



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Animal Wealth Development

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy
(Economics and Farm Management)



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(2021-2022)**

A- Administrative information:

- 1- Awarding Body:** Kafr El-Sheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Animal Wealth Development
- 4- Program Title:** PhD Degree in Veterinary Medicine (Economic and Farm management)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years
- 7- Program Coordinator:** Prof. Dr. Mohamed A. Helal

B- Professional information:

1- Aim of the Program:

- Allow graduate to create new knowledge and understanding in Veterinary Economics and Farm Management through the process of research and inquiry.
- Enable graduate to achieve competency in modern technology
- Provide the graduate with the opportunity to develop communication skills, recent techniques and tools in the field of Veterinary Economics and Farm Management and experience of scientific research skills.
- Giving the graduate the ability to be creative to advance Veterinary Economics and Farm Management through new scientific research.

- Enable graduate to achieve capability in modern technology to develop practical research project.
- Demonstrate an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and present their own research data for the improvement of the economics of animal and poultry production.
- Have the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibit awareness about current economic problems and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of Veterinary Economics and Farm Management.

2- Academic standards:

**Academic reference standards (ARS) adopted by the faculty committee No(1)
14/9/2014**

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Mastering the basics and methodologies of scientific research veterinary economics and farm management for better dealing with economic problems professionally.
- 2) Performing continuous effort to add knowledge about improvement of economic efficiency of animals and poultry.
- 3) Analysis of information in veterinary economics and farm management and related fields including behavior, production, infectious diseases, etc.
- 4) Integrating data collected from the animal and poultry farms with related experimental findings to reach the correct system for improvement of economic efficiency of animals and poultry.
- 5) Showing deep awareness with the ongoing economic problems of animal and poultry production and modern theories in solving economic

- problems.
- 6) Identifying the main causes of low economic efficiency in animals and poultry farms and suggesting the appropriate solutions.
 - 7) Mastering of a wide range of professional skills in experimental design, data collection, analysis, and interpretation of economic data.
 - 8) Acquiring trends towards developing modern methods and tools in veterinary economics and farm management.
 - 9) Using appropriate technological means to serve professional practice.
 - 10) Communicating effectively with animal breeders, students and colleagues and leading work team through professional scale.
 - 11) Making decision in different professional situations especially under field conditions to deal with economics of animals and poultry production.
 - 12) Using of the available resources efficiently in the development of new techniques and work to find new resources.
 - 13) Being aware with his role in society development and community preservation.
 - 14) Acting with integrity, credibility and according to the rules of profession.
 - 15) Realizing the importance of self and life-long learning and progress.

4-Programme Intended Learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

- a.1. Recognize recent theories, principles and knowledge in improvement of economic efficiency of animal and poultry production.
- a.2. Apply Principles methodologies and ethics of scientific research and its tools in improvement of economic efficiency of animals and poultry.
- a.3. Define legal and ethical principles of the area of veterinary economics and farm management.
- a.4. Recognize Principles and the basics of quality assurance the field of veterinary economics and farm management.
- a.5. Apply knowledge and understanding in of veterinary economics and farm management for maximizing economic efficiency of animal and poultry production

- a.6. Recognize the effect of different farm management systems on the animal wealth and methods for maximizing production
- a.7. Describe the principles, methodologies and ethics of scientific research in veterinary economics and farm management.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1. Assess and criticize different data and information in veterinary economics and farm management
- b.2. Analyze and evaluate information about economics of animals and poultry and the eliciting from them
- b.3. Solve professional problems in veterinary economics and farm management using available data under field or experimental conditions.
- b.4. Perform scientific research studies that can give significant impact on the improvement of economic efficiency animal and poultry production.
- b.5. Conduct scientific research studies aiming at maximize economic efficiency of animal and poultry production.
- b.6. Formulating scientific papers in veterinary economics and farm management with the ability to match and discuss his own findings with those of other scientists.
- b.7. Asses risks in the field of veterinary economics and farm management.
- b.8. Share and lead scientific open discussion in the field of veterinary economics and farm management based on evidences and proofs.
- b.9. Planning to enhance the performance in the field of veterinary economics and farm management.
- b.10. Make professional decisions and suggestions for improvement of veterinary economics and farm management under different professional contexts
- b.11. Innovate new method or technique for improvement of veterinary economics and farm management.
- b.12. Perform evidence-based discussion and conversation for his PhD defense

c. Practical and professional skills:

By the end of this program the graduate should be able to:

- c.1. Master the fundamental and recent professional skills in the field of veterinary economics and farm management including experimental design, data collection, presentation and analysis.
- c.2. Write and evaluate professional economic reports.
- c.3. Evaluate and modernize methods and tools in improvement of economic efficiency of animal and poultry production.
- c.4. Use modern technological means to serve improvement of economic efficiency of animal and poultry production.
- c.5. Plan for the development of a research project in the field of veterinary economics and farm management taking in consideration the methodology, ethical and bio- safety with precise cost estimation and time frame required

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1. Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology in the improvement of economics of animal and poultry production professional practice.
- d.2. Utilize information technology to serve professional practice.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements
- d.5. Lead team under different professional circumstances.
- d.6. Use of different sources for obtaining information and knowledge.
- d.7. Manage scientific meetings with the ability to manage time efficiently.
- d.8. Asses himself and life-long learning

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, and seminars.

6-Assessments:

The program depends on different assessment ways:

a. Course assessment:

1. Final written exam

- To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills

2. Practical exam

- To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.

3. Oral exam

- To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.

b. Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work

c. PhD Thesis assessment

- Annual reports adopted by the Faculty.
- Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
- Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1-2; b1,2,3;
Oral	a1-2; b1,2,3;
Practical	c1-3
Qualifying Exam	a3-7; b3-12, d6-7
Thesis	a3-7; b3-12; c4-5; d1-7

7. Program structure

a. Program duration (years):

PhD degree duration at least 3 years and it should not exceed a period of 5 years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law (article 18).

b. Program courses:

Predocor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council should include at least 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. These courses must not be previously studied in the Mater program. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c- Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d- Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion .

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Economic and farm management include:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2

	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology				
	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2

Physiology	122/2	22- Fish histology	1	2
	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3

	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2

Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
174/2	74-- Fish pathology	2	2	
Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2

Bacteriology and Virology	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
81- Advanced immunology			2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1
Hygiene and control of milk	208/2	108- Hygienic control of milk and dairy products	2	2

and dairy products	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2

	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/ 2	134- Stress diseases during animals transport.		
Infectious diseases	235/ 2	135- Infectious diseases of cattle	2	2
	236/ 2	136- Infectious diseases of sheep and goat	2	2
	237/ 2	137- Infectious diseases camel	2	2
	238/ 2	138 Infectious diseases of equine	2	2
	239/ 2	139- Infectious diseases of pet animals	2	2
	240/ 2	140- Infectious diseases lab animals	1	2
	241/ 2	141- Infectious diseases of udder and newly born animals	2	2
	242/ 2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic	2	2

		toxicology		
	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2

Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in polutry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses	285/2	185- advanced zoonoses (specific	2	2

		courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)		
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases and	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2

management	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (Economics and Farm management) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medical science lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.
3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected

courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.

5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.
7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.
8. The applicant should submit a seminar(Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).
9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met:Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.
10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and incase of thesis approval by the department council, the applicant will submit 6 copies for the

faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.

11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards bit to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.

12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade		Percentage
Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
I	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

Program Coordinator

Head of Department

Dr. Seham Mohammed Elkassas

Prof. Dr. Mohamed Atef Helal

Matching program ILOs with ARS Matrix

Program ILOs	ARS																											
	K&U (a)							I.S. (b)								P.P. (c)					G.T. (d)							
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7
K&U	1	2	3	4	5	6	7																					
I.S.								1	2	3	4	5	6	7	8	9	10	11	12									
P.P.																	1	2	3	4	5							



Kafrelsheikh University
Faculty of Veterinary Medicine



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Animal Wealth Development



ARS for PhD in Veterinary Medical Sciences (Economics and Farm Management)

1) Graduate attributes

The graduate should have the ability for:

- 16) Mastering the basics and methodologies of scientific research Economics and Farm Management for better dealing with economic problems professionally.
- 17) Performing continuous effort to add knowledge about improvement of economic efficiency of animals and poultry.
- 18) Analysis of information in Economics and Farm Management and related fields including genetics, behavior, animal production, medicine, etc.
- 19) Integrating data collected from the animal and poultry farms with related experimental findings to reach the correct system for improvement of economic efficiency of animal and poultry production.
- 20) Showing deep awareness with the ongoing economic problems and modern theories in solving productive efficiency problems.
- 21) Identifying the main causes of low productive efficiency in animals and poultry farms and suggesting the appropriate solutions.
- 22) Mastering of a wide range of professional skills in experimental design, data collection, analysis, and interpretation of productive and reproductive efficiency data.
- 23) Acquiring trends towards developing modern methods and tools in Economics and Farm Management.
- 24) Using appropriate technological means to serve professional practice.
- 25) Communicating effectively with animal breeders, students and colleagues and leading work team through professional scale.
- 26) Making decision in different professional situations especially under field conditions to deal with economic efficiency of animals and poultry.
- 27) Using of the available resources efficiently in the development of new techniques and work to find new resources.
- 28) Being aware with his role in society development and community preservation.



- 29) Acting with integrity, credibility and according to the rules of profession.
30) Realizing the importance of self and life-long learning and progress.

A) Knowledge and understanding

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Recent theories, principles and knowledge in genetic and environmental improvement of economic efficiency of animal and poultry production		Recent theories, principles and knowledge in the field of specialization and related areas
2)	Principles methodologies and ethics of scientific research and its tools in improvement of productive and reproductive efficiency of animals and poultry		Basics, methodologies and ethics of scientific research and its different tools
3)	Legal and ethical principles in the area of Economics and Farm Management		Legal and ethical principles of professional practice in the area of specialization
4)	Principles and the basics of quality assurance in animal housing and management in the field of Economics and Farm Management		Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Awareness with the effect of different farm management systems on the animal wealth and methods for maximizing production		Awareness with the effect of professional practice on the environment and methods of its maintain and development
6)	the effect of professional practice on the environment and methods of environmental development and maintenance		

B) Intellectual skills

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analyzing and evaluating information about economics of production and reproduction of animals and poultry and the eliciting from them		Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solving productive and economic problems using available data		Solving professional problems using available data
3)	Performing scientific research studies that can give		Conducting scientific research studies



	significant impact on the improvement of economics of animal and poultry production.	that add to knowledge
4)	Formulating scientific papers in Economics and Farm Management	Formulating scientific papers
5)	Risk-assessment of in the field of Economics and Farm Management	Risk-assessment in the field of specialization
6)	Planning to enhance the performance in the field of Economics and Farm Management	Planning to enhance the performance in field of specialization
7)	Making professional decisions for improvement of economics of animal and poultry production under different professional contexts	Making professional decisions under different professional contexts
8)	Creation and innovative in the area of specialization field of Economics and Farm Management	Creation and innovative in the area of specialization
9)	Dialogue and discussion based on economic evidences and proofs	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills in the field of Economics and Farm Management	Mastering basic and modern professional skills in the area of specialization
2)	Writing and evaluating professional economic reports	Writing and evaluating professional reports
3)	Evaluating and modernizing methods and tools in improvement of economic efficiency of animal and poultry.	Evaluating and modernizing methods and tools in the area of specialization
4)	Using modern technological means to serve improvement of economic efficiency of animal and poultry production	Using modern technological means to serve professional practice
5)	Planning for the maximizing productive and reproductive efficiency of animals and poultry by applying recent techniques in Economics and Farm Management	Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill



Adopted ARS	NARS (PhD)
<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1) Effective communication with animal and poultry producers, students and veterinarians.	Effective communication
2) Utilizing information technology to serve development of Economics and Farm Management practice	Utilizing information technology to serve development of professional practice
3) Teaching others and evaluating their performance	Teaching others and evaluating their performance
4) Self-assessment and continuous learning	Self-assessment and continuous learning
5) Using different resources to obtain knowledge and information	Using different resources to obtain knowledge and information
6) Team working and leading a team in familiar professional contexts	Team working and leading a team in familiar professional contexts
7) Management of scientific meetings with the ability to manage time efficiently	Management of scientific meetings with the ability to manage time efficiently

ثالثا: برامج الدكتوراه

١- مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستتبطا و مطورا للعلاقات البيئية بينها
٥. إظهار و عيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حلولاً مبتكرة لحلها
٧. إتقان نطاقا و اسعا من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تنميتها و العمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصادقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢- المعايير القياسية العامة

المعرفة و الفهم:

- بانتهاؤ دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا علي الفهم و الدراية بكل من:
- أ- النظريات و الأساسيات و الحديث من المعارف في مجال التخصص و المجالات ذات العلاقة
 - ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة



ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و طرق تنمية البيئة وصيانتها
المهارات الذهنية

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها

ب- حل المشاكل المتخصصة استنادا علي المعطيات المتاحة

ج- إجراء دراسات بحثية تضيف إلى المعارف

د- صياغة أوراق علمية

هـ- تقييم المخاطر في الممارسات المهنية

و- التخطيط لتطوير الأداء في مجال التخصص

ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة

ح- الابتكار/ الإبداع

ط- الحوار و النقاش المبني علي البراهين والأدلة

المهارات المهنية

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص

ب- كتابة و تقييم التقارير المهنية

ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص

د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية

هـ- التخطيط لتطوير الممارسة المهنية و تنمية أداء الآخرين

المهارات العامة و المتنقلة

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

أ- التواصل الفعال بأنواعه المختلفة

ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية

ت- تعليم الآخرين و تقييم أداءهم

ث- التقييم الذاتي و التعلم المستمر

ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف

ح- العمل في فريق و قيادة فرق العمل

خ- إدارة اللقاءات العلمية و القدرة علي إدارة الوقت



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 306/2

Course title: Economics of dairy production farms (اقتصاديات مزارع انتاج اللبن)

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 96 hrs.

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical: -----

2 - OVERALL AIMS OF THE COURSE:

At the end of this course, students should gain the basic concepts, principles and skills in the field of dairy economics to recognize the different economic tools that measure and maximize the revenue of dairy farms, as well as implement an efficient marketing strategy.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Describe the economic methods for feeding dairy cattle.
- a.2. Identify the most important disease that affecting dairy enterprises and causing losses.
- a.3. Outline the different economic programs used for improvement the economic, productive and reproductive efficiency of dairy farms.
- a.4. Diagram the different types of farm records and risks in dairy farms.
- a.5. Enumerate the factors affecting demand and supply of milk and dairy products and their marketing.
- a.6. Name the Characters of dairy enterprises and factors affecting them.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Compare the different economic feeding plans in improving the dairy enterprises and their marketing strategies.
- b.2. Analyze of different farm records.
- b.3. Detect the economic problems and diseases of dairy farms and how you can deal with it.
- b.4. Interpret the economic information in determine the risks and uncertainty in dairy farms and factors affecting dairy enterprises.
- b.5. Judge different characters of dairy enterprises.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Efficiently make use of library facilities and IT tools.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements



4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1- Economics of dairy nutrition	6	---	6
2-Economic of dairy cattle diseases	8	---	8
3- Economic of heifer replacement	8	---	8
4-Factors affecting demand and supply of milk and dairy products.	8	---	8
5- Dairy farm records	10	---	10
6- Risks and uncertainty of dairy cattle	10	---	10
7- Economic losses of productive and reproductive diseases	8	---	8
8- Marketing of dairy animals	10	---	10
9- Marketing of dairy products	8	---	8
10-Factors affecting dairy enterprises	10	---	10
11- Characters of dairy enterprises	10	---	10
Total	96	---	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Self-Learning activities:** Mini reviews from the web and the library Making individual reports about poultry breeding

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a6	b1 to b5		d1, d4
Self-Learning activities		b1 to b5		d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b5		d1 to d4

*Lectures may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during lectures.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
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7.b time	At the end of the academic year	At the end of the academic year		Allover the academic year
7.c grads	25	20	-----	5

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b5		d4
Practical exams	-----	-----	-----	-----
Oral exams	a1 to a6	b1 to b5		d1
Student activities	a1, a5,			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Bill LaFayette, Stephen A. Buser. 2017. **Economic and Social Impacts of Veterinary Medicine**, he Ohio State University College of Veterinary Medicine and the Ohio Veterinary Medical Association
- Bath, L. Donald; F. N. Dickinson; H. A. Tucker; and R. Appleman. (1985):”Dairy cattle: Principles, practices, problems, profits”. 3rd Edition, Lea & Febiger. Philadelphia.
- Economics for veterinarians (2009):” Proceedings of a course in economics fo veterinarians of the Western Australian Department of Agriculture, February 14 to 18.

8-2: Recmonded books:

- Economics for veterinarians (2018):” Proceedings of a course in economics for veterinarians of the Western Australian Department of Agriculture, February 14 to 18.
- Heady, E. H. and R. Jensen. (2014):” Farm management economics”. Pren. of India, New Delhi.
- Lasley, J. F. (2016):” Beef cattle production “. Prentice-Hall, Inc. Englewood cliffs, New Jersey 07632.
- Knippenberg, R., Michael R. D., Bridgette B., and Michael D. 2015. Estimating the financial return on a veterinary education. JAVMA, Vol 246, No. 4, February 15, 2015
- Ahmadi B.V., Dominic M., Rick D. 2020. The Economics of Farm Animal Welfare: Theory, Evidence and Policy Kindle Edition. CABI (July 9, 2020)

8-3: Egyptian Knowledge Bank:

- Max K. Hinds , William F. Johnstone, 2010. Dairy economics handbook. U.S. Department of Agriculture, Federal Extension Service
- Lawrence, A., Vigors, B. 2020. The economics of farm animal welfare: theory, evidence and policy. Animal Behaviour and Welfare, Animal and Veterinary Sciences, Scotland's Rural College (SRUC), Edinburgh, Scotland, UK.

Scientific Journals

- Journal of Animal Science.
- Livestock Production Science.
- British Journal of Animal Science.

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- DeLaval Dairy Supply. <http://www.delaval.com/en/-/Dairy-knowledge-and-advice/>
- Lactation Biology: <http://classes.aces.uiuc.edu/ansci308/index.html>



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- National Dairy Database: <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>
 - WWW Virtual Library for Dairy Production* (Oklahoma). <http://www.ansi.okstate.edu/library/dairy/>
 - US Dairy Export Council: <http://www.usdec.org/about/howeare.htm>
 - The International Dairy Federation (IDF): <http://www.fil-idf.org/>
 - Managing of dairy heifers: <http://www3.das.psu.edu/dcn/calfmgt/385/index.html>
 - Management Practices Associated with High-Producing U.S. Dairy Herds (USDA): http://www.aphis.usda.gov/vs/ceah/cahm/Dairy_Cattle/drymgmt.htm

Course Coordinator

Head of Department

Prof. Dr. M. Atef Helal

Prof. Dr. M. Atef Helal



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 307/2

Course title: Economics of meat production farms (اقتصاديات مزارع انتاج اللحم)

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 96 hrs.

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical: -----

2 - OVERALL AIMS OF THE COURSE:

At the end of this course, students should gain the basic concepts, principles and skills in the field of beef production economics and to use and allocate the production and economic resources in improving the economic efficiency of beef production farms.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Classify the economic information in management of beef production farms.
- a.2. Determine the economic resources in improving the economic and productive efficiency of commercial beef production farms.
- a.3. Identify the different economic programs used for improvement and evaluation of the economic and productive efficiency.
- a.4. Recognize the factors affecting demand and supply of beef products.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Diagram the economic information in management of beef production farms.
- b.2. Interpret the evaluation of economic efficiency of beef production farms.
- b.3. Diagnose the economic problems of beef farms and how you can deal with it.
- b.4. Explore the economic information in beef farms success and marketing of beef products

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

There is no practical course

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Efficiently make use of library facilities and IT tools.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1-Managerial function of Beef production	20	---	20
2-Cost benefit analysis of beef production.	20	---	20
3-Economics of commercial beef production.	30	---	30



4-Factors affecting demand and supply of beef products.	26	---	26
Total	96	---	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about poultry breeding

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures *	a1 to a4	b1 to b4		d1, d4
Self-Learning activities		b1 to b4		d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b4		d1 to d4

*Lectures may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during lectures.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year		Allover the academic year
7.c grads	25	20	-----	5

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b4		d4
Practical exams	-----	-----	-----	-----
Oral exams	a1 to a4	b1 to b4		d1
Student activities	a1, a4,			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Bill LaFayette, Stephen A. Buser. 2017. **Economic and Social Impacts of Veterinary Medicine**, he Ohio State University College of Veterinary Medicine and the Ohio Veterinary Medical Association



- Bath, L. Donald; F. N. Dickinson; H. A. Tucker; and R. Appleman. (1985): "Dairy cattle: Principles, practices, problems, profits". 3rd Edition, Lea & Febiger. Philadelphia.
- Economics for veterinarians (2009): "Proceedings of a course in economics for veterinarians of the Western Australian Department of Agriculture, February 14 to 18.

8-2: Recommended books:

- Economics for veterinarians (2018): "Proceedings of a course in economics for veterinarians of the Western Australian Department of Agriculture, February 14 to 18.
- Heady, E. H. and R. Jensen. (2014): "Farm management economics". Pren. of India, New Delhi.
- Lasley, J. F. (2016): "Beef cattle production ". Prentice-Hall, Inc. Englewood cliffs, New Jersey 07632.
- Knippenberg, R., Michael R. D., Bridgette B., and Michael D. 2015. Estimating the financial return on a veterinary education. JAVMA, Vol 246, No. 4, February 15, 2015
- Ahmadi B.V., Dominic M., Rick D. 2020. The Economics of Farm Animal Welfare: Theory, Evidence and Policy Kindle Edition. CABI (July 9, 2020)

8-3: Egyptian Knowledge Bank:

- Max K. Hinds , William F. Johnstone, 2010. Dairy economics handbook. U.S. Department of Agriculture, Federal Extension Service
- Lawrence, A., Vigers, B. 2020. The economics of farm animal welfare: theory, evidence and policy. Animal Behaviour and Welfare, Animal and Veterinary Sciences, Scotland's Rural College (SRUC), Edinburgh, Scotland, UK.

Scientific Journals

- Journal of Animal Science.
- Livestock Production Science.
- British Journal of Animal Science.

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- DeLaval Dairy Supply. <http://www.delaval.com/en/-/Dairy-knowledge-and-advice/>
- Lactation Biology: <http://classes.aces.uiuc.edu/ansci308/index.html>
- National Dairy Database: <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>
- WWW Virtual Library for Dairy Production* (Oklahoma). <http://www.ansi.okstate.edu/library/dairy/>
- US Dairy Export Council: <http://www.usdec.org/about/whoweare.htm>
- The International Dairy Federation (IDF): <http://www.fil-idf.org/>
- Managing of dairy heifers: <http://www3.das.psu.edu/dcn/calfmgt/385/index.html>
- Management Practices Associated with High-Producing U.S. Dairy Herds (USDA): http://www.aphis.usda.gov/vs/ceah/cahm/Dairy_Cattle/drymgmt.htm

Course Coordinator

Head of Department

Prof. Dr. M. Atef Helal

Prof. Dr. M. Atef Helal



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 308/2

Course title: Economics of Poultry farms (اقتصاديات مزارع الدواجن)

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 96 hrs.

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical: -----

2 - OVERALL AIMS OF THE COURSE:

At the end of this course, students should gain the basic concepts, principles and skills in the field of economic basics of poultry business, as well as recognize the different economic concepts that improve and maximize the revenue of poultry farms, as well as have good economic information about business of poultry production.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Identify the economic concepts of poultry production .
- a.2. Enumerate the different economic resources in improving and maximize the efficiency, financial position and marketing of poultry farms.
- a.3. List the different poultry disease with high economic losses and strategy of control.
- a.4. Outline the usefulness of economic resources in records of poultry farms.
- a.5. Index the types of risks in poultry production farms.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Diagram the usefulness of economic information in improving poultry production and marketing of poultry products.
- b.2. Analyze of different farm records.
- b.3. Examine the economic problems of poultry farms and how you can deal with it.
- b.4. Optimize the economic information in determine the risks and uncertainty in poultry farms.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

There is no practical course

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Efficiently make use of library facilities and IT tools.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1- Economics concepts of poultry production	10	---	10
2-Economic and productive efficiency of poultry farms	15	---	15
3- Farm records	10	---	10



4- Risks and uncertainty of poultry enterprises	13	---	13
5- Economic losses of poultry diseases	12		12
6- Marketing of poultry animals	15		15
7- Marketing of poultry products	10		10
8- Economic resources and problems	10		10
Total	96	---	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about poultry breeding

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b4		d1, d4
Self-Learning activities		b1 to b3		d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b4		d1 to d4

*Lectures may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during lectures.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year		Allover the academic year
7.c grads	25	20	-----	5

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b4		d4
Practical exams	-----	-----	-----	-----
Oral exams	a1 to a5	b1 to b4		d1
Student activities	a1, a4,			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.



8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Bill LaFayette, Stephen A. Buser. 2017. Economic and Social Impacts of Veterinary Medicine, The Ohio State University College of Veterinary Medicine and the Ohio Veterinary Medical Association
- Jonathan Rushton 2009. The Economics of Animal Health and Production. CAB International. ISBN: 9781 84593 1940
- Leeson, S., Summers, J. 2018. Commercial Poultry Nutrition, 3rd Edition. Nottingham University Press. England.
- Donald D. Bell & William D. Weaver, Jr. 2012. Commercial Chicken Meat and Egg Production. Springer publishing, New York, USA.

8-2: Recommended books:

- Economics for veterinarians (2018):” Proceedings of a course in economics for veterinarians of the Western Australian Department of Agriculture, February 14 to 18.
- Heady, E. H. and R. Jensen. (2014):” Farm management economics”. Pren. of India, New Delhi.
- Knippenberg, R., Michael R. D., Bridgette B., and Michael D. 2015. Estimating the financial return on a veterinary education. JAVMA, Vol 246, No. 4, February 15, 2015
- Ahmadi B.V., Dominic M., Rick D. 2020. The Economics of Farm Animal Welfare: Theory, Evidence and Policy Kindle Edition. CABI (July 9, 2020)

8-3: Egyptian Knowledge Bank:

- Beaver, BV and Höglund, DL. 2016. Efficient Livestock Handling. The Practical Application of Animal Welfare and Behavioral Science
- Blair, R. 2018. Nutrition and feeding of organic poultry. University of British Columbia, British Columbia, Canada. ISBN 9781786392985
- Burton, E., Gatcliffe, J., O'Neill, H. M., Scholey, D. 2016. Sustainable poultry production in Europe. School of Animal, Rural and Environmental Sciences, Nottingham Trent University, Brackenhurst Campus, Southwell, Nottinghamshire NG25 0AF, UK.

Scientific Journals

- Poultry Science Association
- American journal of poultry science
- British Poultry Science
- International journal of Poultry Science.
- Journal of Applied Poultry Research

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <http://www.thepoultrysite.com/>
- <http://www.worldpoultry.net/>
- <http://www.dawagen.com>

Course Coordinator

Head of Department

Prof. Dr. M. Atef Helal

Prof. Dr. M. Atef Helal



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 309/2

Course title: Economics of fish production farms (اقتصاديات مزارع سمكية)

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 96 hrs.

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical: -----

2 - OVERALL AIMS OF THE COURSE:

At the end of this course, students should gain the basic concepts, principles and skills in the field of economics of fish production farms and allocate the production and economic resources in improving the economic efficiency of fish production farms. In addition to analysis the risk factors affecting fish production and fish records.

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Review the economic information in improving the economic and productive efficiency of fish production farms and their economics.
- a.2. Identify the economic resources and their best allocation in fish production.
- a.3. Record the different economic programs used for improvement the economic and productive efficiency of fish farms.
- a.4. Tabulate the usefulness of data records in improving the efficiency of fish farms and evaluation of different systems of production.
- a.5. Name deferent risk factors and uncertainty facing.
- a.6. Enumerate factors affecting demand and supply of fish products.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Analyze the economic information in improving the economic and productive efficiency of fish production farms.
- b.2. Diagnose of economic efficiency of fish production farms and factors affecting demand and supply of fish products.
- b.3. Classify the economic problems of fish farms and how you can deal with it.
- b.4. Interpret the economic information for fish farms success.
- b.5. Analyze risks facing fish farms and analysis of farm records

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

There is no practical course

3- D: GENERAL SKILLS:

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Efficiently make use of library facilities and IT tools.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements



4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1-Fish production systems and efficiency	20	---	20
2-Economics of commercial fish production systems.	10	---	10
3-Evaluation of fish production economics.	12	---	12
4-Factors affecting demand and supply of fish production.	14	---	14
5- Using of computer in fish farming analysis	10	---	10
6. fish records	15	---	15
7. Risks and uncertainty	15	---	15
Total	96	---	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Self-Learning activities:** Mini reviews from the web and the library Making individual reports about poultry breeding

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a6	b1 to b5		d1, d4
Self-Learning activities		b1 to b5		d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b5		d1 to d4

*Lectures may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during lectures.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year		Allover the academic year
7.c grads	25	20	-----	5

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b4		d4
Practical exams	-----	-----	-----	-----



Oral exams	a1 to a4	b1 to b4		d1
Student activities	a1, a4,			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Clem Tisdell. 2001. Aquaculture Economics and Marketing: An Overview. ISSN 1327-8231.
- Jonathan Rushton 2009. The Economics of Animal Health and Production. CAB International. ISBN: 9781 84593 1940
- Salahu Ayemi Jibril and Alh Yusuf Ibrahim. Essential of Fisheries and Aquaculture Techniques. Finix Publication Bauch. ISBN: 978 - 978 - 950 - 155 – 7
- Fish Farming Handbook. 1980. SEAFDEC INSTITUTE OF AQUACULTURE. Aquaculture Department, SEAFDEC Tigbauan, Iloilo, Philippines P.O. Box 256 Iloilo City, Philippines

8-2: Recmended books:

- Economics for veterinarians (2018):” Proceedings of a course in economics for veterinarians of the Western Australian Department of Agriculture, February 14 to 18.
- Heady, E. H. and R. Jensen. (2014):” Farm management economics”. Pren. of India, New Delhi.
- Knippenberg, R., Michael R. D., Bridgette B., and Michael D. 2015. Estimating the financial return on a veterinary education. JAVMA, Vol 246, No. 4, February 15, 2015
- Ahmadi B.V., Dominic M., Rick D. 2020. The Economics of Farm Animal Welfare: Theory, Evidence and Policy Kindle Edition. CABI (July 9, 2020)

8-3: Egyptian Knowledge Bank:

- Beaver, BV and Höglund, DL. 2016. Efficient Livestock Handling. The Practical Application of Animal Welfare and Behavioral Science
- Ágúst Einarsson, Ásta Dís Óladóttir. 2020. Fisheries and Aquaculture The Food Security of the Future. □ eBook ISBN: 9780128231920- Paperback ISBN: 9780128210567

Scientific Journals

- AQUACULTURE
- Aquaculture Reports
- AQUACULTURE RESEARCH
- AQUACULTURE NUTRITION.
- AQUACULTURE ECONOMICS & MANAGEMENT

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <http://www.biozoomer.com/2011/11/fishes-economic-importance.html>
- <http://www.biologydiscussion.com/fisheries/fisheries-types-of-fisheries-and-it-economical-importance/1361>

Course Coordinator

Head of Department

Prof. Dr. M. Atef Helal

Prof. Dr. M. Atef Helal



COURSE SPECIFICATION (2021 / 2022))

1 - Basic Information:

Code number: 310/2

Course title: Feasibility studies of animal production projects (دراسات جدوى)

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 96 hrs.

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical: -----

2 - OVERALL AIMS OF THE COURSE:

At the end of this course, students should gain the basic concepts, principles and skills to establish the different feasibility studies of animal, poultry and fish production projects, as well as financial analysis and market research.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Identify the economic importance of preparation of feasibility study.
- a.2. Classify the information used for making feasibility study of animal production projects (market survey).
- a.3. Outline and make feasibility study of animal, poultry and fish production projects.
- a.4. List the different programs used for financial analysis of animal production projects.
- a.5. Recognize the evaluation and usefulness of feasibility study of animal production projects.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Analyze the economic information in feasibility study of animal production projects.
- b.2. Evaluate feasibility studies of different animal production projects.
- b.3. Analyze the financial position of animal production farms.
- b.4. Explore the economic information in feasibility studies of animal production projects.
- b.5. Analyze market research and demand projects.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

There is no practical course

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Efficiently make use of library facilities and IT tools.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1-Feasibility studies and its economic importance.	12	---	12
2-Types of feasibility studies.	20	---	20
3-Application of feasibility studies in production farms.	20	---	20



4-Evaluation of feasibility studies.	14	---	14
5- Financial analysis of animal projects	20	---	20
6. Market research	10	---	10
Total	96	---	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about poultry breeding

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b4		d1, d4
Self-Learning activities		b1 to b4		d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b4		d1 to d4

*Lectures may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during lectures.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year		Allover the academic year
7.c grads	25	20	-----	5

7. Student Assessment				
6.1. Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b5		d4
Practical exams	-----	-----	-----	-----
Oral exams	a1 to a5	b1 to b5		d1
Student activities	a1, a4,			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Rodney Overton. 2007. Feasibility Studies Made Simple. ISBN: 9781921360329. Martin Books



- Bill LaFayette, Stephen A. Buser. 2017. Economic and Social Impacts of Veterinary Medicine, The Ohio State University College of Veterinary Medicine and the Ohio Veterinary Medical Association
- Economics for veterinarians (2009):” Proceedings of a course in economics fo veterinarians of the Western Australian Department of Agriculture, February 14 to 18.
- Saeed Al-Muharrami. 2019. Economic Feasibility Study: Preparation and Analysis. Sultan Qaboos University. ISBN: 978-99969-3-254-0

8-2: Recmended books:

- Economics for veterinarians (2018):” Proceedings of a course in economics for veterinarians of the Western Australian Department of Agriculture, February 14 to 18.
- Heady, E. H. and R. Jensen. (2014):” Farm management economics”. Pren. of India, New Delhi.
- Knippenberg, R., Michael R. D., Bridgette B., and Michael D. 2015. Estimating the financial return on a veterinary education. JAVMA, Vol 246, No. 4, February 15, 2015
- Ahmadi B.V., Dominic M., Rick D. 2020. The Economics of Farm Animal Welfare: Theory, Evidence and Policy Kindle Edition. CABI (July 9, 2020)

8-3: Egyptian Knowledge Bank:

- Beaver, BV and Höglund, DL. 2016. Efficient Livestock Handling. The Practical Application of Animal Welfare and Behavioral Science
- Ndalakwa MUSA Masanja, 2020. A Practical Guide To Writing A Feasibility Study. NMM Printers

Scientific Journals

- AQUACULTURE
- AQUACULTURE ECONOMICS & MANAGEMENT
- Poultry Science Association
- Journal of Animal Science.
- Livestock Production Science.

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <https://www.scribd.com/doc/.../Developing-Feasibility-Studies-notes>
- www.ifc.org/wps/wcm/connect/.../PartTwo_FeasibilityStudies.pdf?MOD
- <https://www.projectsart.co.uk/elements-of-a-good-feasibility-study.php>

Course Coordinator

Head of Department

Prof. Dr. M. Atef Helal

Prof. Dr. M. Atef Helal



COURSE SPECIFICATION

(2021 / 2022)

1 - Basic Information:

Code number: 311/2

Course title: Management of animal farms (ادارة حقول حيوانية)

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 96 hrs.

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical: -----

2 - OVERALL AIMS OF THE COURSE:

At the end of this course, students should gain the basic concepts, principles and skills in the field of management practices of animal production farms and have good economic information for management strategy of animal production enterprises and decision making policy

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Identify the different animal and poultry projects and know importance of management in veterinary science.
- a.2. Outline a good design for improvement management of different animal farms in relation to veterinary practice.
- a.3. Recognize the different systems used for management of animal production projects and decision making polices.
- a.4. Explain the usefulness of good management in improving the efficiency of animal production farms.
- a.5. Discuss the management quality and how to measure farm success.
- a.6. determine the different strategies of animal farms.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Examine the economic information in management of different animal production farms.
- b.2. Diagnose of management quality in different animal production farms.
- b.3. Interpret the problems of management in animal production farms and how can deal with it.
- b.4. Layout the measures of farm success.
- b.5. Analyze the Financial position of animal farms and take precise decision.
- b.6. Diagram different strategies for managing of animal farms.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

There is no practical course

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Efficiently make use of library facilities and IT tools.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements



4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1- Introduction to farm management	10	---	10
2-Application of advanced management information on animal production farms.	10	---	10
3-Systems of management of animal production farms.	14	---	14
4-Decision making polices	10	---	10
5-Evaluation of management quality.	10		10
6- Financial analysis of animal farms	12		12
7- Animal farm strategies	10		10
8- Measures of farm success	20		20
Total	96	---	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about poultry breeding

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a6	b1 to b6		d1, d4
Self-Learning activities		b1 to b6		d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b6		d1 to d4

*Lectures may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during lectures.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year		All over the academic year
7.c grads	25	20	-----	5

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			



	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b6		d4
Practical exams	-----	-----	-----	-----
Oral exams	a1 to a6	b1 to b6		d1
Student activities	a1, a4,			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Rodney Overton. 2007. Feasibility Studies Made Simple. ISBN: 9781921360329. Martin Books
- Economics for veterinarians (2009):” Proceedings of a course in economics fo veterinarians of the Western Australian Department of Agriculture, February 14 to 18.
- Saeed Al-Muharrami. 2019. Economic Feasibility Study: Preparation and Analysis. □ Sultan Qaboos University. ISBN: 978-99969-3-254-0

8-2: Recmonded books:

- Economics for veterinarians (2018):” Proceedings of a course in economics for veterinarians of the Western Australian Department of Agriculture, February 14 to 18.
- Heady, E. H. and R. Jensen. (2014):” Farm management economics”. Pren. of India, New Delhi.
- Knippenberg, R., Michael R. D., Bridgette B., and Michael D. 2015. Estimating the financial return on a veterinary education. JAVMA, Vol 246, No. 4, February 15, 2015
- Ahmadi B.V., Dominic M., Rick D. 2020. The Economics of Farm Animal Welfare: Theory, Evidence and Policy Kindle Edition. CABI (July 9, 2020)

8-3: Egyptian Knowledge Bank:

- Beaver, BV and Höglund, DL. 2016. Efficient Livestock Handling. The Practical Application of Animal Welfare and Behavioral Science
- Ndalaha MUSA Masanja, 2020. A Practical Guide To Writing A Feasibility Study. NMM Printers

Scientific Journals

- AQUACULTURE ECONOMICS & MANAGEMENT
- Poultry Science Association
- Journal of Animal Science.
- Livestock Production Science.

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <https://www.scribd.com/doc/.../Developing-Feasibility-Studies-notes>
- www.ifc.org/wps/wcm/connect/.../PartTwo_FeasibilityStudies.pdf?MOD
- <https://www.projectsmart.co.uk/elements-of-a-good-feasibility-study.php>

Course Coordinator

Head of Department

Prof. Dr. M. Atef Helal

Prof. Dr. M. Atef Helal



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of fish diseases and management

Programme Specification for Doctor of Philosophy Degree in Fish Diseases and Management

Faculty of Veterinary Medicine

Kafr El-Sheikh University

2021-2022



Kafr El-Sheikh University
Faculty of Veterinary Medicine
Department of Fish diseases and management

Programme Specification for Doctor of Philosophy Degree (2021-2022)

A- Administrative information:

- 1- **Awarding Body:** Kafrelsheikh University
- 2- **Teaching Body:** Faculty of Veterinary Medicine
- 3- **Department responsible:** Fish Diseases and Management
- 4- **Program Title:** PhD Degree in Veterinary Science (Fish Diseases and Management)
- 5- **Final award:** PhD Degree
- 6- **Registration period:** 3-5 years
- 7- **Program Coordinator:** Dr. Eman Moustafa Moustafa Moustafa
- 8- **External evaluator:** Prof. Dr. Kamal kamal metwally

B- Professional information:

1-Overall aims of the Programme:

- Creation of new knowledge and understanding in Fish diseases and Management through the process of research and inquiry.
- Development of communication skills, recent techniques and diagnostic tools in the field of Fish diseases and Management and experience of scientific research skills.
- Giving the graduate the ability to be creative to advance Fish diseases and Management through new scientific research.
- Achievement of capability in modern laboratory technology to develop practical research project.
- Demonstrating an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and



present their own research data for the protection and promotion of the animal health.

- Giving the student the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibiting awareness about current Aquatic problems and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of Fish diseases and Management.

2- Academic standards:

Adapted by the faculty committee for formulating the academic standard for post-graduate using the generic guidelines for post-graduate adapted by NAQAAE. Academic reference standards (ARS) adopted by the faculty committee No(1) 14/9/2014

3-Graduate attributes:

Graduate of PhD programme must be able to:

- 3.1. Mastery of the basics and methodologies of scientific research.
- 3.2. Continuous work for the addition of knowledge in the field of fish diseases and management.
- 3.3. Apply analytical and critical approach of knowledge in the field of fish diseases and management and relevant area.
- 3.4. Integrate the specialized knowledge with the relevant ones to discover and develop the relation between them.
- 3.5. Demonstrate a deep awareness of the ongoing problems and modern theories in the field of specialization
- 3.6. Identify of the Professional problems and find innovative solutions for them.



- 3.7. Mastery of a wide range of professional skills in the field of fish disease and management.
- 3.8. Orientation towards the development of methods and tools as well as, new techniques for professional practice.
- 3.9. Use of appropriate technological means to serve his professional practice.
- 3.10. Communicate effectively and lead the team work in various professional contexts.
- 3.11. Decision-making using available information.
- 3.12. Employment and raising the available fund and work to find new resources.
- 3.13. Awareness of his role in the development of society and safe community.
- 3.14. Deposit in a manner reflecting the commitment to integrity, credibility, and the professional rules.
- 3.15. Commitment to self-continuous development and transfer of his knowledge and experience to others.

4-Programme outcomes:

a. Knowledge and understanding:

At the end of PhD programme, the graduate must be able to understand and familiar for the following:

- a1.** Theories and basics and modern knowledge in the field of fish biology, breeding and diseases of cultured and the relevant areas.
- a2.** Basics, methodologies and the ethics of scientific research as well as, its different tools.
- a3.** Principle of ethics and laws for professional practice in fish farms and advanced lab diagnosis in fish diseases.
- a4.** Principles and basics of quality in professional practice in diseases of cultured and ornamental fishes.



a5. Knowledge related to his professional practice on the environment, methods for environmental development and its maintenance.

b. Intellectual skills:

On successful completion of this programme, the graduate will be able to:

- b1.** Analyze and evaluate information in fish management, biosecurity and biocontrol of freshwater and marine water fish diseases.
- b2.** Solve specialized problem related to fish farm, diseases and their control based on the available data.
- b3.** Apply research studies that adding new and recent knowledge.
- b4.** Writing a scientific paper.
- b5.** Assessment of the risks in professional practice in lab and farm management .
- b6.** Planning to improve performance in the area of cultured and ornamental fish diseases and management.
- b7.** Make professional decision in the different professional contexts.
- b8.** Innovation/ Creativity.
- b9.** Dialogue and discussion built on evidence.

c. Professional skills

Graduate must be attaining the capacity to:

- c1. Mastering basic and modern professional skills in fish diseases and management.
- c2. Writing and evaluation of professional reports
- c3. Evaluate and develop the methods and advanced tools in the diagnosis of bacterial, parasitic, mycotic and viral diseases of cultured freshwater and marine water fishes.
- c4 .Use of biotechnological means to serve the professional practice.
- c5. Planning for the development of professional practice and improve of the performance of others.



d. General and transferable skills:

Graduate must be having the ability to:

- d1. Effective communication of all kinds
- d2. Use of information technology to serve the development of professional practice
- d3. learn of others and evaluate their performance.
- d4. Self-evaluation and continuous learning.
- d5. Use of different sources for gaining information and knowledge.
- d6. Work in a team and lead team work.
- d7. Manage of scientific meetings and time

5-Teaching and Learning methods:

- The program features a variety of teaching approaches for different intended learning objectives, including a combination of lectures, seminars, presentation, practical lab assignments.
- The research experiment work and library work leading to write thesis.

6-Assessments:

The program depends on different assessment ways:

a. Course assessment:

1. Final written exam

- To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills

2. Practical exam

- To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.

3. Oral exam

- To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.

b. Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the

advancement in his research work

c. PhD Thesis assessment

- Annual reports adopted by the Faculty.
- Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
- Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1,2; b1,2;
Oral	a1,2; b1,2;
Practical	C1-2
Qualifying Exam	A3-5; b3-9
Thesis	A3-5; b3-9; d1-7

7. Program structure

a. Program duration (years):

PhD degree duration at least 3 years and it should not exceed a period of 5 years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law (article 18).

b. Program courses:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council should include at least 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. These courses must not be previously studied in the Mater program. The student will entitled to apply for the exam only after meeting



attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c-Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d-Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met.

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Fish Diseases and Management include:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Fish diseases and management	302/2	Biology of fish.	2	2
	303/2	Fish diseases (advanced)	2	2
	304/2	Fish farms.	1	2
	305/2	Fish breeding .	2	2

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week
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			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and	2	2



		Nails		
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2

	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical	175/2	75- Advanced clinical pathology	2	2



pathology	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
		81- Advanced immunology	2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
198/2	99- Fish parasitology	1	2	
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2



	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1
Hygiene and control of milk and dairy products				
	208/2	108- Hygienic and control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products				
	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine				
	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2

	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/ 2	134- Stress diseases during animals transport.		
Infectious diseases	235/ 2	135- Infectious diseases of cattle	2	2
	236/ 2	136- Infectious diseases of sheep and goat	2	2
	237/ 2	137- Infectious diseases camel	2	2
	238/ 2	138 Infectious diseases of equine	2	2
	239/ 2	139- Infectious diseases of pet animals	2	2
	240/ 2	140- Infectious diseases lab animals	1	2
	241/ 2	141- Infectious diseases of udder and newly born animals	2	2
	242/ 2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in	2	2



		ruminants- equine- pet animals)		
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in polutry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2

	282/2	182-hygiene of animal enclosures- specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2



Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (Fish Diseases and Management) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medical science lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.
3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.



5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.
7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.
8. The applicant should submit a seminar(Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).
9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met:Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.
10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and incase of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.
11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards bit to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.



12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade	Percentage
Excellent	> 90



Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
I	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

program Co-ordinator:

Dr.Eman moustafa

Head of Department:

Prof. Dr. Nadia bassiuony

Matching program ILOs with ARS - Matrix

Program ILOs	ARS																											
	K&U (a)						I.S. (b)									P.P. (c)					G.T. (d)							
	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7	
K&U	1	2	3	4	5	6																						
I.S.							1	2	3	4	5	6	7	8	9													
P.P.																1	4	3	4	5								
G.T.																					1	2	3	4	5	6	7	



ARS for PhD in Veterinary Medical Sciences (Fish diseases and management)

1) Graduate attributes

The graduate should have the ability for:

- 1) Mastering the basics and methodologies of scientific research in the Fish diseases and management
- 2) Making continuous effort to add knowledge in the field of diagnosis of fish infectious and non-infectious diseases.
- 3) Application of analytical and criticizing method in aquatic medicine including biochemical, hematological, microbial and parasitic investigations..
- 4) Integrating specialized knowledge with related information and extrapolating their interrelationship.
- 5) Showing deep awareness with the ongoing problems and modern theories in disease of fish and other aquatic organisms of interest.
- 6) Identification of professional problems and suggesting innovative solutions of the focus area.
- 7) Mastering a wide range of professional skills in Fish diseases and management.
- 8) Acquiring trends towards developing modern methods and tools in professional practice.
- 9) Using appropriate technological means to serve professional practice.
- 10) Effective communication and leading work team through professional scale.
- 11) Decision making in different professional situations.
- 12) Employment and development of available resources efficiently and working on finding new ones.
- 13) Awareness with his role in society development and community preservation.
- 14) Acting with integrity, credibility and according to the rules of profession.
- 15) Commitment with continuous self and life-long development and transferring of his knowledge and experience to others.

A) Knowledge and understanding

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Advanced theories and principles in pathogenesis, diagnosis and control of bacterial, viral, parasitic and non-infectious diseases of fish		Recent theories, principles and knowledge in the field of specialization and related areas
2)	Ethics and basics of laboratory investigations in the field of Aquatic medicine		Basics, methodologies and ethics of scientific research and its different tools
3)	Legal and ethical principles of therapy and vaccination against different diseases in addition to control, prevention and eradication of such diseases.		Legal and ethical principles of professional practice in the area of specialization
4)	Application of his knowledge of aquatic research		Principles and the basics of quality

	methods by evaluating the utility of those techniques to specific research question about diagnosis of certain pathogens	assurance in the area of professional practice in the field of specialization
5)	Awareness with the effect of fish diseases on human health.	Awareness with the effect of professional practice on the environment and methods of its maintain and development
6)	Recognize the different molecular and serological protocols for diagnosis of fish affections	

B) Intellectual skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analyzing clinical signs, PM lesions and laboratory diagnosis to reach a perfect diagnosis of fish affections	Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solving professional problems in diagnosis and control of fish diseases using available data	Solving professional problems using available data
3)	Performing scientific research studies that add to knowledge in fish medicine	Conducting scientific research studies that add to knowledge
4)	Write a review and aim of the research project followed by detailed plan of scientific research and discussion and interpretation of his own findings	Formulating scientific papers
5)	Risk-assessment in the field of aquatic medicine	Risk-assessment in the field of specialization
6)	Planning to enhance the performance in the laboratory diagnosis of pathogens using molecular techniques.	Planning to enhance the performance in field of specialization
7)	Recognizing and coping with uncertainty by accepting that uncertainty is unavoidable in the practice of medicine and using appropriate intellectual strategy to deal with uncertainty when it arises	Making professional decisions under different professional contexts
8)	Creation and innovative in the area of Fish diseases and management	Creation and innovative in the area of specialization
9)	Development of evidence based learning and practice in scientific research	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the</i>

		<i>following:</i>
1)	Mastering basic and modern professional skills in isolation and identification of pathogens (bacteria, fungi viruses, parasites)	Mastering basic and modern professional skills in the area of specialization
2)	Writing and evaluating professional reports about fish specimens	Writing and evaluating professional reports
3)	Evaluating and modernizing methods and tools in immunology and nutrition of fish	Evaluating and modernizing methods and tools in the area of specialization
4)	Using modern technological means to serve protect fish against new pathogenic strains	Using modern technological means to serve professional practice
5)	Planning for the improvement of aquatic medicine by applying molecular techniques and developing performance of others	Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Effective communication with aquatic scientists, students and veterinarians.	Effective communication
2)	Utilizing information technology to serve development of aquatic practice	Utilizing information technology to serve development of professional practice
3)	Teaching others and evaluating their performance	Teaching others and evaluating their performance
4)	Self-assessment and continuous learning	Self-assessment and continuous learning
5)	Using different resources to obtain knowledge and information	Using different resources to obtain knowledge and information
6)	Team working and leading a team in familiar professional contexts	Team working and leading a team in familiar professional contexts
7)	Management of scientific meetings with the ability to manage time efficiently	Management of scientific meetings with the ability to manage time efficiently

ثالثا: برامج الدكتوراه

١- مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطا و مطورا للعلاقات البينية بينها
٥. إظهار وعيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص

٦. تحديد المشكلات المهنية و إيجاد حلولاً مبتكرة لحلها
٧. إتقان نطاقاً واسعاً من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تنميتها و العمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢- المعايير القياسية العامة

المعرفة و الفهم:

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً على الفهم والدراسة بكل من:
أ- النظريات و الأساسيات والحديث من المعارف في مجال التخصص والمجالات ذات العلاقة

- ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
- ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
- ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
- ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و وطرق تنمية البيئة وصيانتها

المهارات الذهنية

- بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً على:
- أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
 - ب- حل المشاكل المتخصصة استناداً على المعطيات المتاحة
 - ج- إجراء دراسات بحثية تضيف إلى المعارف
 - د- صياغة أوراق علمية
 - هـ- تقييم المخاطر في الممارسات المهنية
 - و- التخطيط لتطوير الأداء في مجال التخصص
 - ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة
 - ح- الابتكار/ الإبداع
 - ط- الحوار والنقاش المبني على البراهين والأدلة

المهارات المهنية

- بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً على:
- أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
 - ب- كتابة و تقييم التقارير المهنية
 - ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
 - د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
 - هـ- التخطيط لتطوير الممارسة المهنية وتنمية أداء الآخرين

المهارات العامة و المتنقلة

- بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً على:
- أ- التواصل الفعال بأنواعه المختلفة
 - ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية
 - ت- تعليم الآخرين و تقييم أداءهم
 - ث- التقييم الذاتي والتعلم المستمر
 - ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
 - ح- العمل في فريق وقيادة فرق العمل
 - خ- إدارة اللقاءات العلمية والقدرة على إدارة الوقت



DEPARTMENT OF FISH DISEASES AND MANAGEMENT
Course specification
(2021 / 2022)

1 - Basic Information:

Code number: 302/2

Course title: **Fish Biology**

Academic Year: **PhD Degree in Veterinary Science (Fish Diseases and Management**

Total teaching hours: 192 hrs

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical: 96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

- Achieve the basic principles for distinguishing the different types of fish species.
- Provide the students with the basic hygienic measures adopted in aquacultures for food fish and ornamentals.
- Provide the students with an appropriate background on biological differences between fish species.
- Acquaint the students with an appropriate professional attitudes, communications and problem solving skills .

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Describe the general anatomical features of different fish species.

A2- Study the different technical terms of ichthyology.

A3- Distinguish the basic immunology of fish.

A4- Recognize the basic knowledge about fish ecology.

A5- Classify the feeding habits of fish species .

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1- Identify the different anatomical features of normal fish species.

B2- Differentiate the different theories in fish immunology.

B3- Judge the various ecological basis of different fish species and aquaculture.

B4- Interpret the different feeding habits and regims of different fish species.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

C1- Check the normal anatomical features of healthy and diseased fish.

C2- Evaluate the different immunological hypothesis in fish species .

C3- Analyse the ecological parameters for healthy fish species.

C4- Recommend the normal feeding habits of different fish species.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:



- D1- Coach and work in groups.
 D2-Classify different duties.
 D3- Utilize computer and internet skills.
 D4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
1- General Anatomy of fish	50	20	30
2- General Ichthyology & technical terms	36	16	20
3- Basic fish immunology	40	20	20
4- Basic fish ecology	33	20	13
5-Feeding habits of fish	33	20	13
Total	192	96	96

5- TEACHING & LEARNING METHODS:

- ***Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming
- * **Practical sessions:** Practical demonstrations, practice of skills, and discussions, Fish farm visits.
- * **Self-Learning activities:** Mini reviews from the web and the library, Making individual reports
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures	A1 to A5	B1 to B4		D1, D4
Practical sessions		B1 to B4	C1 to C4	D1, D4
Self-Learning activities				D2, D3, D4
Distance Teaching and Learning	A1 to A5	B1 to B4	C1 to C4	D1 to D4

6. MET HOD S FOR STU DEN TS

With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - Discussion with them during practical session.
 - Theoretical and practical teaching suitable for people with limited capacity.
 - Activation of office hours.
 - Simplify and re-explain the information theoretically and practically wherever needed .
 - Using of illustrated cases.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	all over the academic year
7.c grads	50	20	20	10

7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	A1 to A5	B1 to B4		D3
Practical exams			C1 to C4	
Oral exams	A1 to A5	B1 to B4		D1,D2
Student activities	A1, A5			D1 to D4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Recommended books:

1. Fish Medicine by Stoskopff.
2. Fish Biology.
3. **Aquaculture principles and practices**, Pillay T.V.R. (1995) Black well science, Inc,USA.
4. **Aquaculture farming aquatic animals and plants**. Lucas and Southgate (2003), a black well publishing LTD, UK.

8.2: web sites and journalsand so on

- WWW.PubMed.com
- WWW.arabvet.com
- WWW.science direct.com
- www.FAO.com
- **J. Fish Pathology.**
- **J. Aquaculture**
- **Egyptian Scientific J. of Oceanography**



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hs	Knowledge & Understanding					Intellectual Skills				Practical & Professional Skills				General & Transferable Skills			
		1	2	3	4	5	1	2	3	4	1	2	3	4	1	2	3	4
1- General Anatomy of fish	50	×					×				×				×	×	×	×
2- General Ichthyology & technical terms	36		×					×				×			×	×	×	×
3- Basic fish immunology	40			×					×				×		×	×	×	×
4- Basic fish ecology	33				×					×				×	×	×	×	×
5-Feeding habits of fish	33					×				×				×	×	×	×	×

Course Coordinator:

Head of Department:

Dr. Amira Alaa El-Dein Zakaria

Prof. Dr. Nadia Basiony Mahfouz



DEPARTMENT OF FISH DISEASES AND MANAGEMENT
Course specification
(2021 / 2022)

1 - Basic Information:

Code number: 303/2

Course title: Fish Diseases (Advanced)

Academic Year: PhD Degree in Veterinary Science (Fish Diseases and Management)

Total teaching hours: 192 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

- Achieve the basic principles for distinguishing the normal and diseased fish, through their clinical examination.
- Provide the students with the basic hygienic measures adopted in aquacultures for food and ornamental fish.
- Provide the students with an appropriate background on the most common diseases affecting fishes with their remedies or prevention and control in Egypt.
- Acquaint the students with an appropriate professional attitudes, communications and problem solving skills

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Describe the normal and pathological parameters of the different fish species that may aid in diagnosis of the disease affections.

A2- Determine the nutritional disorders affecting the fish life stages (fry, fingerlings and adults).

A3- Recognize the suitable health promotives as well as the preventive measures of fish diseases.

A4- Define the causes, pathogenesis, clinical signs, post-mortem findings, laboratory investigations, treatments for the most important fish diseases (bacterial, fungal, viral, parasitic and nutritional diseases).

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1- Interpret of the most important clinical signs and lesions of diseased fish.

B2- Design the basic managemental programs either for fish and/or aquaculture.

B3- Analyze the laboratory investigation parameters performed for the fish.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

C1- Check the pathognomonic clinical signs in diseased fish.

C2- Assess the normal developmental stages of fish life stages.

C3- Apply the appropriate clinical assessments for disease diagnosis.

C4- Acquire the talent of obtaining the proper case history of a fish farm.

3- D: GENERAL AND transferable SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Coach and work in groups.

D2- Classify different duties

D3- Utilize computer and internet skills.

D4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
1- Bacterial Diseases of fish	34	20	14
2- Parasitic Disease of fish	30	16	14
3- Mycotic Disease of fish	28	14	14
4- Viral Disease of fish	20	10	10
5- Nutritional Diseases of fish	10	10	-
6- Principals of fish immunology	8	8	-
7- Role of stress in fish diseases	10	10	-
8-Prophylaxis and treatment	8	8	-
9-Internal anatomy and external features of fish	12	-	12
10-Genaral ichthyology and technical terms	12	-	12
11-Fish specimens dispatch	10	-	10
12-Haematological examination of fish blood	10	-	10
Total	192	96	96

5- TEACHING & LEARNING METHODS:

***Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:** Practical demonstrations, practice of skills, and discussions, Fish farm visits.

* **Self-Learning activities:** Mini reviews from the web and the library, Making individual reports

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures	A1 to A4	B1 to B3		D1, D4
Practical sessions		B1 to B3	C1 to C4	D1, D4
Self-Learning activities				D2, D3, D4
Distance Teaching and Learning	A1 to A4	B1 to B3	C1 to C4	D1 to D4

**6. MET
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TS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - Discussion with them during practical session.
 - Theoretical and practical teaching suitable for people with limited capacity.
 - Activation of office hours.
 - Simplify and re-explain the information theoretically and practically wherever needed .
 - Using of illustrated cases.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination	Activities
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year	all over the academic year
<u>7.c grads</u>	50	20	20	10

7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	A1 to A4	B1 to B3		D3
Practical exams			C1 to C4	
Oral exams	A1 to A4	B1 to B3		D1,D2
Student activities	A1, A4			D1 to D4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Recomendd books:

1. Bacterial fish pathogens (Austin & Austin)1999.
2. Fish Disease (Diagnosis and treatment) by Edward Noga, 2nd edition 2000.
3. Fish Medicine by stoskopff (1993).
4. Practical Notes on Fish Diseases & Management. Students book (2016/2017).
5. Fish pathology, second edition (1989)

8.2: web sites and jouranlsand so on

- WWW.PubMed.com
- WWW.arabvet.com
- WWW.science direct.com
- WWW.FAO.com
- **J. Fish Pathology.**

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hrs	Knowledge & Understanding				Intellectual Skills			Practical & Professional Skills				General & Transferable Skills				
		1	2	3	4	1	2	3	1	2	3	4	1	2	3	4	
1- Bacterial Diseases of fish	34	×		×	×	×	×	×	×		×	×	×	×	×	×	×
2- Parasitic Disease of fish	30	×		×	×	×	×	×	×		×	×	×	×	×	×	×
3- Mycotic Disease of fish	28	×		×	×	×	×	×	×		×	×	×	×	×	×	×
4- Viral Disease of fish	20	×		×	×	×	×	×	×		×	×	×	×	×	×	×
5- Nutritional Diseases of fish	10	×	×	×	×	×	×	×	×		×	×	×	×	×	×	×
6- Principals of fish immunology	8	×	×	×		×					×			×	×	×	×
7- Role of stress in fish diseases	10	×	×	×		×			×	×	×			×	×	×	×
8-Prophylaxis and treatment	8			×	×		×	×			×	×		×	×	×	×
9-Internal anatomy and external features of fish	12	×					×		×	×							
10-Genaral ichthyology and technical terms	12	×	×				×				×						



11-Fish specimens dispatch	10	×					×		×							
12-Haematological examination of fish blood	10	×	×				×		×							

Course Coordinator:

Head of Department:

Dr. Eman Moustafa Moustafa

Prof. Dr. Nadia Bassiouny Mahfouz



DEPARTMENT OF FISH DISEASES AND MANAGEMENT
Course specification
(2021 / 2022)

1 - Basic Information:

Code number: 304/2

Course title: **Aquaculture**

Academic Year: **PhD Degree in Veterinary Science (Fish Diseases and Management)**

Total teaching hours: 144 hrs

Lectures: 48 hrs (48 weeks- 1hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

1. Provide the students with proper management programmes to construct the fish and shrimp ponds, tanks, cages and hatcheries.
2. Acquire the students with the suitable methods to control the aquatic weeds, pests and predators and the suitable schedules to control the water hydrochemistry of fish farms

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Describe the construction of fish and shrimp ponds, tanks, cages and hatcheries.

A2- Denote the appropriate programmes to control the aquatic weeds, pests and predators.

A3- Recognize the suitable schedules to control the water hydrochemistry of fish farms.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1- Adopt the proper management programmes to construct the fish and shrimp ponds, tanks, cages and hatcheries.

B2-Assess the suitable methods to control the aquatic weeds, pests and predators.

B3-Mindful the different clinical situations concerned with water hydrochemistry of the fish farms.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

C1-Acquire the talent of different designations of ponds, tanks, cages and hatcheries.

C2-Apply the different methods to control the aquatic weeds, pests and predators.

C3-Check the different methods to measure the water hydrochemistry of fish farms.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Coach and work in groups.

D2-Classify different duties

D3- Utilize computer and internet skills.

D4-Develop the ethical behaviors between students and staff members as well as among the students themselves.



4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
1- Design and construction of fish ponds	23	8	15
2- Design and construction of fish tanks	18	6	12
3- Design and construction of fish cages	18	6	12
4- Design and construction of fish hatcheries	21	6	15
5-Design and construction of shrimp ponds	18	6	12
6- Control of aquatic weeds, pestes and predators	21	6	15
7-Control of Water hydrochemistry of fish farm	25	10	15
Total	144	48	96

5- TEACHING & LEARNING METHODS:

***Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:** Practical demonstrations, practice of skills, and discussions, Fish farm visits.

* **Self-Learning activities:** Mini reviews from the web and the library, Making individual reports

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures	A1 to A3	B1 to B3		D1, D4
Practical sessions		B1 to B3	C1 to C3	D1, D4
Self-Learning activities				D2, D3, D4
Distance Teaching and Learning	A1 to A3	B1 to B3	C1 to C3	D1 to D4

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - Discussion with them during practical session.
 - Theoretical and practical teaching suitable for people with limited capacity.
 - Activation of office hours.
 - Simplify and re-explain the information theoretically and practically wherever needed .
 - Using of illustrated cases.



7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	all over the academic year
7.c grads	50	20	20	10

7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	A1 to A3	B1 to B3		D3
Practical exams			C1 to C3	
Oral exams	A1 to A3	B1 to B3		D1,D2
Student activities	A1, A3			D1 to D4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Recommended books:

- 1-Aquaculture principles and practices, Pillay T.V.R. (1995)
- 2- Aquaculture farming aquatic animals and plants. Lucas and Southgate (2003),

8.2: web sites and journalsand so on

- WWW.PubMed.com
- WWW.arabvet.com
- WWW.science direct.com
- www.FAO.com
- J. Aquaculture

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hrs	Knowledge & Understanding			Intellectual Skills			Practical & Professional Skills			General & Transferable Skills			
		1	2	3	1	2	3	1	2	3	1	2	3	4
		1- Design and construction of fish ponds	23	×			×			×			×	×
2- Design and construction of fish tanks	18	×			×			×			×	×	×	×
3- Design and construction of fish cages	18	×			×			×			×	×	×	×



4- Design and construction of fish hatcheries	21	×			×			×			×	×	×	×
5- Design and construction of shrimp ponds	18	×			×			×			×	×	×	×
6- Control of aquatic weeds, pestes and predators	21		×			×			×		×	×	×	×
7- Control of Water hydrochemistry of fish farm	25			×						×	×	×	×	×

Course Coordinator:

Head of Department:

Dr. Amira Alaa El-Dein Omar

Prof. Dr. Nadia Basiony Mahfouz



DEPARTMENT OF FISH DISEASES AND MANAGEMENT
Fish Rearing Course specification
(2021 / 2022)

1 - Basic Information:

Code number: 305/2

Course title: Fish Rearing

Academic Year: PhD Degree in Veterinary Science (Fish Diseases and Management)

Total teaching hours: 144 hrs

Lectures: 48 hrs (48 weeks- 1hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

- Achieving the basic principles for selecting good fish species for culturing.
- Acquainting the students with an appropriate knowledge about the basics of fish sorting and harvesting.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1-Approach the appropriate parameters for selecting good fish species for culture.

A2-Determine the guidelines followed for suitable pond construction.

A3-Recognize the methods of fish cultivation in fresh, brackish and marine water.

A4-Describe the different feeding regimes of fish inside pond.

A5-Denote the appropriate knowledge about the basics of sorting, grading and harvesting of fish.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1-Interpret of the most important feeding systems for fish inside the pond either naturally or artificially.

B2-Adopt the best methods for sorting, grading and harvesting of fish.

B3-Mindful the different ways for fish cultivation in fresh, brackish and marine water.

B4- Choose the best fish species that can be reared altogether for best farm management and highest economic outcome.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

C1- Assess the best way for fish feeding.

C2- Acquir the talent for good pond management.

C3- Perform the suitable regime for fish harvesting and sorting.

C4-Prescribe the different ways for fish cultivation.

C5- Determine the best type of fish culture with suitable stocking density.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Coach and work in groups.

D2- Classify different duties

D3- Utilize computer and internet skills.



D4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
1- Selection of fish species for culture	18	6	12
2- Farm management	18	8	10
3-Stocking rate of ponds	12	4	8
4-Natural food of fish in ponds	18	6	12
5- Artificial feeding of fish	18	6	12
6- Fish cultivation in fresh water	10	2	8
7- Fish cultivation in brackish water	12	4	8
8- Fish cultivation in marine water	12	4	8
9- sorting and grading of fish	14	4	10
10-Harvesting of fish	12	4	8
Total	144	48	96

5- TEACHING & LEARNING METHODS:

***Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Practical sessions:** Practical demonstrations, practice of skills, and discussions, Fish farm visits.

* **Self-Learning activities:** Mini reviews from the web and the library, Making individual reports

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures	A1 to A5	B1 to B4		D1, D4
Practical sessions		B1 to B4	C1 to C5	D1, D4
Self-Learning activities				D2, D3, D4
Distance Teaching and Learning	A1 to A5	B1 to B4	C1 to C5	D1 to D4

6. MET HOD S FOR STU DEN

TS With limited capabilities:-



- No disabled students until now, but if present the methods are:-
 - Discussion with them during practical session.
 - Theoretical and practical teaching suitable for people with limited capacity.
 - Activation of office hours.
 - Simplify and re-explain the information theoretically and practically wherever needed .
 - Using of illustrated cases.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	all over the academic year
7.c grads	50	20	20	10

7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	A1 to A5	B1 to B4		D3
Practical exams			C1 to C5	
Oral exams	A1 to A5	B1 to B4		D1,D2
Student activities	A1, A5			D1 to D4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Recommended books:

- 1-Aquaculture principles and practices, Pillay T.V.R. (1995) Black well science, Inc,USA.
- 2-Aquaculture farming aquatic animals and plants. Lucas and Southgate (2003), a black well publishing LTD, UK.

8.2: web sites and jouranlsand so on

- WWW.PubMed.com
- WWW.arabvet.com
- WWW.science direct.com
- WWW.FAO.com
- [J. Aquaculture](#)

Course Matrix for achievement of Intended Learning Outcomes



Topics	Hs	Knowledge & Understanding					Intellectual Skills				Practical & Professional Skills					General & Transferable Skills			
		1	2	3	4	5	1	2	3	4	1	2	3	4	5	1	2	3	4
1- Selection of fish species for culture	18	×								×					×	×	×	×	×
2- Farm management	18	×	×	×	×	×				×		×	×	×	×	×	×	×	×
3-Stocking rate of ponds	12		×							×					×	×	×	×	×
4-Natural food of fish in ponds	18				×		×				×					×	×	×	×
5- Artificial feeding of fish	18				×		×				×					×	×	×	×
6- Fish cultivation in fresh water	10			×					×					×		×	×	×	×
7- Fish cultivation in brackish water	12			×					×					×		×	×	×	×
8- Fish cultivation in marine water	12			×		×			×					×		×	×	×	×
9- sorting and grading of fish	14					×		×						×		×	×	×	×
10-Harvesting of fish	12					×		×						×		×	×	×	×

Course Coordinator:

Head of Department:

Dr. Eman Moustafa Moustafa

Prof. Dr. Nadia Bassiouny Mahfouz

Kafrelsheikh University

Faculty of Veterinary Medicine

Department of Forensic Medicine & Toxicology



Program Specification

For

PhD degree of

**Veterinary Forensic Medicine, Toxicology
and veterinary regulation**

A- Administrative information:

1. Awarding Body: **Kafrelsheikh University**
2. Teaching Body: **Faculty of Veterinary Medicine**
3. Department responsible: **Forensic Medicine and Toxicology**
4. Program Title: **PhD Degree in Veterinary Science (Forensic Medicine, Toxicology and Veterinary Regulations)**
5. Final award: **PhD Degree**
6. Registration period: **3-5 years**
7. Program Coordinator: **Prof. Dr.**
8. External evaluator: **Prof. Dr.**
9. Date of revision:
10. Date of approval:

B- Professional Information:

1-Program Aims

By the completion of his study, the students and graduate will be capable to:

- Creation of new knowledge and understanding in Forensic Medicine and Toxicology through the process of research and inquiry.
- Development of communication skills, recent techniques and diagnostic tools in the field of Forensic Medicine and Toxicology and experience of scientific research skills.
- Giving the graduate the ability to be creative to advance Forensic Medicine and Toxicology through new scientific research.
- Achievement of capability in modern laboratory technology to develop practical research project.
- Demonstrating an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and present their own research data for the protection and promotion of the animal health.
- Giving the student the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibiting awareness about current Forensic Medicine and Toxicology problems and mastering the identification of problems and finding solutions based on sound

scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.

- Guarantee of veterinary professional practice regulations and ethics in the field of Forensic Medicine and Toxicology.

2- Academic standards:

Academic reference standards (ARS) adopted by the faculty committee No 1 (14/9/2014)

3-Graduate attributes:

Upon successful completion of the program, the graduate has the ability for:

- 1) Mastering the basics and methodologies of scientific research in criminal and toxicological branches for better dealing with medicolegal and toxicological problems professionally.
- 2) Performing continuous effort to add knowledge about detection of causes and control of poisoning and examination of trace evidences.
- 3) Analysis and criticism of information in crime scene and fields related to Forensic Medicine and Toxicology including Anatomy, Pathology, pharmacology, biochemistry, physiology, clinical pathology, etc.
- 4) Integrating data collected from the crime scene with related laboratory findings to reach the correct diagnosis of cause of poisoning or death.
- 5) Showing deep awareness with the ongoing toxicological and animal cruelty problems and modern theories in treating poisoned animals and controlling cases of intoxication.
- 6) Identifying the main causes of animal poisoning and suggesting the appropriate methods of animal protection.
- 7) Mastering of a wide range of professional skills in Forensic laboratory investigation of trace evidences and modern toxicological techniques performed for measuring toxicity.
- 8) Acquiring trends towards developing modern methods and tools in diagnostic and mechanistic toxicology, and forensic DNA analysis.
- 9) Using appropriate technological means including molecular biology, chromatography to serve professional practice.
- 10) Communicating effectively with toxicologists, forensic pathologists, students and colleagues and leading work team through professional scale.

- 11) Making decision in different professional situations especially under field conditions to deal with criminal cases of death or injury.
- 12) Using of the available resources efficiently in the development of new techniques and work to find new resources.
- 13) Being aware with his role in society development and community preservation from the toxicological pollution of the environment.
- 14) Acting with integrity, credibility and according to the rules of profession.
- 15) Realizing the importance of self and life-long learning and progress.

4-Intended Learning Outcomes (ILOs):

A-Knowledge and Understanding:

By the end of this program the graduate should be able to:

- a.1. Recognize recent theories, principles and knowledge in identifying the nature and cause of natural or criminal death or injury.
- a.2. Realize the basics of poison biotransformation, mechanistic toxicology, diagnostic toxicology as well as diagnosis and control of poisoning.
- a.3. Realize principles, methodologies and ethics of scientific research and its tools including using laboratory animals in toxicological research and legal ways for extrapolation of research findings of other toxicologists.
- a.4. List legal and ethical principles of dealing with forensic cases and animals which require euthanasia.
- a.5. Realize legal and ethical principles of dealing with poisoned patients and methods of protecting human food from animal origin from different toxic residues.
- a.6. Recognize Principles and the basics of quality assurance in laboratory examination of poisons and forensic trace evidences
- a.7. Apply their knowledge and understanding in Forensic Medicine and Toxicology for enhancing animal health and production
- a.8. Recognize the effect of poisons on the environment and methods of prevention of environmental pollution.
- a.9. Describe the principles, methodologies and ethics of scientific research in Forensic Medicine and Toxicology.

B- Intellectual Skills

By the end of this program the graduate should be able to:

- b.1. Analyze and evaluate information about trace evidence detected at crime scene

- or other laboratory forensic findings.
- b.2.** Analyze and interpret the history of poisoning, clinical signs, PM lesions and laboratory investigation in order to reach perfect diagnosis of the cause of poisoning.
 - b.3.** Solve professional problems in Forensic Medicine and Toxicology using available data under field or laboratory conditions.
 - b.4.** Perform scientific research studies that can give significant impact on the control and treatment of intoxicated animals.
 - b.5.** Conduct scientific research studies aiming at protecting human from the toxic residues of drugs, mycotoxins, pesticides, etc.
 - b.6.** Formulating scientific papers in Forensic Medicine and Toxicology with the ability to match and discuss his own findings with those of other scientists.
 - b.7.** Asses risks of inorganic and organic pollutants in food, water and air.
 - b.8.** Share and lead scientific open discussion in the field of Forensic Medicine and Toxicology based on evidences and proofs.
 - b.9.** Planning to enhance the performance in the laboratory diagnosis of poisoning and criminal cases using modern biotechnology techniques.
 - b.10.** Make professional decisions about presence of criminal cause of death and suggesting further investigations and search for new evidences.
 - b.11.** Decide the possible cause of intoxication and therefore suggesting the best antidote for overcoming the problem.
 - b.12.** Trying new antidotes and antioxidants to fight against the toxic insult at the cellular level.
 - b.13.** Using the DNA fingerprinting for identification of valuable animals, detection of meat adulteration and identification of assailants.
 - b.14.** Lead a discussion based on toxicological and forensic evidences and proofs including biological trace evidence and toxic residues in animal body.

C- Practical Skills

By the end of this program the graduate should be able to:

- c.1.** Conduct basic and modern professional missions including examination of crime scene, collection of evidences, and performing advanced forensic laboratory techniques.
- c.2.** Master advanced techniques for diagnosis of poisoning depending upon case

history, clinical signs PM lesions, and advanced laboratory techniques, and the perfect selection of appropriate antidote for each case.

- c.3. Write and evaluate professional toxicological reports and matching the values with normal reference values.
- c.4. Write a conclusive medicolegal report indicating the cause of injury, vitality of wound, burn, or asphyxia, and demonstrating the time passed since injury on a scientific base.
- c.5. Evaluate and modernize methods depending upon use of DNA analysis in forensic medicine and toxicology.
- c.6. Creation of new tests in vitro and in vivo for determination of toxic action, fate of poison in body and target organ.
- c.7. Use modern technological means to serve professional practice.
- c.8. Planning for the improvement of veterinary medicine by applying recent molecular techniques in forensic medicine and toxicology, and developing performance of veterinarians in the field.

D- General and Transferable Skills

At the end of the programme, graduate must be able to:

- d.1. Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology in the improvement of Forensic Medicine and Toxicology professional practice.
- d.2. Utilize information technology to serve professional practice.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements
- d.5. Lead team under different professional circumstances.
- d.6. Use of different sources for obtaining information and knowledge.
- d.7. Manage scientific meetings with the ability to manage time efficiently.

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, field visits and seminars.

6-Assessments:

The program depends on different assessment ways:

a. Course assessment:

1. **Final written exam:** to assess understanding the overall aim of the course,

knowledge and understanding, intellectual skills and general and transferable skills

2. **Practical exam:** to assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
3. **Oral exam:** to assess skills of intellectual analysis and discussion beside the basic scientific knowledge.

b. Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work

c. PhD Thesis assessment

- Annual reports adopted by the Faculty.
- Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
- Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1,4; b1,2,3
Oral	a1,4; b1,2,3
Practical	c1-3
Qualifying Exam	a2-7; b1-12
Thesis	a2-7; b1-12; c1-5; d1-7

7. Program structure

a. Program duration (years):

PhD degree duration at least 3 years and it should not exceed a period of 5 years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law (article 18).

b. Program courses:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council should include at least 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. These courses must not be previously studied in the Mater program. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c- Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d- Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion.

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for Ph.D. in Forensic Medicine, Toxicology and Veterinary Regulations include:

Subject	Code	Course title	No of hours/week
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			Lecture	Practical Lab
Forensic Medicine, Toxicology and Veterinary Regulations	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology	1	2

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and	1	1



		cardiovascular system.		
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2



	132/2	32– Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo	2	2



		nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)		
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2



Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
81- Advanced immunology			2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2



	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1
Hygiene and control of milk and dairy products	208/2	108- Hygienic control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2



	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/ 2	134- Stress diseases during animals transport.		
Infectious diseases	235/ 2	135- Infectious diseases of cattle	2	2
	236/ 2	136- Infectious diseases of sheep and goat	2	2
	237/ 2	137- Infectious diseases camel	2	2
	238/ 2	138 Infectious diseases of equine	2	2
	239/ 2	139- Infectious diseases of pet animals	2	2
	240/ 2	140- Infectious diseases lab animals	1	2
	241/ 2	141- Infectious diseases of udder and newly born animals	2	2
	242/ 2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet	1	2



		animals		
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in poultry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-	2	2



		specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses		
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genres.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2

	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (Forensic Medicine, Toxicology and Veterinary Regulations) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medical science lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.
3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.
5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.
7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.

8. The applicant should submit a seminar(Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).
9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met:Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.
- 10.The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and incase of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.
- 11.Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards bit to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.
- 12.The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.
- 13.The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).

2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade		Percentage
Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
I	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

Program Coordinator

Head of Department

Prof. Dr. Hanaa Mohamed Ragab

Prof. Dr. Tarek Ahmed Abd el-Hady

Matching program ILOs with ARS - Matrix

Program ILOs	K&U (a)					I.S. (b)									P.P. (c)					G.T. (d)							
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7	
K&U	1 2	3	4 5	6	7 8 9																						
I.S.						1 2	3	4 5	6	7	8 9	10 11	12 13	14													
P.P.															1 2	3 4	5 6	7	8								
G.T.																				1	2	3	4	5	6	7	



Kafrelsheikh University

Faculty of Veterinary Medicine



ARS for PhD in Veterinary Medical Sciences (Forensic Medicine, Toxicology and Veterinary Regulations)

1) Graduate attributes

The graduate should have the ability for:

- 1) Mastering the basics and methodologies of scientific research in criminal and toxicological branches for better dealing with medicolegal and toxicological problems professionally.
- 2) Performing continuous effort to add knowledge about detection of causes and control of poisoning and examination of trace evidences.
- 3) Analysis of information in crime scene and fields related to Forensic Medicine and Toxicology including Anatomy, Pathology, pharmacology, biochemistry, physiology, clinical pathology, etc.
- 4) Integrating data collected from the crime scene with related laboratory findings to reach the correct diagnosis of cause of poisoning or death.
- 5) Showing deep awareness with the ongoing toxicological and animal cruelty problems and modern theories in treating poisoned animals and controlling cases of intoxication.
- 6) Identifying the main causes of animal poisoning and suggesting the appropriate methods of animal protection.
- 7) Mastering of a wide range of professional skills in Forensic laboratory investigation of trace evidences and modern toxicological techniques performed for measuring toxicity.
- 8) Acquiring trends towards developing modern methods and tools in diagnostic and mechanistic toxicology, and forensic DNA analysis.
- 9) Using appropriate technological means including molecular biology, chromatography to serve professional practice.
- 10) Communicating effectively with toxicologists, forensic pathologists, students and colleagues and leading work team through professional scale.
- 11) Making decision in different professional situations especially under field conditions to deal with criminal cases of death or injury.
- 12) Using of the available resources efficiently in the development of new



techniques and work to find new resources.

- 13) Being aware with his role in society development and community preservation from the toxicological pollution of the environment.
- 14) Acting with integrity, credibility and according to the rules of profession.
- 15) Realizing the importance of self and life-long learning and progress.

A) Knowledge and understanding

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Recent theories, principles and knowledge in recognizing the cause and time of injury or death, in addition fate of poisons in body, mechanistic toxicology, in addition to diagnosis and control of poisoning		Recent theories, principles and knowledge in the field of specialization and related areas
2)	Principles methodologies and ethics of scientific research and its tools including using laboratory animals in toxicological research		Basics, methodologies and ethics of scientific research and its different tools
3)	Legal and ethical principles of dealing with poisoned patients and preserving the crime scene.		Legal and ethical principles of professional practice in the area of specialization
4)	principles and the basics of quality assurance in laboratory examination of poisons and forensic trace evidences		Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Awareness with the effect of poisons and different injuries on the animal wealth and methods for enhancing animal health		Awareness with the effect of professional practice on the environment and methods of its maintain and development

B) Intellectual skills

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analyzing and evaluating information about natural and criminal death or injury and about cases of animal poisonings		Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solving toxicological and criminal problems using available data		Solving professional problems using available data
3)	Performing scientific research studies that can give		Conducting scientific research studies



	significant impact on the treatment of intoxicated animals	that add to knowledge
4)	Formulating scientific papers in Forensic Medicine and Toxicology	Formulating scientific papers
5)	Risk-assessment of environmental pollution by inorganic and organic toxicants	Risk-assessment in the field of specialization
6)	Planning to enhance the performance in the laboratory diagnosis of poisoning and criminal cases.	Planning to enhance the performance in field of specialization
7)	Making professional decisions for selecting the ideal method of treating intoxicating animals under field condition	Making professional decisions under different professional contexts
8)	Trying new antidotes and protectants for treating poisoned animals	Creation and innovation in the area of specialization
9)	Dialogue and discussion based on toxicological and forensic evidences and proofs	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills in diagnosis and treatment of poisoning and diagnosis of criminal causes of death including case history, recording clinical signs PM lesions, and advanced laboratory techniques	Mastering basic and modern professional skills in the area of specialization
2)	Writing and evaluating professional medicolegal and toxicological reports involving the effect of poisons on different body systems and identification of cause of death or poisoning	Writing and evaluating professional reports
3)	Evaluating and modernizing methods and tools in general and special toxicity testing in addition to forensic DNA analysis	Evaluating and modernizing methods and tools in the area of specialization
4)	Using modern technological means to serve protect animals against natural and industrial toxicants	Using modern technological means to serve professional practice
5)	Planning for the improvement of veterinary medicine by applying recent molecular techniques in forensic medicine and toxicology, and developing performance of others	Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill



Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Communicating effectively with physicians, other health professionals, and health related agencies.	Effective communication
2)	Using the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.	Utilizing information technology to serve development of professional practice
3)	Presenting information clearly in written, electronic and oral forms	Teaching others and evaluating their performance
4)	Establishment of life-long self-learning required for continuous professional development.	Self-assessment and continuous learning
5)	Using different resources to obtain knowledge and information	Using different resources to obtain knowledge and information
6)	Team working and leading a team in familiar professional contexts	Team working and leading a team in familiar professional contexts
7)	Management of time and open discussions in the professional field	Management of scientific meetings with the ability to manage time efficiently

ثالثا: برامج الدكتوراه

١ - مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستتبطا و مطورا للعلاقات البيئية بينها
٥. إظهار وعيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حولا مبتكرة لحلها
٧. إتقان نطاقا و اسعا من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تميتها والعمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصادقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢ - المعايير القياسية العامة

المعرفة و الفهم:

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا علي الفهم و الدراية بكل من:
أ- النظريات و الأساسيات و الحديث من المعارف في مجال التخصص و المجالات ذات



العلاقة

- ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
 - ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
 - ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
 - ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و طرق تنمية البيئة و صيانتها
- #### المهارات الذهنية

- بانتهاؤ دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
- ب- حل المشاكل المتخصصة استنادا علي المعطيات المتاحة
- ج- إجراء دراسات بحثية تضيف إلى المعارف
- د- صياغة أوراق علمية
- هـ- تقييم المخاطر في الممارسات المهنية
- و- التخطيط لتطوير الأداء في مجال التخصص
- ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة
- ح- الابتكار/ الإبداع
- ط- الحوار و النقاش المبني علي البراهين والأدلة

المهارات المهنية

- بانتهاؤ دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
- ب- كتابة و تقييم التقارير المهنية
- ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
- د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
- هـ- التخطيط لتطوير الممارسة المهنية و تنمية أداء الآخرين

المهارات العامة و المنتقلة

- بانتهاؤ دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- التواصل الفعال بأنواعه المختلفة
- ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية
- ت- تعليم الآخرين و تقييم أداءهم
- ث- التقييم الذاتي و التعلم المستمر
- ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
- ح- العمل في فريق و قيادة فرق العمل
- خ- إدارة اللقاءات العلمية و القدرة علي إدارة الوقت



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 244/2

Course title: Forensic medicine and veterinary regulations (Advanced) (الطب الشرعي والإجراءات البيطرية)

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 192 hrs.

Lectures: 96 hrs. (48 weeks- 2hrs. /week)

Practical: 96 hrs. (48 weeks- 2hrs. /week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles, skills and achievement of knowledge about, death, violent asphyxia, thermal injuries, wounds, abortion, infanticide and veterinary regulations besides procedures of PM examination.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Identify stages of death and types of injuries
- a2. Explain the causes of asphyxia, abortion and infanticide.
- a3. Discuss the basics for writing a complete medico-legal report.
- a4. Memorize the laws and regulations on the profession of forensic medicine.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1. Interpret the injuries of body parts of different animal species
- b2. Differentiate criminal and accidental deaths.
- b3. Write, conclude and evaluate a professional and conclusive medico-legal report.
- b4. Choose the proper approach for different medicolegal case

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Perform PM examination and collect proper samples.
- c2. Solve criminal clues by examination of biological stains and trace evidences.
- c3. **Apply** the laws and procedures for forensic medicine.
- c4. **Write** and **assess** medicolegal reports.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
Identification	12	12	24
Death	12	12	24
Wounds	12	12	24



Thermal injuries	12	12	24
Asphyxia	12	12	24
Abortion	12	12	24
Infanticides	12	12	24
Medical rules and ethics	12	12	24
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about forensic medicine

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures *	a1 to a4	b1 to b4		d1, d4
Practical sessions		b1 to b4	c1 to c4	d2, d4
Self-Learning activities				d1, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b4	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.A Used methods	Written examination	Oral examination	Practical examination	Activities
7.B Time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.C Grads	50	20	20	10

7. Student Assessment				
5.1. Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b4		d4
Practical exams			c1 to c4	d2, d3
Oral exams	a1 to a4	b1 to b4		d1
Student activities	a1, a4			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.



8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- **Veterinary Forensics: Animal Cruelty Investigation.** Merck, M.D., 2nd ed., Wiley-Blackwell, USA, 2012.
- **Forensic Pathology**, Second Edition (Practical Aspects of Criminal & Forensic Investigations). DiMaio, D. and DiMaio, V.J. M.D., 2nd edition, CRC press, New York, 2001.

8-2: Recommended books:

- **Introduction to Veterinary and Comparative Forensic Medicine.** Cooper, J.E. and Cooper, M.E., Wiley-Blackwell, USA, 2007.
- **Animal Abuse and Unlawful Killing: Forensic veterinary pathology.** Munro, R. and Munro, H.M.C., Saunders Ltd, China, 2008.

8-3: Scientific Journals:

- Journal of Forensic Sciences
- American Journal of Forensic Medicine and Pathology
- Forensic Science International: Genetics
- Environmental Forensics
- Journal of Forensic and Legal Medicine
- Forensic Toxicology
- Journal of Forensic Identification
- Journal of Forensic Medicine and Toxicology
- Journal of Forensic Practice
- Forensic Science Review
- Journal of clinical forensic medicine

8-4: Scientific websites

- [A Free And Comprehensive Guide To The World Of Forensic Science](#)
- [Crime Scene Investigator Network](#)
- [Digital Evidence and Forensics](#)
- [FBI Laboratory](#)
- [FBI: Fingerprints & Other Biometrics](#)
- [Forensic Entomology Page, International](#)
- [National Archive of Criminal Justice Data](#)
- [Visible Proofs: Forensic Views of the Body](#)
- [American Association of Anthropological Genetics](#)
- [American Association of Physical Anthropologists](#)
- [American Board of Forensic Anthropology](#)
- [C.A. Pound Human Identification Laboratory](#)
- [Forensic Art](#)
- [International Association for Craniofacial Identification](#)
- [The Perfect Corpse](#)
- [Written in Bone: Forensic Files of the 17th-Century Chesapeake](#)

Course Coordinator

Head of Department

Prof. Dr. Hanaa Mohamed Ragab

Prof. Dr. Tarek Ahmed Abd el-Hady

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding				Intellectual Skills				Practical & Professional Skills					General & Transferable Skills			
		1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4
1. Identification	24	✓													✓	✓	✓	✓
2. Death	24	✓		✓	✓	✓	✓			✓					✓	✓	✓	✓
3. Wounds	24	✓	✓		✓ ✓			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
4. Thermal injuries	24	✓	✓		✓ ✓			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
5. Asphyxia	24	✓	✓		✓ ✓			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
6. Abortion	24	✓	✓												✓	✓	✓	✓
7. Infanticides	24	✓	✓												✓	✓	✓	✓
8. Medical rules and ethics	24	✓	✓	✓	✓		✓		✓						✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 245/2

Course title: Advanced General Toxicology (سموم عام متقدم)

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 240 hrs.

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical: 144 hrs. (48 weeks- 3hrs/week)

2 - OVERALL AIMS OF THE COURSE:

At the end of this course, the student must be acquire knowledge and skills related to types, actions, clinical features, circumstances, diagnosis, detection, and management of poisoning which operate on the animal body.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Define the types, sources and circumstances of poisoning.
- a2. Recognize the mode of action and metabolism of toxic substances.
- a3. Identify the factors affecting the degree of poisoning.
- a4. Explain the general line of treatment and diagnosis of toxicological cases.
- a5. Be aware with different sources of toxicants.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Relate the toxic impacts to the metabolic pathways of the toxicant.
- b.2. Interpret the results of different laboratory tests.
- b.3. Relate the mechanism of action with the symptoms of poisoning.
- b.4. Select the most suitable antidotes for treatment of poisoning in animals.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Perform essential calculations in toxicology.
- c.2. Carry out dosing, sampling, labeling and preservation of samples.
- c.3. Estimate the general and special toxic effects in-vivo and in-vitro.
- c.4. Detect metals and organic poisons in biological samples.

3- D: GENERAL SKILLS:

By the end of this course, the student should be able to:

- d1. Communicate effectively with his professors, and collages.
- d2. Efficiently make use of library facilities and IT tools.
- d3. Manage time efficiently.
- d4. Processing, spreadsheets, presentation packages and graph plotting.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Basic of general toxicology	12	18	30



2. Corrosives	12	18	30
3. Metallic poisons	12	18	30
4. Pesticides	12	18	30
5. Animal poisoning	12	18	30
6. Volatile gases poisoning	12	18	30
7. Mycotoxicosis	12	18	30
8. Poisonous plants	12	18	30
Total	96	144	240

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about toxicology

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b4	c1 to c4	d1, d4
Self-Learning activities		b1 to b4		d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b4	c1 to c4	d1 to d4

*Lectures may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during lectures.

7. STUDENT ASSESSMENT:-

<u>7.a: Used methods</u>	Written examination	Oral examination	Practical examination	Activities
<u>7.b: Time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year
<u>7.c: grads</u>	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
5.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b4		d4
Practical exams	-----	-----	c1 to c4	-----
Oral exams	a1 to a5	b1 to b4		d1
Student activities	a1, a5			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.



8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- **Principles of Forensic Toxicology.** 2020. Barry S. Levine and Sarah Kerrigan. Springer. ISBN-13: 978-3030429164- ISBN-10: 3030429164
- **Toxicology.** Osweiler, G.D., The National Veterinary Medical Series for Independent Study Blackwell Pub., 1996.
- **Handbook of Toxicology:** Derelanko, M.J. and Hollinger, M.A., 2nd ed., CRC Press , Boca Raton, 2002.

8-2: Recommended books:

- **Principles and Methods of Toxicology:** Hayes, A.W., 5th ed., CRC Press, New York, 2007.
- **Casarett & Doull's Toxicology. The Basic Science of Poisons.** Klaassen, C.D., 6th edition, McGraw-Hill, New York, 2001.
- **Introduction to toxicology.** Timbrell, J., - 3rd ed., Taylor & Francis, USA, 2003.

8-3: Scientific Journals:

- Archiv Toxicol. - Springerlink
- Bull. Environ. Contam. Toxicol. - Springerlink
- Environ. Toxicol. – Interscience
- Food Chem. Toxicol. - Elsevier
- Reprod. toxicol. - Elsevier
- Toxicol. Appl. Pharmacol. – Elsevier

8-4: Scientific websites:

- TOXNET (toxicology data network)
- IVIS
- Environmental Protection Agency (EPA)
- Food and Drug Administration (FDA)
- American Board of Toxicology
- EPA: Integrated Risk Information System (IRIS)

Course Coordinator

Head of Department

Prof. Dr. Hanaa Mohamed Ragab

Prof. Dr. Tarek Ahmed Abd el-Hady

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding					Intellectual Skills				Practical and professional skills				General & Transferable Skills			
		1	2	3	4	5	1	2	3	4	1	2	3	4	1	2	3	4
1. Basic of general toxicology	30	✓					✓	✓					✓	✓	✓	✓	✓	✓
2. Corrosives	30	✓		✓			✓	✓		✓	✓		✓	✓	✓	✓	✓	✓
3. Metallic poisons	30		✓	✓			✓	✓	✓		✓		✓	✓	✓	✓	✓	✓
4. Pesticides	30				✓		✓	✓				✓	✓	✓	✓	✓	✓	✓
5. Animal poisoning	30					✓	✓	✓		✓			✓	✓	✓	✓	✓	✓
6. Volatile gases poisoning	30					✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓
7. Mycotoxicosis	30					✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓
8. Poisonous plants	30					✓	✓	✓				✓	✓	✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 246/2

Course title: Environmental Toxicology (السموم البيئية)

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 192 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

At the end of this course, the student must be acquire knowledge and skills related to demonstrate, analyze and control the main toxicological problems of contaminants in the environment.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1 Recognize different classes of physical and chemical environmental pollutants.
- a.2 Identify the impact of pollutants in the environment .
- a.3 Explain specific areas including: the major environmental toxicants,
- a.4 Identify the basics and scientific theories to find ways of assessing environmental toxins.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1. Interpret the different environmental toxic substance.
- b2. Manage the risks arising from exposure to toxins and various pollutants.
- b3. Estimate the impact of using pesticides on community health and economics.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Carry out proper sampling, labeling and preservation for pollutant assessment.
- c.2. Analyze and detect the expected pollutants in air, water and soil samples.
- c.3. Perform toxicity testing to different classes of pollutants in Lab animals.

3- D: GENERAL SKILLS:

By the end of this course, the student should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Efficiently make use of library facilities and IT tools.
- d.3. Manage time efficiently.
- d.4. Processing, spreadsheets, presentation packages and graph plotting.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Basic of general toxicology	16	16	32
2. Environmental Data Analysis	20	20	40
3. Environmental Toxicology	20	20	40
4. Water Management	20	20	40



5. Environmental Toxicology and Pollution Monitoring Project	20	20	40
Total	96	96	192

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about environmental toxicology
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures *	a1 to a4	b1 to b3	c1 to c3	d1, d4
Self-Learning activities		b1 to b3		d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b3	c1 to c3	d1 to d4

*Lectures may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during lectures.

7. STUDENT ASSESSMENT:-

7.a:Used methods	Written examination	Oral examination	Practical examination	Activities
7.b: Time	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year
7.c: Grads	50	20	20	10

7. Student Assessment				
5.1. Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b3	c1 to c3	d4
Practical exams	a1 to a3	b1 to b3	c1 to c3	d1 to d3
Oral exams	a1 to a4	b1 to b3		d1
Student activities	a1, a3	b1 to b3		d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- **Environmental Toxicology**, Wright, D.A. and Welbourn, P., Cambridge University Press, UK, 2002.



- **Principles of Forensic Toxicology.** 2020. Barry S. Levine and Sarah Kerrigan. Springer. ISBN-13: 978-3030429164- ISBN-10: 3030429164

8-2: Recmended books:

- **Casarett & Doull's Toxicology. The Basic Science of Poisons.** Klaassen, C.D., 6th edition, McGraw-Hill, New York, 2001.
- **Introduction To Environmental Toxicology, *Impacts of Chemicals Upon Ecological Systems*,** Landis, W.G. and Yu, M., CRC Press, New York, 2005.

8-3: Scientific Journals:

- Archiv Toxicol. - Springerlink
- Bull. Environ. Contam. Toxicol. - Springerlink
- Environ. Toxicol. – Interscience
- Food Chem. Toxicol. - Elsevier
- Reprod. toxicol. - Elsevier
- Toxicol. Appl. Pharmacol. – Elsevier

8-4: Scientific websites:

<https://cfpub.epa.gov/ecotox/>

<https://www.atsdr.cdc.gov/toxprofiledocs/index.html>

https://www.nlm.nih.gov/pubs/techbull/nd19/nd19_toxnet_new_locations.html

<https://ntp.niehs.nih.gov/>

<https://www.atsdr.cdc.gov/>

Course Coordinator

Head of Department

Prof. Dr. Hanaa Mohamed Ragab

Prof. Dr. Tarek Ahmed Abd el-Hady



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding					Intellectual Skills			Practical and professional skills			General & Transferable Skills			
		1	2	3	4	5	1	2	3	1	2	3	1	2	3	4
1. Basics of general toxicology	32	✓					✓						✓	✓	✓	✓
2. Environmental Data Analysis	40	✓		✓		✓	✓	✓		✓			✓	✓	✓	✓
3. Environmental Toxicology	40		✓	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓
4. Water Management	40				✓			✓			✓	✓	✓	✓	✓	✓
5. Environmental Toxicology and Pollution Monitoring Project	40	✓				✓	✓	✓				✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 247/2

Course title: Forensic Toxicology (السموم من الوجهة الطبية الشرعية)

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 192 hrs.

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical: 96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, students should have gained the basic principles and the essential practical skills in the field of identification of the cause of deaths and write medico-legal report concerning toxicological case.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Recognize criminal toxins, their characteristics and harmful effects.
- a2. Define the theories and fundamentals related Occupational and environmental toxicology
- a3. Explain circumstantial evidence about the crime scene
- a4. State the principles of judging in different toxicological cases

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1. Evaluate the forensic cases depending upon analytical bases.
- b2. Interpret the results of forensic analysis.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Collect and store samples in the perfect way
- c2. Acquire skills used in analytical laboratories in the context of medico-legal investigation.
- c3. Apply appropriate autopsy procedures and sampling technique.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
Analytical toxicology	16	16	32
Drugs and toxicology	16	16	32
General and clinical toxicology	16	16	32
Occupational and environmental toxicology	16	16	32
General forensics	16	16	32
Postmortem examination and medico-legal reports	16	16	32
Total	96	96	192



5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports in forensic toxicology

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b2		d1, d4
Practical sessions		b1 to b2	c1 to c3	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b2	c1 to c3	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
*Activation of office hours.
*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a: Used methods	Written examination	Oral examination	Practical examination	Activities
7.b: Time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c : Grads	50	20	20	10

7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b2		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a4	b1 to b2		d1
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Fundamentals of analytical toxicology**, SeFlanagan, R.J., Taylor, A., Watson, I.D. and Whelpton, R., John Wiley & Sons Inc, New York, 2007.
- Principles of Forensic Toxicology**. 2020. Barry S. Levine and Sarah Kerrigan. Springer. ISBN-13: 978-3030429164- ISBN-10: 3030429164



- **Forensic Toxicology: Principles and Concepts.** 2022. Nicholas T. Lappas, Courtney M. Lappas. 2nd Ed. **ISBN-13:** 9780128192863- Elsevier Science

8-2: Recommended books:

- Handbook of Forensic Toxicology for Medical Examiners. Molina,, D.K., CRC press, USA, 2010.

8-3: Scientific Journals

- **Archiv Toxicol. - Springerlink**
- **Bull. Environ. Contam. Toxicol. - Springerlink**
- **Environ. Toxicol. – Interscience**
- **Food Chem. Toxicol. - Elsevier**
- **Reprod. toxicol. - Elsevier**
- **Toxicol. Appl. Pharmacol. – Elsevier**

8-4: Scientific websites

- TOXNET (toxicology data network)
- IVIS
- Environmental Protection Agency (EPA)
- Food and Drug Administration (FDA)
- American Board of Toxicology
- EPA: Integrated Risk Information System (IRIS)

Course Coordinator

Prof. Dr. Hanaa Mohamed Ragab

Head of Department

Prof. Dr. Tarek Ahmed Abd el-Hady



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding				Intellectual Skills		Practical & Professional Skills			General & Transferable Skills			
		1	2	3	4	1	2	1	2	3	1	2	3	4
Analytical toxicology	32	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
Drugs and toxicology	32		✓			✓	✓	✓			✓	✓	✓	✓
General and clinical toxicology	32		✓		✓	✓	✓			✓	✓	✓	✓	✓
Occupational and environmental toxicology	32			✓		✓	✓		✓		✓	✓	✓	✓
General forensics	32	✓		✓		✓	✓			✓	✓	✓	✓	✓
Postmortem examination and medico-legal reports	32			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 248/2

Course title: Laboratory diagnosis for toxins (التشخيص المعملّي للسموم)

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 192 hrs.

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical: 96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, students should have gained the basic principles and the essential practical skills in the field of application of scientific methods in laboratory diagnosis of toxicants.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.)

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Identify the methods used in toxicants detection.
- a2. Recognize the type, quantity and methods of collecting the necessary samples for the diagnosis of toxicants.
- a3. Describe how to use laboratory equipment in the analysis of those samples.
- a4. Explain how to interpret and analyze the laboratory results.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1. Distinguish the different forensic/analytical toxicological cases.
- b2. Select decisions regarding common clinical situations using appropriate problem solving skills and relevant ethical principles.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1. Collect suspected samples from clinical cases under field conditions
- C2. Perform the suitable laboratory assessments for detection of the poison in question.
- C3. Conduct toxicity testing in vitro.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
Essential Clinical Toxicology	12	12	24
Analytical Techniques	12	12	24



Essential Therapeutics	12	12	24
Trace Elements and Toxic Metals	12	12	24
Drug Abuse and Forensics	12	12	24
Essential Clinical Biochemistry	12	12	24
Laboratory and personal safety	12	12	24
Practical Project and Dissertation	12	12	24
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports in laboratory diagnosis of toxicants

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures *	a1 to a4	b1 to b2		d1, d4
Practical sessions		b1 to b2	c1 to c3	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b2	c1 to c3	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a: Used methods	Written examination	Oral examination	Practical examination	Activities
7.b: Time	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year
7.c : Grads	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
7.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b2		d4



Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a4	b1 to b2		d1
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- **Vet. Toxicol. Basic. & Clin. Principles**, R.C. Gupta, Academic Press; 2 edition, 2012.
- **Toxicology**. Osweiler, G.D., The National Veterinary Medical Series for Independent Study Blackwell Pub., 1996.

8-2: Recommended books:

- **Principles and Methods of Toxicology: Hayes**, A.W., 5th ed., CRC Press, New York, 2007.
- **Handbook of Toxicology: Derelanko**, M.J. and Hollinger, M.A., 2nd ed., CRC Press, Boca Raton, 2002.

8-3: Scientific Journals

- Archiv Toxicol. - Springerlink
- Bull. Environ. Contam. Toxicol. - Springerlink
- Environ. Toxicol. – Interscience
- Food Chem. Toxicol. - Elsevier
- Reprod. toxicol. - Elsevier
- Toxicol. Appl. Pharmacol. – Elsevier

8-4: Scientific websites

- TOXNET (toxicology data network)
- IVIS
- Environmental Protection Agency (EPA)
- Food and Drug Administration (FDA)
- American Board of Toxicology
- EPA: Integrated Risk Information System (IRIS)

Course Coordinator

Prof. Dr. Hanaa Mohamed Ragab

Head of Department

Prof. Dr. Tarek Ahmed Abd el-Hady



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding				Intellectual Skills		Practical & Professional Skills			General & Transferable Skills			
		1	2	3	4	1	2	1	2	3	1	2	3	4
Analytical toxicology	32	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
Drugs and toxicology	32		✓			✓		✓			✓	✓	✓	✓
General and clinical toxicology	32		✓		✓	✓	✓			✓	✓	✓	✓	✓
Occupational and environmental toxicology	32			✓		✓	✓		✓		✓	✓	✓	✓
General forensics	32	✓		✓		✓	✓			✓	✓	✓	✓	✓
Postmortem examination and medico-legal reports	32			✓	✓		✓	✓	✓		✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 249/2

Course title: Drug toxicity (سمية الدواء)

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 144 hrs.

Lectures: 48 hrs. (48 weeks- 1hrs./week)

Practical: 96 hrs. (48 weeks- 2hrs./week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, students should have gained the basic principles and the essential practical skills in the field of mechanism of toxicity, toxicokinetics, clinical presentation, diagnosis and medications indicated and contraindicated in the treatment of toxicity of common drug and chemical groups.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.)

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. **Recognize** the impact of drug toxicity.
- a2. **Define** the major drug toxicants, sources, pathways and fate of major toxicants; specific effects on organisms; physiological & biochemical principles of toxicity testing; LD50 & NOEC.
- a3. Explain circumstantial evidence about the drug toxicity cases
- a4. State the principles of judging in different toxicological cases

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1. **Interpret** the different drug toxins.
- b2. **Evaluate** and analyze the toxic doses of drugs.
- b3. **Analyze** other scientific toxicological researches and data.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Report the toxic effect of drugs on animals.
- c2. Conduct suitable sample collection, chemical and biological methods of analysis, analytical quality control, toxicity tests.
- c3. Manage and deal with drug toxicity cases.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
Drug safety and pharmacovigilance	8	16	24



Mechanisms of toxicity	8	16	24
Major toxins	8	16	24
Management and prevention of toxicity	8	16	24
Poisoning and toxic vigilance	8	16	24
Occupational and environmental toxicology	8	16	24
Total	48	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports in drug toxicity

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures *	a1 to a4	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c3	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b3	c1 to c3	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a: Used methods	Written examination	Oral examination	Practical examination	Activities
7.b: Time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c : Grads	50	20	20	10

7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b3		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a4	b1 to b3		d1
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.



8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- **Vet. Toxicol. Basic. & Clin. Principles**, R.C. Gupta, Academic Press; 2 edition, 2012.
- **Toxicology**. Osweiler, G.D., The National Veterinary Medical Series for Independent Study Blackwell Pub., 1996.

8-2: Recommended books:

- **Principles and Methods of Toxicology: Hayes**, A.W., 5th ed., CRC Press, New York, 2007.
- **Handbook of Toxicology: Derelanko**, M.J. and Hollinger, M.A., 2nd ed., CRC Press, Boca Raton, 2002.

8-3: Scientific Journals

- Archiv Toxicol. - Springerlink
- Bull. Environ. Contam. Toxicol. - Springerlink
- Environ. Toxicol. – Interscience
- Food Chem. Toxicol. - Elsevier
- Reprod. toxicol. - Elsevier
- Toxicol. Appl. Pharmacol. – Elsevier

8-4: Scientific websites

- TOXNET (toxicology data network)
- IVIS
- Environmental Protection Agency (EPA)
- Food and Drug Administration (FDA)
- American Board of Toxicology
- EPA: Integrated Risk Information System (IRIS)

Course Coordinator

Prof. Dr. Hanaa Mohamed Ragab

Head of Department

Prof. Dr. Tarek Ahmed Abd el-Hady

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding				Intellectual Skills			Practical & Professional Skills			General & Transferable Skills			
		1	2	3	4	1	2	3	1	2	3	1	2	3	4
Drug safety and pharmacovigilance	32	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mechanisms of toxicity	32		✓				✓		✓	✓		✓	✓	✓	✓
Major toxins	32		✓		✓	✓	✓				✓	✓	✓	✓	✓
Management and prevention of toxicity	32						✓	✓		✓		✓	✓	✓	✓
Poisoning and toxic vigilance	32	✓		✓		✓	✓				✓	✓	✓	✓	✓
Occupational and environmental toxicology	32	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓



Kafrelsheikh University
Faculty of Veterinary Medicine



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Animal Wealth Development

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy
(Genetics and Genetic Engineering)



Kafrelsheikh University
Faculty of Veterinary Medicine



Kafr El-Sheikh University

Faculty of Veterinary Medicine

Department of Animal Wealth Development

Program Specification for PhD Degree

(2016-2017)

A- Administrative information:

- 1- Awarding Body:** Kafr El-Sheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Animal Wealth Development
- 4- Program Title:** PhD Degree in Veterinary Science (Genetics and Genetic Engineering)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years

B- Professional information:

1- Aim of the Program:

- Allow graduate to create new knowledge and understanding in veterinary genetics and genetic engineering through the process of research and inquiry.
- Enable graduate to achieve competency in modern technology
- Provide the graduate with the opportunity to develop communication skills, recent techniques and tools in the field of veterinary genetics and genetic engineering and experience of scientific research skills.
- Giving the graduate the ability to be creative to advance veterinary genetics and genetic engineering through new scientific research.
- Enable graduate to achieve capability in modern technology to develop practical research project.
- Demonstrate an awareness of the connections between disciplines and



develop the ability to engage critically with scientific literature and to critically review and present their own research data for genetic the improvement of the animal and poultry production.

- Have the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibit awareness about current Animal and Poultry genetic problems and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the veterinary genetics and genetic engineering.

2- Academic standards:

Academic reference standards (ARS) adopted by the faculty committee No(1) 14/9/2014

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Mastering the basics and methodologies of scientific research veterinary genetics and genetic engineering for better dealing with genetic problems professionally.
- 2) Performing continuous effort to add knowledge about genetic improvement of animals and poultry productive and reproductive traits.
- 3) Analysis and criticism of information in veterinary genetics and genetic engineering and related fields including production, biochemistry, behavior, economics, etc.
- 4) Integrating data collected from the animal and poultry farms with related experimental findings to reach the correct system for genetic improvement of animal and poultry production.
- 5) Showing deep awareness with the ongoing animal and poultry genetic problems and modern theories in solving genetic problems.
- 6) Identifying the main genetic causes of low production and infertility in animals and poultry farms and suggesting the appropriate solutions.
- 7) Mastering of a wide range of professional skills in experimental design, data collection, analysis, and interpretation of genetic data.
- 8) Acquiring trends towards developing modern methods and tools in



veterinary genetics and genetic engineering.

- 9) Using appropriate technological means to serve professional practice.
- 10) Communicating effectively with animal breeders, students and colleagues and leading work team through professional scale.
- 11) Making decision in different professional situations especially under field conditions to deal with genetics of animals and poultry.
- 12) Using of the available resources efficiently in the development of new techniques and work to find new resources.
- 13) Being aware with his role in society development and community preservation.
- 14) Acting with integrity, credibility and according to the rules of profession.
- 15) Realizing the importance of self and life-long learning and progress.

4-Programme Intended Learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

- a.1. Recognize recent theories, principles and knowledge in genetic and environmental improvement of animal and poultry production.
- a.2. Apply Principles methodologies and ethics of scientific research and its tools in genetic improvement of productive and reproductive efficiency of animals and poultry
- a.3. Define legal and ethical principles of the area of veterinary genetics and genetic engineering.
- a.4. Recognize Principles and the basics of quality assurance the field of veterinary genetics and genetic engineering.
- a.5. Apply knowledge and understanding in of veterinary genetics and genetic engineering for genetic improvement of animal and poultry production
- a.6. Recognize the effect of different systems of genetic improvement on the animal wealth and methods for maximizing production
- a.7. Describe the principles, methodologies and ethics of scientific research veterinary genetics and genetic engineering.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1. Assess and criticize different data and information in veterinary genetics and genetic engineering



- b.2.** Analyze and evaluate information about DNA fingerprinting animals and poultry and the eliciting from them
- b.3.** Solve professional genetic problems in animal and poultry production using available data under field or laboratory conditions.
- b.4.** Perform scientific research studies that can give significant impact on the genetic improvement of animal and poultry production.
- b.5.** Conduct scientific research studies aiming at enhance genetic value of animal and poultry.
- b.6.** Formulating scientific papers in veterinary genetics and genetic engineering with the ability to match and discuss his own findings with those of other scientists.
- b.7.** Asses risks in the field of veterinary genetics and genetic engineering.
- b.8.** Share and lead scientific open discussion in the field of veterinary genetics and genetic engineering based on evidences and proofs.
- b.9.** Planning to enhance the performance in the field of veterinary genetics and genetic engineering.
- b.10.** Make professional decisions and suggestions for genetic improvement of animal and poultry production under different professional contexts
- b.11.** Innovate new method or technique for genetic improvement of animal and poultry production.
- b.12.** Perform evidence-based discussion and conversation for his PhD defense

c. Practical and professional skills:

By the end of this program the graduate should be able to:

- c.1.** Master the fundamental and recent professional skills in the field of veterinary genetics and genetic engineering including experimental design, data collection, presentation and analysis.
- c.2.** Write and evaluate professional genetic reports.
- c.3.** Evaluate and modernize methods and tools in genetic improvement of productive and reproductive traits of animal and poultry
- c.4.** Use modern technological means to serve genetic improvement of animal and poultry production.
- c.5.** Plan for the development of a research project in the field of veterinary



genetics and genetic engineering taking in consideration the methodology, ethical and bio- safety with precise cost estimation and time frame required

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1.** Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology in the improvement of Animal and poultry production professional practice.
- d.2.** Utilize information technology to serve professional practice.
- d.3.** Teach others and evaluate their performance.
- d.4.** Self-evaluate and identify personal learning requirements
- d.5.** Lead team under different professional circumstances.
- d.6.** Use of different sources for obtaining information and knowledge.
- d.7.** Manage scientific meetings with the ability to manage time efficiently.

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, field visits and seminars.

6-Assessments:

The program depends on different assessment ways:

a. Course assessment:

1. Final written exam
 - To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
2. Practical exam
 - To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
3. Oral exam
 - To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.

b. Qualifying examination



The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work

c. PhD Thesis assessment

- Annual reports adopted by the Faculty.
- Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
- Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1-2; b1,2,3;
Oral	a1-2; b1,2,3;
Practical	c1-3
Qualifying Exam	a3-7; b3-12, d6-7
Thesis	a3-7; b3-12; c4-5; d1-7

7. Program structure

a. Program duration (years):

PhD degree duration at least 3 years and it should not exceed a period of 5 years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law (article 18).

b. Program courses:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council should include at least 4 hours from subsidiary courses and approved



by postgraduate and research committee and faculty council. These courses must not be previously studied in the Master program. The student will be entitled to apply for the exam only after meeting attendance rate for each course. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c- Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d- Scientific thesis

The applicant should conduct an innovative research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that is accepted by the judging committee in an open discussion and the following policies should be met.

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Genetics and genetic engineering include:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological	1	2



		genetics.		
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2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1



	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and	2	2



		reproduction		
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2



	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2



	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
81- Advanced immunology			2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
198/2	99- Fish parasitology	1	2	
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2



	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1
Hygiene and control of milk and dairy products	208/2	108- Hygienic control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle,	3	3



		buffalo, camels, sheep and goats)		
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/2	134- Stress diseases during animals transport.		
Infectious diseases	235/2	135- Infectious diseases of cattle	2	2
	236/2	136- Infectious diseases of sheep and goat	2	2
	237/2	137- Infectious diseases camel	2	2
	238/2	138 Infectious diseases of equine	2	2
	239/2	139- Infectious diseases of pet animals	2	2
	240/2	140- Infectious diseases lab animals	1	2
	241/2	141- Infectious diseases of udder and newly born animals	2	2
	242/2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2



	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2



	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in poultry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2



	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:



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- The applicant must have a Master degree in Veterinary Medical Sciences (Genetics and Genetic Engineering) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medicine lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.
3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.
5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.
7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the



faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.

8. The applicant should submit a seminar (Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).

9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met: Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.

10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and in case of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.

11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards it to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.



12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**



b- The final degree of each course which has 3 hours (lecture and practical) per week is 100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.

12. Marking scale as follow:-

Grade		Percentage
Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
1	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

Program Coordinator

Head of Department

Dr. Safaa Elsayed Abdo

Prof. Dr. Mohamed Atef Helal

Matching program ILOs with ARS Matrix



Program ILOs	ARS																																				
	K&U (a)							I.S. (b)									P.P. (c)					G.T. (d)															
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7									
K&U	1	2	3	4	5	6	7																														
I.S.								1	3	4	6	7	8	10	11	12																					
P.P.																	1	2	3	4	5																
G.T.																												1	2	3	4	5	6	7			



ARS for PhD in Veterinary Medical Sciences (Genetics and Genetic Engineering)

1) Graduate attributes

The graduate should have the ability for:

- 16) Mastering the basics and methodologies of scientific veterinary genetics and genetic engineering for better dealing with fertility and productive genetic problems professionally.
- 17) Performing continuous effort to add knowledge about genetic improvement of productive and reproductive efficiency of animals and poultry.
- 18) Analysis and cartelization of information in animal and poultry genetics and related fields including biochemistry, production, physiology, etc.
- 19) Integrating data collected from the animal and poultry farms with related experimental findings to diagnoses genetic diseases.
- 20) Showing deep awareness with the ongoing genetics and genetic engineering problems and modern theories in solving genetic problems.
- 21) Identifying the main genetic causes of low production and infertility in animals and poultry farms and suggesting the appropriate solutions.
- 22) Mastering of a wide range of professional skills in experimental design, data collection, analysis, and interpretation of productive and reproductive data.
- 23) Acquiring trends towards developing modern methods and tools in genetics and genetic engineering Using appropriate technological means to serve professional practice.
- 24) Communicating effectively with animal breeders, students and colleagues and leading work team through professional scale.
- 25) Making decision in different professional situations especially under field conditions to deal with genetics and genetic engineering
- 26) Using of the available resources efficiently in the development of new techniques and work to find new resources.
- 27) Being aware with his role in society development and community preservation.
- 28) Acting with integrity, credibility and according to the rules of profession.
- 29) Realizing the importance of self and life-long learning and progress.

A) Knowledge and understanding

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Recent theories, principles and knowledge in cytogenetic and molecular genetics	Recent theories, principles and knowledge in the field of specialization and related areas
2)	Principles methodologies and ethics of scientific research and its tools in genetic improvement of fertility and production efficiency of animals and poultry	Basics, methodologies and ethics of scientific research and its different tools
3)	Legal and ethical principles in the area of genetics and genetic engineering	Legal and ethical principles of professional practice in the area of specialization
4)	Principles and the basics of quality assurance in animal selection and breeding in the field of veterinary genetics and genetic engineering	Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Awareness with the effect on genetic material on different animal performance, fertility, disease and immunity.	Awareness with the effect of professional practice on genetic material
6)	the effect of professional practice on the environment and methods of environmental development and maintenance	

B) Intellectual skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analyzing and evaluating information about animals DNA fingerprinting and poultry and the eliciting from them	Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solving genetics and genetic engineering problems	Solving professional problems using available data
3)	Performing scientific research studies that can give significant impact on the genetic improvement of animal and poultry breeds.	Conducting scientific research studies that add to knowledge
4)	Formulating scientific papers in genetics and genetic engineering.	Formulating scientific papers
5)	Risk-assessment of in genetics and molecular	Risk-assessment in the field of

	genetics	specialization
6)	Planning to enhance the performance in the field of genetics and genetic engineering	Planning to enhance the performance in field of specialization
7)	Making professional decisions for improvement of genetics and genetic engineering under different professional contexts	Making professional decisions under different professional contexts
8)	Creation and innovative in the area of specialization field of genetics and genetic engineering.	Creation and innovative in the area of specialization
9)	Dialogue and discussion based on genetics and production evidences and proofs	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

	Adopted ARS	NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills in the field of genetics and genetic engineering	Mastering basic and modern professional skills in the area of specialization
2)	Writing and evaluating professional genetic reports	Writing and evaluating professional reports
3)	Evaluating and modernizing methods and tools in genetic improvement of fertility and productive efficiency of animal and poultry.	Evaluating and modernizing methods and tools in the area of specialization
4)	Using modern technological means to serve genetic improvement of animal and poultry breeds.	Using modern technological means to serve professional practice
5)	Planning for the maximizing productive and reproductive efficiency of animals and poultry by applying recent techniques in genetics and genetic engineering.	Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill

	Adopted ARS	NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>

1)	Effective communication with animal and poultry genetics, students and veterinarians.	Effective communication
2)	Utilizing information technology to serve development of genetics and genetic engineering practice	Utilizing information technology to serve development of professional practice
3)	Teaching others and evaluating their performance	Teaching others and evaluating their performance
4)	Self-assessment and continuous learning	Self-assessment and continuous learning
5)	Using different resources to obtain knowledge and information	Using different resources to obtain knowledge and information
6)	Team working and leading a team in familiar professional contexts	Team working and leading a team in familiar professional contexts
7)	Management of scientific meetings with the ability to manage time efficiently	Management of scientific meetings with the ability to manage time efficiently

ثالثا: برامج الدكتوراه

١- مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستتبطا و مطورا للعلاقات البيئية بينها
٥. إظهار وعيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حلولاً مبتكرة لحلها
٧. إتقان نطاقا واسعا من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تنميتها والعمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصادقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢- المعايير القياسية العامة

المعرفة و الفهم:

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا علي الفهم والدراية بكل من:
أ- النظريات و الأساسيات والحديث من المعارف في مجال التخصص والمجالات ذات العلاقة

- ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
- ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
- ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص



ج- المعارف المتعلقة بأثار ممارسته المهنية على البيئة و وطرق تنمية البيئة وصيانتها

المهارات الذهنية

بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها

ب- حل المشاكل المتخصصة استنادا علي المعطيات المتاحة

ج- إجراء دراسات بحثية تضيف إلى المعارف

د- صياغة أوراق علمية

هـ- تقييم المخاطر في الممارسات المهنية

و- التخطيط لتطوير الأداء في مجال التخصص

ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة

ح- الابتكار/ الإبداع

ط- الحوار والنقاش المبني علي البراهين والأدلة

المهارات المهنية

بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص

ب- كتابة و تقييم التقارير المهنية

ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص

د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية

هـ- التخطيط لتطوير الممارسة المهنية وتنمية أداء الآخرين

المهارات العامة و المنقولة

بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

أ- التواصل الفعال بأنواعه المختلفة

ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية

ت- تعليم الآخرين و تقييم أداءهم

ث- التقييم الذاتي و التعلم المستمر

ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف

ح- العمل في فريق و قيادة فرق العمل

خ- إدارة اللقاءات العلمية و القدرة علي إدارة الوقت

COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 289/2

Course title: Microbial genetics

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 144 hrs.

Lectures: 48 hrs. (48 weeks- 1hrs/week)

Practical: 96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to the structure of genome of micro-organisms, accommodate the role of micro-organisms in the process of genetic engineering, awareness by scientific developments in the study of the gene in the micro-organisms.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1- Describe structure of the genetic material in micro-organisms
- a2 - Outline the steps of bacterial transformation
- a3- Explain the mechanism of operon action (control of bacterial protein formation).
- a4- Identify the role of viruses used in genetic engineering as a vectors

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1- Construct the genetic material in micro-organisms
- b2- Differentiate the steps of bacterial transformation
- b3- Diagram the mechanism of operon action
- b4- Compare between different uses and application of bacterial genome.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1- Isolate the bacterial genome from micro-organisms, as well as plasmids and deal with it
- c2- Predict the Steps of bacterial transduction and transformation
- c3- Illustrate the regulation of microbial gene control and regulation
- c4- Use bacterial plasmids carry various genes.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	Lecture Hrs.	Practical Hrs.	Total Hrs.
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Bacterial genome	18	36	54
Transduction & Transformation	10	20	30
Mechanism of operon action	10	20	30
Types of vectors used in genetic engineering	10	20	30
Total	48	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about Microbial genetics

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b4		d1, d4
Practical sessions		b1 to b4	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b4	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination	Activities
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year
<u>7.c grads</u>	25	10	10	5

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS

Written exams	a1 to a4	b1 to b4		d4
Practical exams			c1 to c4	d2, d3
Oral exams	a1 to a4	b1 to b4		d1
Student activities	a1, a4			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- The Bacterial Genome – Where the Genes Are. Structure and Function of the Bacterial Genome (2020). Genome: 1-66.
- Gene Control. Structure and Function of the Bacterial Genome(2020).: 113-131.
- Kumar, P. (2018). Operon concept - An overview.

8-2: Recmended books:

- Osbourn, A. E., et al. (2009). "Operons." Cellular and Molecular Life Sciences 66(23): 3755-3775.
- An Integrated View of Genome Structure and Function. Structure and Function of the Bacterial Genome (2020).: 231-245.

Scientific Journals

- Gene and genome <https://www.springer.com/journal/13258>
- <https://www.frontiersin.org/journals/genetics>
- <https://journals.plos.org/plosgenetics/>
- Molecular Genetics & Genomic medicine
- <https://www.journals.elsevier.com/gene>
- <https://www.springer.com/journal/251/> immuogenetics

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <https://genome.ucsc.edu/cgi-bin/hgPcr>
- <https://www.labtools.us/nebcutter-v2-0/>
- <https://pubmed.ncbi.nlm.nih.gov/>
- <https://primer3.ut.ee/>

Course Coordinator

Head of Department

Dr. Safaa Elsayed Mohamed Abdo

Prof. Dr. Mohamed Atef Helal

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hrs.	Knowledge & Understanding				Intellectual Skills				Practical & Professional Skills				General & Transferable Skills			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Genetic material structure expression	54	✓				✓				✓				✓	✓	✓	✓
Steps of recombinant DNA technology	30		✓				✓				✓			✓	✓	✓	✓
Method of studying genome (PCR, RFLP)	30			✓				✓				✓		✓	✓	✓	✓
Applications of Genetic engineering	30				✓				✓				✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 290/2

Course title: Advanced Genetic Engineering

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 144 hrs.

Lectures: 48 hrs. (48 weeks- 1hrs/week)

Practical: 96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to Characteristics of genetic material and different methods of its manipulation and applications, relationship between the genetic material, knowledge about Genetic engineering and its application..

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

By the end of the course, student should be able to:

- a1- Define the genetic material, Replication, expression.
- a2- Identify Recombinant DNA technology and its application
- a3- Discuss Genetic manipulation method of studying the genome.
- a4- Contrast the steps of Genetic engineering and Genetic engineering applications

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1- Construct the general structure of different tissues DNA in animals, birds and fish.
- b2- Examine the result of PCR and restriction Endonucleases
- b3- Apply the steps of Recombinant DNA technology and genetic engineering
- b4- Compare between different methods of studying the genome.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1- Isolation of DNA from different organs.
- c2- Use PCR as a tool of gene isolation, studying genome structure and disease diagnosis
- c3- Explain different application of genetic engineering.
- c4- Evaluate the result of restriction Endonucleases technique

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently.



4 - COURSE CONTENTS:

Topic	Lecture Hrs.	Practical Hrs.	Total Hrs.
1 .Genetic material structure & expression	10	20	30
2 .Steps of recombinant DNA technology	18	30	38
3. method of studying genome (PCR, RFLP)	10	30	40
4- Applications of Genetic engineering	10	16	26
Total	48	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about Genetic Engineering

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b4		d1, d4
Practical sessions		b1 to b4	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b4	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year
7.c grads	25	10	10	5

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS



Written exams	a1 to a4	b1 to b4		d4
Practical exams			c1 to c4	d2, d3
Oral exams	a1 to a4	b1 to b4		d1
Student activities	a1, a4			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Berg JM, Tymoczko JL, Stryer L, Clarke ND (2002) Chapter 27, Section 4: DNA Replication of Both Strands Proceeds Rapidly from Specific Start Site. In: Biochemistry. WH Freeman and Company, USA.
- Alberts B, Johnson A, Lewis J, Raff M, Roberts K, et al. (2002) Molecular Biology of the Cell. (4th edn). Garland Science, UK. pp. 238–240. 18.
- Latchman, D., Latchman, D. S., (2004), Eukaryotic Transcription Factors, (Forth Ed.), USA, Elsevier Ltd.

8-2: Reomnded Books

- Griffiths, F. J. A. , Wessler, R. S., Lewontin, C. R., Gelbart, M. W., Suzuki T. D., Miller, H. J., An Introduction to Genetic Analysis 8th Edition, Chapter 9: Proteins and Their Synthesis, 273-296 , 2004.
- A. Shinde et al (2018) Recombinant DNA Technology and its Applications: A Review. Int.J. MediPharm Res.,4(2),pp 79-88
- Paun O, Schönswetter P. Amplified Fragment Length Polymorphism (AFLP) - an invaluable fingerprinting technique for genomic, transcriptomic and epigenetic studies. Methods in Molecular Biology, 2012;862:75-87

Scientific Journals

- Gene and genome <https://www.springer.com/journal/13258>
- <https://www.frontiersin.org/journals/genetics>
- <https://journals.plos.org/plosgenetics/>
- Molecular Genetics & Genomic medicine
- <https://www.journals.elsevier.com/gene>
- <https://www.springer.com/journal/251/> immuogenetics

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <https://genome.ucsc.edu/cgi-bin/hgPcr>
- <https://www.labtools.us/nebcutter-v2-0/>
- <https://pubmed.ncbi.nlm.nih.gov/>
- <https://primer3.ut.ee/>

Course Coordinator

Head of Department

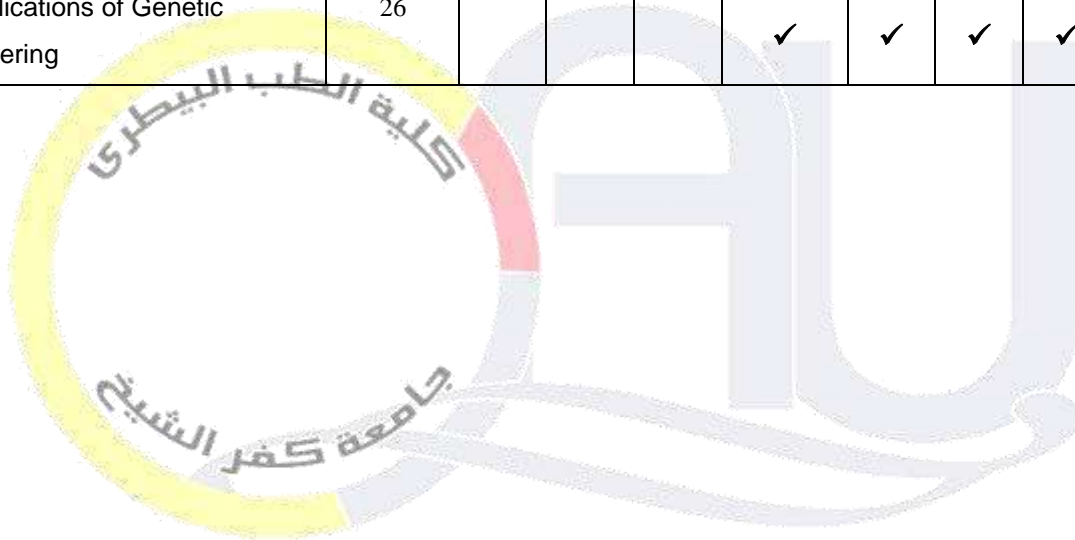
Dr. Safaa Elsayed Mohamed Abdo

Prof. Dr. Mohamed Atef Helal



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hs	Knowledge & Understanding				Intellectual Skills				Practical & Professional Skills				General & Transferable Skills			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1 .Genetic material structure & expression	30	✓				✓	✓	✓	✓	✓					✓	✓	✓
2 .Steps of recombinant DNA technology	38		✓			✓	✓	✓	✓		✓				✓	✓	✓
3. method of studying genome (PCR, RFLP)	40			✓		✓	✓	✓	✓			✓			✓	✓	✓
4- Applications of Genetic engineering	26				✓	✓	✓	✓	✓				✓		✓	✓	✓





COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 291/2

Course title: Cytogenetics.

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 48 hrs.

Lectures: 48hrs (48 weeks- 1hrs/week)

Practical: -----

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to Different types of chromosomes, chromosomal aberration, genetic traits affected by sex chromosomes, fertility problems affected by chromosomes, and gene mapping on chromosome.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

By the end of the course, student should be able to:

a1-Define the basics of chromosome structure and organization and karyotyping.

a2- Identify the different chromosomal aberration.

a3- Evaluate the genetic traits affected by sex chromosomes.

a4- Explain the fertility problems affected by chromosomes

a5- Outline the basics of gene mapping on chromosome

a6- Summarize molecular techniques in cytogenetics as FISH, Primed In Situ Labelling (PRINS) and Comparative Genomic Hybridization.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

b1-Examine the karyotyping results.

b2- Classify different chromosomal aberration.

b3- Assessment fertility problems associated to chromosomes.

b4- Compare between different sex chromosomes related inheritance modes.

b5- Enumerates advanced molecular techniques and their application.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

d.1. Communicate effectively with his professors, and collages.

d.2. Utilize different sources of knowledge and information

d.3. Use information technology to serve the professional practice.

d.4. Manage time efficiently.

4 - COURSE CONTENTS:



Topic	Lecture Hrs.	Practical Hrs.	Total Hrs.
1 . Chromosome structure and organization	8	--	8
2. Chromosomal aberrations	12	---	12
3. Sex differentiation and sex determination	12	--	12
4. Fertility as affected by chromosomes	8	--	8
5- Introduction to molecular cytogenetics & gene mapping	8	--	8
Total	48	--	48

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about Cytogenetics.

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a6	b1 to b5		d1, d4
Practical sessions		b1 to b5	-----	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b5	-----	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year		All over the academic year
7.c grads	25	20	-----	5

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS



Written exams	a1 to a6	b1 to b5		d4
Practical exams			-----	-----
Oral exams	a1 to a6	b1 to b5		d1
Student activities	a1, a6			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Hirschhorn K (1973) Chromosomal abnormalities I: Autosomal defects. In: McKusick VA and Claiborne R (eds) Medical Genetics, pp. 3–14. New York: HP Publishing
- Warburton D (1991) De novo balanced chromosome rearrangements and extra marker chromosomes identified at prenatal diagnosis: clinical significance and distribution of breakpoints. American Journal of Human Genetics 49: 995–1013.
- Yimer, N.* and Rosnina, Y. Pertanika J. (2014). Chromosomal Anomalies and Infertility in Farm Animals: A Review. Trop. Agric. Sci. 37 (1): 1 - 18

8-2: Recommended books:

- Advanced molecular and cytogenetic technologies in birth defect diagnosis and prevention.
- Li MM. Li MM. Beijing Da Xue Xue Bao Yi Xue Ban. 2005 Feb 18;37(1):14-9. Beijing Da Xue Xue Bao Yi Xue Ban. 2005. PMID: 15719034
- [Strategies to identify supernumerary chromosomal markers in constitutional cytogenetics].
- Douet-Guilbert N, Basinko A, Le Bris MJ, Herry A, Morel F, De Braekeleer M. Douet-Guilbert N, et al. Pathol Biol (Paris). 2008 Sep;56(6):362-7. doi: 10.1016/j.patbio.2008.03.012. Epub 2008 May 5. Pathol Biol (Paris). 2008. PMID: 18456432 Review. French.
- Characterization of complex chromosomal abnormalities in uveal melanoma by fluorescence in situ hybridization, spectral karyotyping, and comparative genomic hybridization.

Scientific Journals

- Gene and genome <https://www.springer.com/journal/13258>
- <https://www.frontiersin.org/journals/genetics>
- <https://journals.plos.org/plosgenetics/>
- <https://www.journals.elsevier.com/gene>
- <https://www.springer.com/journal/251/>

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <https://genome.ucsc.edu/cgi-bin/hgPcr>
- <https://www.labtools.us/nebcutter-v2-0/>
- <https://pubmed.ncbi.nlm.nih.gov/>
- <https://primer3.ut.ee/>

Course Coordinator

Head of Department

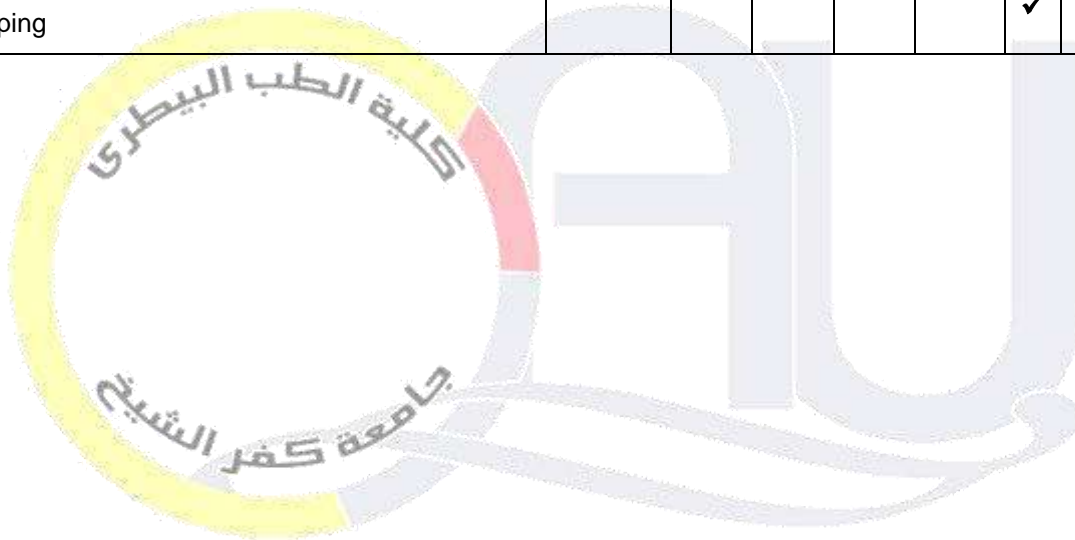
Dr. Safaa Elsayed Mohamed Abdo

Prof. Dr. Mohamed Atef Helal



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hs	Knowledge & Understanding						Intellectual Skills					General & Transferable Skills				
		1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	
1 . Chromosome structure and orgnization	8	✓						✓	✓	✓		✓	✓	✓	✓	✓	✓
2. Chromosomal aberrations	12		✓					✓	✓	✓		✓	✓	✓	✓	✓	✓
3. Sex differnation and sex determination	12			✓				✓	✓	✓		✓	✓	✓	✓	✓	✓
4. Fertility as affected by chromosomes	8				✓							✓	✓	✓	✓	✓	✓
5- Introduction to molecular genetics & gene mapping	8					✓	✓						✓	✓	✓	✓	✓





COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 292/2

Course title: Population genetics.

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 96 hrs.

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical: -----

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to Population genetic terminology, gene epistasis, Mendelian genetics law, genetic selection and genetic improvement of population.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

By the end of the course, student should be able to:

- a1-Define the common terms as genotype, phenotype, allele, allele frequencies and type of inherited traits.
- a2- Identify the genetic basics of population equilibrium and Hardy Weinberg theories.
- a3- Explain the roles of Mendelian genetics and effect of gene and environment interaction on phenotype
- a4- Contrast the genetic epistasis and phenotype.
- a5- Summarize the effect of chromosomal polymorphism and gene mutation on population structure
- a6- Discuss the genome assisted selection methods (GAS & MAS).

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1-Classify the genetic parameters related to inherited traits in animal any species.
- b2- Compare between monogenic and polygenic traits
- b3- Assessment of population structure and balance.
- b4- Expect the phenotype and the genotype of next generation.
- b5- Enumerates different genetic markers.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.



d.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	Lecture Hrs.	Practical Hrs.	Total Hrs.
1 . introduction to population genetics	4	--	4
2. Mendeline genetics	12	---	12
3. Population structure and genetic epistasis	12	--	12
4. Genetic improvement to a herd	12	--	12
5- Introduction to genome assisted selectin	8	--	8
Total	48	--	48

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library Making individual reports about Population genetics.

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures *	a1 to a6	b1 to b5		d1, d4
Practical sessions		b1 to b5	-----	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b5	-----	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination	Activities
<u>7.b time</u>	At the end of the academic year	At the end of the academic year		All over the academic year
<u>7.c grads</u>	25	20	-----	5

6.1. Methods	7. Student Assessment
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	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b5		d4
Practical exams			-----	-----
Oral exams	a1 to a6	b1 to b5		d1
Student activities	a1, a6			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Principles of Population Genetics 4th Edition by Daniel L. Hartl, Andrew G. Clark. 1980. ISBN-13: 978-0878933082
- Molecular Population Genetics 1st Edition. Sònia Casillas and Antonio Barbadilla. 2017
- Dekkers, J. C., 2004. Commercial application of marker- and gene-assisted selection in livestock: strategies and lessons. *Journal of Animal Science*. 82 E-Suppl, 313-328.

8-2: Recmoned books:

- Yao, J. B., Aggrey, S. E., Zadworny, D., Hayes, J. F., Kuhnlein, U., 1996. Sequence variations in the bovine growth hormone gene characterized by single-strand conformation polymorphism (SSCP) analysis and their association with milk production traits in Holsteins. *Genetics*. 144, 1809-1816.
- Davis, G. P., DeNise, S. K., 1998. The impact of genetic markers on selection. *Journal of Animal Science*. 76, 2331-2339.

Scientific Journals

- Gene and genome <https://www.springer.com/journal/13258>
- <https://www.frontiersin.org/journals/genetics>
- <https://journals.plos.org/plosgenetics/>
- <https://www.journals.elsevier.com/gene>
- <https://www.springer.com/journal/251/>

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <https://genome.ucsc.edu/cgi-bin/hgPcr>
- <https://www.labtools.us/nebcutter-v2-0/>
- <https://pubmed.ncbi.nlm.nih.gov/>
- <https://primer3.ut.ee/>

Course Coordinator

Head of Department

Dr. Safaa Elsayed Mohamed Abdo

Prof. Dr. Mohamed Atef Helal



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hs	Knowledge & Understanding						Intellectual Skills					General & Transferable Skills				
		1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	
1 . introduction to population genetics	4	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2. Mendeline genetics	12			✓					✓	✓	✓		✓	✓	✓	✓	
3. Population structure and genetic epistasis	12		✓							✓	✓		✓	✓	✓	✓	
4. Genetic improvement to a herd	12					✓	✓					✓	✓	✓	✓	✓	
5- Introduction to genome assisted selectin	8					✓	✓					✓	✓	✓	✓	✓	





COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 293/2

Course title: Physiological Genetics.

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 96 hrs.

Lectures: 96hrs (48 weeks- 2hrs/week)

Practical: -----

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to Nucleic acid structure, regulation of protein, hormones, enzyme expression and action, inherited Bleeding Disorders and immunogenetics multiple alleles.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1- Identify the structure of DNA, RNA in different animal species and fish.
- a2- Define the regulation of gene expression and protein synthesis
- a3- Evaluate the genetic differences between hormones and enzymes mode of action
- a4- Illustrate the genetic Factors regulates the developmental and Morphogenesis
- a5- Discuss the inborn errors of metabolism and inherited Bleeding Disorders
- a6- Outline immunogenetics multiple alleles as red-cell antigen, antibodies Diversity and MHC and host-pathogens interaction

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1-Examine the nucleic acid extraction results.
- b2-. Assess the gene expression regulation in different species.
- b3- Compare between different hormones and enzymes pathway
- b4-. Study the animal inherited diseases and their control
- b5- Enumerates different multiple allele and gene diversity.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	Lecture Hrs.	Practical Hrs.	Total Hrs.
1 . Nucleic acid structure	8	--	8
2. Regulation of gene expression and protein synthesis	14	---	14



3. Inborn Errors of Metabolism and inherited Bleeding Disorders	14	--	14
4. The inheritance of immune-related traits	12	--	12
Total	48	--	48

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about Physiological Genetics

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a6	b1 to b5		d1, d4
Practical sessions		b1 to b5	-----	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b5	-----	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year		All over the academic year
7.c grads	25	20	-----	5

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b5		d4
Practical exams			-----	-----
Oral exams	a1 to a6	b1 to b5		d1
Student activities	a1, a6			d1 to d4



KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Berg JM, Tymoczko JL, Stryer L, Clarke ND (2002) Chapter 27, Section 4: DNA Replication of Both Strands Proceeds Rapidly from Specific Start Site. In: Biochemistry. WH Freeman and Company, USA.
- Alberts B, Johnson A, Lewis J, Raff M, Roberts K, et al. (2002) Molecular Biology of the Cell. (4th edn). Garland Science, UK. pp. 238–240. 18.
- Brown TA (2002) Genomes. (2nd edn). Oxford: Wiley-Liss, USA
- Murakami, K. S., Masuda, S., Campbell, E. A., Muzzin, O., Darst, S. A., Structural basis of transcription initiation: an RNA polymerase holoenzyme-DNA complex, Science, 296, 5571, 1285-90, 2002. 48. Yang,
- Latchman, D., Latchman, D. S., (2004), Eukaryotic Transcription Factors, (Forth Ed.), USA, Elsevier Ltd.
- Griffiths, A. J. F., Miller, J. H., Suzuki, D. T., Lewontin, R. C., Gelbart, W. M., (2000), An Introduction to Genetic Analysis, (7th Ed.), New York, W. H. Freeman and Company.
- Hajam, Y. A., et al. (2022). Chapter 3 - Basics of immunogenetics: application and future perspectives. A Molecular Approach to Immunogenetics. M. U. Rehman, A. Arafah, M. N. Ali and S. Ali, Academic Press: 41-62.
- Introductory Chapter: Immunogenetics Amene Saghadzadeh and Nima Rezaei, **2019**

8-2: Recommended books:

- Johnson, B. G., Raven, H. P., Chapter 15: Genes and How They Work , Biology, Eighth Edition (Raven) , 300-308, 2008.
- Griffiths, F. J. A. , Wessler, R. S., Lewontin, C. R., Gelbart, M. W., Suzuki T. D., Miller, H. J., An Introduction to Genetic Analysis 8th Edition, Chapter 9: Proteins and Their Synthesis, 273-296 , 2004.
- A. Shinde et al (2018) Recombinant DNA Technology and its Applications: A Review. Int.J. MediPharm Res.,4(2),pp 79-88
- Matzaraki V et al. The MHC locus and genetic susceptibility to autoimmune and infectious diseases. Genome Biology. 2017;18(1):76

Scientific Journals

- Gene and genome <https://www.springer.com/journal/13258>
- <https://www.frontiersin.org/journals/genetics>
- <https://journals.plos.org/plosgenetics/>
- <https://www.journals.elsevier.com/gene>
- <https://www.springer.com/journal/251/>

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <https://genome.ucsc.edu/cgi-bin/hgPcr>
- <https://www.labtools.us/nebcutter-v2-0/>
- <https://pubmed.ncbi.nlm.nih.gov/>



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Faculty of Veterinary Medicine



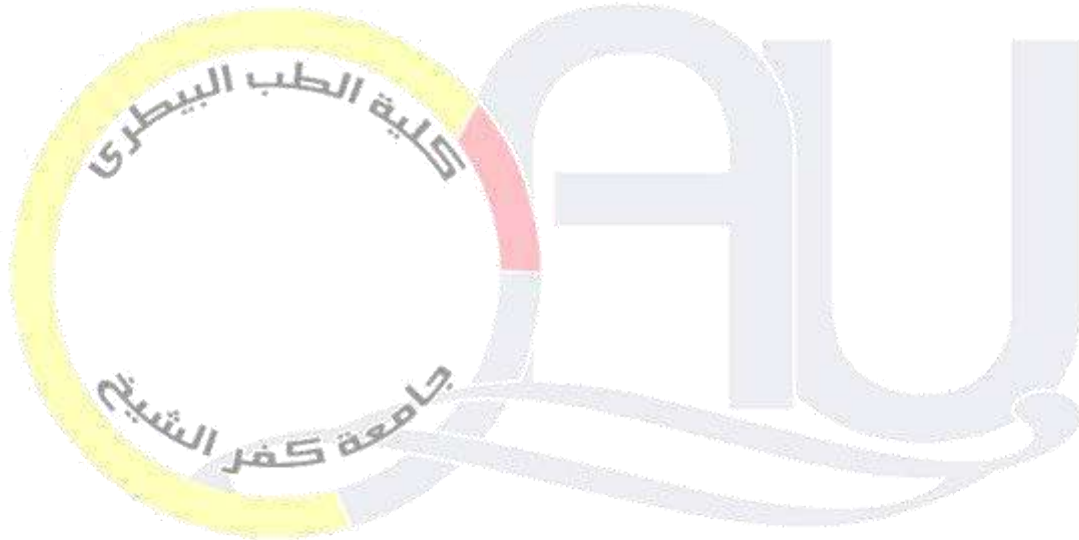
- <https://primer3.ut.ee/>

Course Coordinator

Head of Department

Dr. Safaa Elsayed Mohamed Abdo

Prof. Dr. Mohamed Atef Helal





Course Matrix for achievement of Intended Learning Outcomes

Topics	Hs	Knowledge & Understanding						Intellectual Skills					General & Transferable Skills			
		1	2	3	4	5	6	1	2	3	4	5	1	2	3	4
1 . Nucleic acid structure	8	✓						✓					✓	✓	✓	✓
2. Regulation of gene expression and protein synthesis	14		✓	✓	✓				✓	✓			✓	✓	✓	✓
3. Inborn Errors of Metabolism and inherited Bleeding Disorders	14					✓					✓		✓	✓	✓	✓
4. The inheritance of immune-related traits	12						✓					✓	✓	✓	✓	✓





COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 294/2
 Course title: Chemical and Radial Genetics.
 Academic Year: **PhD Veterinary Medicine Program**
 Total teaching hours: 144 hrs.
 Lectures: 48 hrs. (48 weeks- 1hrs/week)
 Practical: 96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to Different types of mutations, chemical, physical and radical genotoxic substance, lab assessment of mutagenicity, different DNA repair pathway.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1- Define the different types of genetic mutation.
- a2- Identify the chemical and radical mutagenic substance.
- a3- Evaluate the mutagenicity and carcinogenicity of chemicals.
- a4- Explain DNA repairing mechanisms.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1- Construct a typical classification of mutation.
- b2- Examine the result of chemicals assessment and their genotoxic effect.
- b3- Use online programs to identify mutagens on DNA sequence.
- b4- Compare different types of DNA repair.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1- Isolate DNA and chromosomes and assort them in a karyotyping..
- c2- Use advanced genetic application to detect mutation on the chromosomes and DNA.
- c3- Test the genotoxic and carcinogenicity of chemicals.
- c4- Evaluate the antimutagenicity and repairing efficiency of DNA repair system.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	Lecture Hrs.	Practical Hrs.	Total Hrs.
1 .Definition and classification of mutation	10	--	10



2. Chemical and radical mutagens	18	26	44
3. Genetic evaluation and assessment of mutagens	10	60	70
4. DNA repair mechanisms	10	10	20
Total	48	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about Chemical and Radial Genetics

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b4		d1, d4
Practical sessions		b1 to b4	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b4	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year
7.c grads	25	10	10	5

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b4		d4
Practical exams			c1 to c4	d2, d3



Oral exams	a1 to a4	b1 to b4	d1
Student activities	a1, a4		d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Gupta, M., et al. (2021). "Gene Mutation Classification through Text Evidence Facilitating Cancer Tumour Detection." *Journal of Healthcare Engineering* **2021**: 8689873.
- Guidelines for Mutagenicity Risk Assessment
- ICH guideline S2 (R1) on genotoxicity testing and data interpretation for pharmaceuticals intended for human use

8-2: Recmended books:

- Torgovnick, A., et al. (2015). "DNA repair mechanisms in cancer development and therapy." *Frontiers in Genetics* 6.
- Chatterjee, N., et al. (2017). "Mechanisms of DNA damage, repair, and mutagenesis." *Environmental and molecular mutagenesis* 58(5): 235-263.
- "Reverse chemical mutagenesis: identification of the mutagenic lesions resulting from reactive oxygen species-mediated damage to DNA." *Proceedings of the National Academy of Sciences of the United States of America*

Scientific Journals

- Gene and genome <https://www.springer.com/journal/13258>
- <https://www.frontiersin.org/journals/genetics>
- <https://journals.plos.org/plosgenetics/>
- Molecular Genetics & Genomic medicine
- <https://www.journals.elsevier.com/gene>
- <https://www.springer.com/journal/251> immuogenetics

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <https://genome.ucsc.edu/cgi-bin/hgPcr>
- <https://www.labtools.us/nebcutter-v2-0/>
- <https://pubmed.ncbi.nlm.nih.gov/>
- <https://primer3.ut.ee/>

Course Coordinator

Head of Department

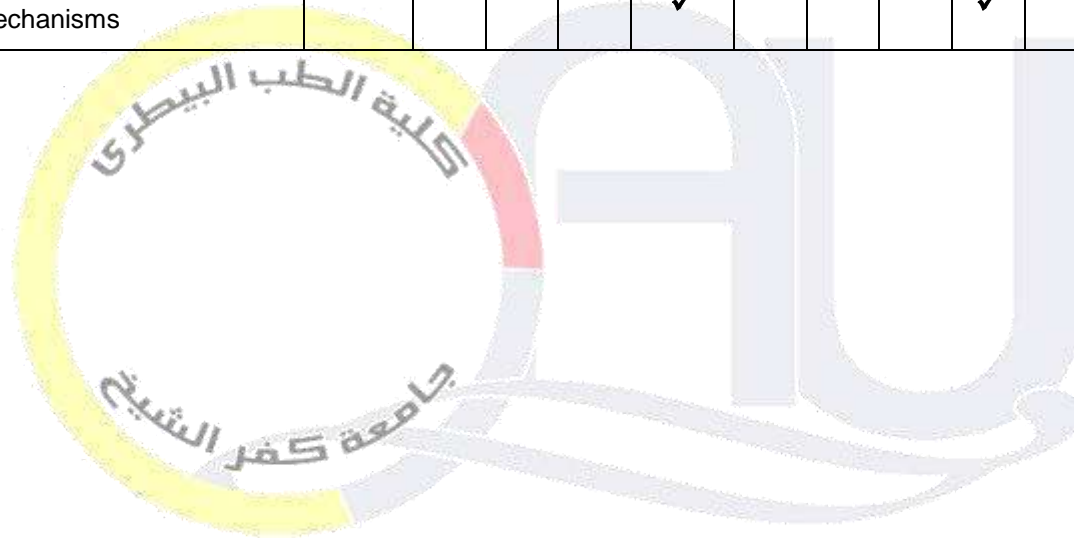
Dr. Safaa Elsayed Mohamed Abdo

Prof. Dr. Mohamed Atef Helal



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hs	Knowledge & Understanding				Intellectual Skills				Practical & Professional Skills				General & Transferable Skills			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1 .Definition and classification of mutation	10	✓				✓	✓	✓	✓						✓	✓	✓
2. Chemical and radical mutagens	44		✓			✓	✓	✓	✓	✓	✓				✓	✓	✓
3. Genetic evolution and assessment of mutagens	70			✓		✓	✓	✓	✓			✓			✓	✓	✓
4. DNA repair mechanisms	20				✓				✓				✓		✓	✓	✓



كلية الطب البيطري

وحدة ضمان الجودة

Program Spc. For Ph.D in Internal medicine



Kafri El-Sheikh University
Faculty of Veterinary Medicine
Animal Medicine Department

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy

(Internal medicine)



Kafrelsheikh University

Faculty of Veterinary Medicine

Animal Medicine Department

Program Specification for PhD Degree (2021-2022)

A- Administrative information:

- 1- Awarding Body:** Kafrelsheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Animal Medicine
- 4- Program Title:** PhD Degree in Veterinary Science (Internal medicine)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years
- 7- Program Coordinator:** Prof. Dr. Medhat Naseef
- 8- External evaluator:** Prof. Dr. Kamal kamal metwally

B- Professional information:

1- Aims of the Program:

This PhD program aim is to render the postgraduate able to:

- Creation of new knowledge and understanding in Internal medicine through the process of research and inquiry.
- Development of communication skills, recent techniques and diagnostic tools in the field of Internal medicine and experience of scientific research skills.
- Giving the graduate the ability to be creative in the field of advance Internal medicine through new scientific research.



- Achievement of capability in modern laboratory technology to develop practical research project.
- Demonstrating an awareness of the connections between disciplines and develop the ability to be covenant with scientific literature and to critically review and present their own research data for the protection and promotion of the animal health.
- Enhancing the ability of graduate to analyze statistical data, results and stimulate the interpretation and dissertation, presentation skills.
- Exhibiting awareness about current Internal medicine problems and their identification with finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of Internal medicine.

2- Academic standards:

**Academic reference standards (ARS) adopted by the faculty committee No(1)
14/9/2014**

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Designing experiment protocol or choice research point and knowing how to analysis the data and summarized the results.
- 2) Making continuous effort to add knowledge in Internal medicine subject through study new points or subjects in animal Internal medicine in diagnosis, treatment or prevention.
- 3) Using the analytical protocols of animal Internal medicine problems. Criticizing the idea of other researcher in dealing with animal Internal medicine problems either positively or negatively.
- 4) Integrating specialized knowledge with related information about Internal



medicine aspects and extrapolating their interrelationship.

- 5) Showing wide range of awareness about outbreaks of **Internal medicine** and problems of diagnosis, treatment and prevention of it. As well as new theories in the field of **Internal medicine**.
- 6) Identification of problems and difficulties in diagnosis, treatment and prevention of **Internal medicine** and suggesting innovative solutions such as new diagnostic tools, and new drugs or vaccines for treatment and prevention.
- 7) Using the diagnostic tools in the field and modern diagnostic techniques in the laboratory and able to perform wide range of treatment and control techniques.
- 8) Using the newly modern techniques and methodology either in research study or field practice with diseased animal.
- 9) Leading the work team in the laboratory or the field effectively and in professional manner.
- 10) Taking suitable decision depending on the available data and can support his decision.
- 11) Using the available resources to diagnosis, treatment, and control of animal internal diseases and creating new resources of the available materials to be used as diagnostic, curative, or prophylactic tools.
- 12) Using the acquired knowledge and experience in saving animal health and protect them against the internal diseases as of his role in society development and community preservation.
- 13) Dealing with scientific researches and animals in the field of study or work with integrity, credibility and according to the rules of profession.
- 14) Continuous self-learning and long life updating of knowledge and development of all aspect of animal internal diseases and related aspects and transferring this experience to others.

4-Programme outcomes [intended learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

- a.1. Recognize recent theories, principles and knowledge in the field of internal medicine.



- a.2. Apply Principles methodologies and ethics of scientific research and its tools in improvement of animal health
- a.3. Define legal and ethical principles of the area of internal medicine.
- a.4. Recognize Principles and the basics of quality assurance the field of internal medicine.
- a.5. Apply knowledge and understanding in the field of internal medicine for enhancing animal health.
- a.6. Recognize the effect of different animal internal diseases on the animal wealth and methods for control.
- a.7. Describe the principles, methodologies and ethics of scientific research of internal medicine.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1. Evaluate and analyze medical information, interpret case history, clinical findings and laboratory investigation in order to reach perfect diagnosis of the cause of internal diseases.
- b.2. Solve professional problems in internal medicine using available data under field or laboratory conditions.
- b.3. Gain and write scientific research that can give significant impact on the control and treatment of diseased animals.
- b.4. Manage scientific research studies in the field of internal disease control.
- b.5. Formulating scientific papers in internal diseases with the ability to match and discuss his own findings with those of other scientists.
- b.6. Share and lead scientific open discussion in the field of internal medicine based on evidences and proofs.
- b.7. Planning to enhance the performance in the laboratory diagnosis advanced modern biotechnology techniques.
- b.8. Decide the possible cause of diseases and therefore suggesting the best control measures for overcoming the problem.
- b.9. Lead a discussion based on medical evidences and proofs including epidemiological data.

c. Practical and professional skills:

At the end of the program, postgraduate will inquire the ability of:



- c.1. Conduct basic and modern professional missions including examination of animal, collection of samples, and performing advanced diagnostic laboratory techniques.
- c.2. Write and assess the professional reports in field of Internal Medicine..
- c.3. Creation of new tests for rapid diagnosis and can apply best control measures.
- c.4. Use modern technological means to serve professional practice.
- c.5. Planning for the improvement of veterinary medicine by applying recent molecular techniques in internal medicine, and developing performance of veterinarians in the field.

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1. Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology in the improvement of professional practice.
- d.2. Utilize information technology to serve professional practice.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements
- d.5. Lead team under different professional circumstances.
- d.6. Use of different sources for obtaining information and knowledge.
- d.7. Manage scientific meetings with the ability to manage time efficiently.
- d.8. Assess himself and life-long learning

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, field visits and seminars.

6-Assessments:

The program depends on different assessment ways:

- a. Course assessment:
 1. Final written exam



- To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
- 2. Practical exam
 - To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
- 3. Oral exam
 - To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.
- b. Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work
- c. PhD Thesis assessment
 - Annual reports adopted by the Faculty.
 - Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
 - Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1,2; b1,2
Oral	a1-2; b1,2
Practical	c1-5
Qualifying Exam	a1-7; b1-9
Thesis	a3-7; b1-9; c1-5; d1-8

7. Program structure

a. Program duration (years):



PhD degree from 3-5 years and it should not exceed a period of six years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law.

b. Program courses:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council so that include 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c-Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d-Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion .

Courses to be studied during pre-detector year

1. Principle courses



One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Internal Diseases include:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Internal diseases	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/ 2	134- Stress diseases during animals transport.		

.2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2



	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2



Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of	1	2



		pet animals		
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition				
	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Pathology				
	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2



	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
		81- Advanced immunology	2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2



	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93 Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96- Wild life parasitology	1	2
	196/2	97- Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107- Chemotherapy	2	2
	207/2	108- Biological evolution of drug	1	1
Hygiene and control of milk and dairy products	208/2	108- Hygienic control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases,	1	1



		hygiene of table egg, edible fats and oils		
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Infectious diseases	235/2	135- Infectious diseases of cattle	2	2
	236/2	136- Infectious diseases of sheep and goat	2	2
	237/2	137- Infectious diseases camel	2	2
	238/2	138 Infectious diseases of equine	2	2
	239/2	139- Infectious diseases of pet animals	2	2
	240/2	140- Infectious diseases lab animals	1	2
	241/2	141- Infectious diseases of udder and newly born animals	2	2
	242/2	142- Infectious diseases buffaloes	2	1



	2			
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3



	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in polutry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2



	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial	2	2



insemination in poultry and rabbits.				
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (**Internal Diseases**) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medical science lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate



& research committee taking into account the provisions of the universities regulation law.

3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.

4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.

5. The applicant should pass written, practical and oral exams successfully in all courses.

6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.

7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.

8. The applicant should submit a seminar (Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).

9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met:Pass



all supplementary curriculums and acceptance of the seminar presented by the applicant.

10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and incase of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.

11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards bit to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.

12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).



2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade	Percentage
Excellent	> 90
Very good	>80



Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
I	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

Program Co-ordinator:

Prof. Dr. Prof. Dr. Medhat Naseef

Head of Department:

Prof. Dr. Ismail Ibrahim



Matching program ILOs with ARS - Matrix

Program ILOs	ARS																											
	K&U (a)					I.S. (b)									P.P. (c)					G.T. (d)								
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7	7	
K&U	1	3			7																							
	2	4	5	6																								
I.S.						1	2	3	4	5	6	7	8	9														
P.P.															1	2	3	4	5									
G.T.																				1	2	3	5	6	7	7		
																				4						8		

ARS for PhD in Veterinary Medical Sciences (Animal Medicine)

1) Graduate attributes

The graduate should have the ability for:

- 1) Designing experiment protocol or choice research point and knowing how to analysis the data and summarized the results.
- 2) Making continuous effort to add knowledge in animal medicine diseases subject through study new points or subjects in animal medicine diseases in either diagnosis, treatment or prevention.
- 3) Using the analytical protocols of animal medicine diseases problems. Criticizing the idea of other researcher in dealing with animal medicine diseases problems either positively or negatively.
- 4) Integrating specialized knowledge with related information about animal medicine diseases aspects and extrapolating their interrelationship.
- 5) Showing wide range of awareness about outbreaks of animal medicine diseases and problems of diagnosis, treatment and prevention of it. As well as new theories in the field of animal medicine diseases.
- 6) Identification of problems and difficulties in diagnosis, treatment and prevention of animal medicine diseases and suggesting innovative solutions such as new diagnostic tools, and new drugs or vaccines for treatment and prevention.
- 7) Using the diagnostic tools in the field and modern diagnostic techniques in the laboratory and able to perform wide range of treatment and control techniques.
- 8) Using the newly modern techniques and methodology either in research study or field practice with diseased animal.
- 9) Using the newly developed software in epidemiological study of different diseases outbreaks and interpreting the laboratory experiments results.
- 10) Leading the work team in the laboratory or the field effectively and in professional manner.
- 11) Taking suitable decision depending on the available data and can support his decision.
- 12) Using the available resources to diagnosis, treatment, and control of animal medicine diseases and creating new resources of the available materials to be used as diagnostic, curative, or prophylactic tools.
- 13) Using the acquired knowledge and experience in saving animal health and protect them against the animal medicine diseases as of his role in society development and community preservation.
- 14) Dealing with scientific researches and animals in the field of study or work with integrity, credibility and according to the rules of profession.
- 15) Continuous self-learning and long life updating of knowledge and development of all aspect of animal medicine diseases and related aspects. Transferring this experience to others.

A) Knowledge and understanding

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Recognizing theories, principles, and the recent data in the field of animal medicine diseases diagnosis, treatment, and prevention as well as the veterinary epidemiology.		Recent theories, principles and knowledge in the field of specialization and related areas
2)	Realizing the legal and ethical basics of scientific research of animal medicine diseases and veterinary epidemiology.		Basics, methodologies and ethics of scientific research and its different tools
3)	Applying the basics and ethics of scientific research in animals medicine diseases and veterinary epidemiology.		Legal and ethical principles of professional practice in the area of specialization
4)	Realizing Principles and basics of quality assurance in practice of veterinary medicine and specially how to deal with animal medicine diseases.		Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Identifying mutual effect between the advance of diagnosis, treatment and control of animal medicine diseases and the environment.		Awareness with the effect of professional practice on the environment and methods of its maintain and development

B) Intellectual skills

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analyzing and evaluate scientific information of animal medicine diseases and veterinary epidemiology scientific research. And summarizing and eliciting from them		Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Finding solutions of problems animals medicine diseases field problems depending on the available resources.		Solving professional problems using available data
3)	Preparing a good research plan to add new knowledge to the field of diagnosis or treatment or control of animals medicine diseases and apply new epidemiological investigation.		Conducting scientific research studies that add to knowledge

4)	Managing scientific arguments and papers based on evidences and proofs.	Formulating scientific papers
5)	Assessing risks related to animals medicine diseases and veterinary epidemiology.	Risk-assessment in the field of specialization
6)	Planning to enhance the performance and practice in field of animal medicine diseases and veterinary epidemiology.	Planning to enhance the performance in field of specialization
7)	Making professional decisions and suggestion for dealing with field problem under different contexts.	Making professional decisions under different professional contexts
8)	Creating new ideas, methods, techniques and new solutions of animal imedicine diseases field problems.	Creation and innovative in the area of specialization
9)	Discussing the obtained results with the findings of previous authors and to explain the encountered differences.	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Adopting basic and new professional skills in animal medicine diseases and veterinary epidemiology.	Mastering basic and modern professional skills in the area of specialization
2)	Writing case report, detailed treatment, and preventive strategies for animal medicine diseases, and evaluating new diagnostics, and control strategies.	Writing and evaluating professional reports
3)	Assessing and improving methods and tools in the field of animal medicine diseases and veterinary epidemiology.	Evaluating and modernizing methods and tools in the area of specialization
4)	Using the new suitable technological methods to provide accurate, good and rapid diagnosis, treatment and control of animal medicine diseases.	Using modern technological means to serve professional practice
5)	Planning to self-continuous development and development of the performance of others.	Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Communicating effectively	Effective communication
2)	Using information technology to serve the survey, diagnosis, treatment and control of animal medicine diseases.	Utilizing information technology to serve development of professional practice
3)	Educating others and assess their performance.	Teaching others and evaluating their performance
4)	Involving self and continuous learning and evaluation.	Self-assessment and continuous learning
5)	Utilizing different sources of knowledge and information.	Using different resources to obtain knowledge and information
6)	Working in team and show leadership skills.	Team working and leading a team in familiar professional contexts
7)	Managing the time efficiently that enable them to organize work.	Management of scientific meetings with the ability to manage time efficiently

ثالثا: برامج الدكتوراه

١ - مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطا و مطورا للعلاقات البيئية بينها
٥. إظهار و عيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حولا مبتكرة لحلها
٧. إتقان نطاقا و اسعا من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تنميتها و العمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصادقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للأخرين

٢ - المعايير القياسية العامة

المعرفة و الفهم:

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا علي الفهم و الدراية بكل من:
أ- النظريات و الأساسيات و الحديث من المعارف في مجال التخصص و المجالات ذات العلاقة

- ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
 - ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
 - ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
 - ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و وطرق تنمية البيئة وصيانتها
- المهارات الذهنية**

- بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
 - ب- حل المشاكل المتخصصة استنادا على المعطيات المتاحة
 - ج- إجراء دراسات بحثية تضيف إلى المعارف
 - د- صياغة أوراق علمية
 - هـ- تقييم المخاطر في الممارسات المهنية
 - و- التخطيط لتطوير الأداء في مجال التخصص
 - ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة
 - ح- الابتكار/ الإبداع
 - ط- الحوار و النقاش المبني على البراهين والأدلة

المهارات المهنية

- بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
 - ب- كتابة و تقييم التقارير المهنية
 - ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
 - د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
 - هـ- التخطيط لتطوير الممارسة المهنية و تنمية أداء الآخرين

المهارات العامة و المنتقلة

- بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- التواصل الفعال بأنواعه المختلفة
 - ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية
 - ت- تعليم الآخرين و تقييم أداءهم
 - ث- التقييم الذاتي و التعلم المستمر
 - ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
 - ح- العمل في فريق و قيادة فرق العمل
 - خ- إدارة اللقاءات العلمية و القدرة على إدارة الوقت



COURSE SPECIFICATION (2021-2022)

1 - Basic Information

- Code number: 225/2
 - Course title: **Progress Medicine**
- Academic Year: PhD of veterinary medicine program
Total teaching hours: 192 h
Lectures: 96 hrs (48 weeks- 2hrs/week)
Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to

Upon successful completion of the course, the student will be able to Diagnose, treat animal diseases.

3 - INTENDED LEARNING OUTCOMES (I. L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1-List different diseases affecting animals.

- A2- Analyze the clinical picture of animal diseases.
- A3- Identify the different methods for data collections.
- A4-Realize the methods used for his scientific research.
- A5-comprehend the general aim for study animal diseases.
- A6- Recognize the different methods of treatment and control of animal diseases.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Plan a schedule for vaccination against animal diseases.
- B2 - Estimate, Identify and evaluate the articles and collected research papers of animal diseases.
- B3- Identify and evaluate clinical reports about animal diseases
- B4-Comment accurately upon the obtained results and discuss these results
- B5-Determine area where further research is necessary

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Distinguished basic laboratory skills for diagnosis of animals diseases.
- C2- Perform relevant statistical analysis on data obtained from own research which support his clinical skills.
- C3- Conduct research project using appropriate range of experimental techniques.
- C4- Apply advanced molecular and serological techniques for diagnosis of animal diseases.

3-D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Handle scientific meetings and time.

D2 -Develop the ethical behaviours between students and staff members as well as among the students themselves.

D3- Gain skills in problem solving

D4- Acquire Communication skills

D5- Attain Information technology skill

D6– Use the continuous self learning (life long learning) strategy

D7- Work in a team work and effective groups

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1-ECG,Enzymatic measuring	4	2	6
2-Ultrasonography.	20	18	38
3- Endoscopy.	16	20	36
4-X-Ray	20	20	40
5-Allergic tests,seriological tests	20	20	40
6. Biochemical analysis	16	16	32
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming.

*** Practical sessions:**

*** Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

*** Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a6	b1 to b5		d1, d7
Practical sessions	a1 to a6	b1 to b5	c1 to c4	d3, d7
Self-Learning activities		b1 to b5	c1 to c4	d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b5	c1 to c4	d1 to d7

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b5		d4
Practical exams			c1 to c4	d2, d3
Oral exams	a1 to a6	b1 to b5		d1
Student activities	a1, a6		c1 to c4	d1 to d7

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential books (text books)

- Radostits O.M., Blood D.C. and Gay C.C. (2007): Veterinary Medicine, 9th Ed. Baillere Tindall, London.
- Gosden, C. (2004): "Exotics and Wildlife- a manual of Veterinary nursing care." British library cataloguing in publication Data
- Matwichuk, C. L., Daniel, G.B., De Novo, R.C., Schultze, A.E., Schnidt, D.E. and Creevy, K.E. (2000): Veterinary Radiology and Ultrasound, 41(1): 78-84.



- Jameson, L., Fauci, A and Kasper, D . (2018): Harrison's Principles of Internal Medicine, 20th Ed.
- Noli, C ,Foster, A and Rosenkrantz, Wayne.(2014): Veterinary Allergy ,First Ed.

8.2.: web sites and journals

- esarf.tripod.com/index.html.
- WWW.PubMed.com
- International of veterinary information services (IVIS)
- www.Vet.net.com
- Journal of zoo and wild life medicine
- Journal of animal science
- British journal of animal science

Course Coordinator

Dr. Naglaa gomaa

Head of Department

Prof.Dr.Medhat Nassif



xxCourse Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding						Intellectual Skills					Practical & Professional Skills				General & Transferable Skills							
			1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	1	2	3	4	5	6	7	
1	1-ECG,Enzymatic measuring	6	x		x		x		x		x				x		x		x			x		x	x
2	2-Ultrasonography.	38			x		x	x		x			x	x	x		x		x			x			
3	3- Endoscopy.	36	x			x	x		x	x	x			x			x			x			x		x
4	4-X-Ray	40	x				x		x	x	x			x		x						x		x	x
5	5-Allergic tests,seriological tests	40		x		x	x		x	x	x			x	x	x		x	x			x		x	x
6	6. Biochemical analysis	32		x			x			x			x	x			x							x	x

COURSE SPECIFICATION (2021-2022)

1 - Basic Information

Code number: 227/2

Course title: *diseases of Equine*

Academic Year: PhD of veterinary medicine program

Total teaching hours: 192 h

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to
To provide student with basic knowledge and skills concerning Diseases of equine. Provide PhD students with the skills of data collection in the field of pet animal diseases to enhance the self-learning skills through a series of research assays

3 - INTENDED LEARNING OUTCOMES (I. L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Analyze the advanced clinical picture of Equine diseases.
- A2-Know the economic impact of these diseases on nation income.
- A3- Identify the different methods for data collections.
- A4-Realize the methods used for his scientific research.
- A5-comprehend the general aim for study equine diseases.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Differentiate between different Equine diseases.
- B2 - Estimate, Identify and evaluate the articles and collected research papers of equine diseases.
- B3-Criticize and Assess their own research data regarding the research area.
- B4-Comment accurately upon the obtained results and discuss these results
- B5- Estimate and measure epidemiological data by analytical epidemiology

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Distinguished advanced laboratory skills for diagnosis of Equine diseases.
- C2- Perform relevant statistical analysis on data obtained from own research which support his clinical skills.
- C3- Conduct research project using appropriate range of experimental techniques.

3-D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1- Handle scientific meetings and time.
- D2 -Develop the ethical behaviours between students and staff members as well as among the students themselves.
- D3- Gain skills in problem solving

- D4- Acquire Communication skills
- D5- Attain Information technology skill
- D6- Use the continuous self learning (life long learning) strategy
- D7- Work in a team work and effective groups
- D8- Get discussion skills
- D9- Manage research teams in the field of Equine diseases

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Diseases of digestive system in equine	4	2	6
2. Diseases of respiratory system in equine	20	18	38
3. Diseases of musculoskeletal system in equine	16	20	36
4. Diseases of urinary system in equine	20	20	40
5. Diseases of cardiovascular system in equine	20	20	40
6. Skin diseases in equine	16	16	32
Total	96	96	192

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming.
- * **Practical sessions:**
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about poultry or dairy operations
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d9
Practical sessions	a1 to a5	b1 to b5	c1 to c3	d3, d9
Self-Learning activities	a1 to a5		c1 to c3	d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c3	d1 to d9

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- * Activation of office hours.
- * Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b5	c1 to c3	d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a5	b1 to b5		d1
Student activities	a1, a5		c1 to c3	d1 to d9

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential books (text books)

- Radostits O.M., Blood D.C. and Gay C.C. (2007): Veterinary Medicine, 9th Ed. Baillere Tindall, London.
- Smith B.P , Van Metre. and pusterla,N . (2019): Large Animal INTERNAL MEDICINE ,Sixth Ed.
- Matwichuk, C. L., Daniel, G.B., De Novo, R.C., Schultze, A.E., Schnidt, D.E. and Creevy, K.E. (2000): Veterinary Radiology and Ultrasound, 41(1): 78-84.
- Jameson, L., Fauci, A and Kasper,D . (2018): Harrison's Principles of Internal Medicine, 20th Ed.
- Noli, C ,Foster, A and Rosenkrantz, Wayne.(2014): Veterinary Allergy ,First Ed.

8.2.: web sites and jouranls

- esarf.tripod.com/index.html.
- WWW.PubMed.com
- International of veterinary information services (IVIS)
- www.Vet.net.com
- Journal of animal science
- British journal of animal science
- American Journal of Veterinary Medical Association

Course Coordinator

Head of Department



Dr. Naglaa goma

Prof.Dr.Medhat Nassif

COURSE SPECIFICATION (2021-2022)

1 - Basic Information

Code number: 228/2

Course title: Diseases of pet animals

Academic Year: PhD of veterinary medicine program

Total teaching hours: 192 h

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to
To provide student with basic knowledge and skills concerning Diseases in pet animals. Provide PhD students with the skills of data collection in the field of pet animal diseases to enhance the self-learning skills through a series of research assays.

3 - INTENDED LEARNING OUTCOMES (I. L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1-Realize the different causes of pet animal medicine diseases.

A2-Analyze with clinical picture of pet animal medicine diseases.

• A3- Identify the different methods for data collections.

• A4-Recognize the methods used for his scientific research.

• A5- Distinguished the different methods of treatment and control of Pet animal diseases.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

• B1- Differentiate between different Pet animal diseases

• B2 - Select the proper suitable and economic line of treatment

• B3-Differentiate between different pet animal medicines diseases.

• B4-Comment accurately upon the obtained results and discuss these results

• B5-Determine area where further research is necessary

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

• *By the end of the course, students should be able to:*

• C1- Distinguished basic laboratory skills for diagnosis of pet animal medicine diseases.

• C2- Apply clinical examination and proper sampling from diseased animals.

• C3- Conduct research project using appropriate range of experimental techniques.

3-D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Manage research teams in the field of Pet animal diseases

D2 -Develop the ethical behaviours between students and staff members as well as among the students themselves.

D3- Gain skills in problem solving

D4- Acquire Communication skills

D5- Attain Information technology skill

D6–Use the continuous self learning (life long learning) strategy

D7- Work in a team work and effective groups

D8- Get discussion skills

D9- Handel the negotiation skills

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Diseases of digestive system in pet	4	2	6
2. Diseases of respiratory system in pet	20	18	38
3. Diseases of musculoskeletal system in pet	16	20	36
4. Diseases of urinary system in pet	20	20	40
5. Diseases of cardiovascular system in pet	20	20	40
6. Skin diseases in pet	16	16	32
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming.

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d9
Practical sessions		b1 to b5	c1 to c3	d3, d9
Self-Learning activities	a3 to a5		c1 o c3	d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c3	d1 to d9

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities



7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b5	C 1 to c3	d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a5	b1 to b5		d1
Student activities	a1, a5			d1 to d9

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential books (text books)

- Paterson, D. (2008): "Skin Diseases of the Dog
- Nelson, R. W., Couto, C. G. (2019): Small Animal INTERNAL MEDICINE, Sixth Ed.
- Kealy, J.K. and McAllister, H. (2005): Textbook of Diagnostic Radiology, ultrasonography of the dog and cat, 4th ed.: 1-19.
- Matwichuk, C. L., Daniel, G.B., De Novo, R.C., Schultze, A.E., Schnidt, D.E. and Creevy, K.E. (2000): Veterinary Radiology and Ultrasound, 41(1): 78-84.
- Jameson, L., Fauci, A and Kasper, D. (2018): Harrison's Principles of Internal Medicine, 20th Ed.

8.2.: web sites and journals

- esarf.tripod.com/index.html.
- WWW.PubMed.com
- International of veterinary information services (IVIS)
- www.Vet.net.com
- Journal of animal science
- British journal of animal science
- American journal of veterinary research

Course Coordinator

Dr. Naglaa gomaa

Head of Department

Prof.Dr.Medhat Nassif

xxCourse Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills			General & Transferable Skills									
			1	2	3	4	5	1	2	3	4	5	1	2	3	1	2	3	4	5	6	7	8	9	
1	1. Diseases of digestive system in pet	6	X	X	X				X	X				X	X	X		X	X		X		X	X	X
2	2. Diseases of respiratory system in pet	38	X		X			X			X	X	X	X	X	X		X			X	X	X	X	X
3	3. Diseases of musculoskeletal system in pet	36	X			X		X	X			X	X		X		X			X		X	X		
4	4. Diseases of urinary system in pet	40	X		X			X	X	X			X	X	X		X			X		X	X	X	X
5	5. Diseases of cardiovascular system in pet	40		X		X	X	X	X	X			X	X	X		X	X		X		X	X	X	X
6	6. Skin diseases in pet	32	X	X				X			X	X			X		X					X	X	X	X



COURSE SPECIFICATION (2021-2022)

1 - Basic Information

Code number: 229/2

Course title: **Diseases of Ruminants**

Academic Year: PhD of veterinary medicine program

Total teaching hours: 288 hrs

Lectures: 144hrs (48 weeks- 3hrs/week)

Practical: 144hrs (48 weeks- 3hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to

Upon successful completion of the course, the student will be able to Diagnose, treat ruminant diseases.

3 - INTENDED LEARNING OUTCOMES (I. L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Recognize different methods of diagnosis, treatment and control of ruminant medicine diseases.

A2 Define with clinical picture of ruminant medicine diseases. .

- A3- Explain the pathogenesis of Ruminant medicine diseases
- A4- Realize the methods used for his scientific research.
- A5- Trace the different causes of medicine diseases in ruminant.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Differentiate between different medicine diseases of ruminant.
- B2 - Select the most suitable and economic line of treatment
- B3- Analyze and evaluate clinical reports about ruminant medicine diseases
- B4- Comment accurately upon the obtained results and discuss these results
- B5- Plan accurate schedule for vaccination against ruminant disease

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Practice clinical examination and proper sampling from diseased ruminant.
- C2- Handle basic laboratory skills for diagnosis of ruminant diseases.
- C3- Apply prevention and control strategy for ruminant diseases

3-D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Utilize computer and internet skills.

D2 -Develop the ethical behaviours between students and staff members as well as among the students themselves.

D3- Gain skills in problem solving

D4- Acquire Communication skills

D5- Attain Information technology skill

D6- Use the continuous self learning (life long learning) strategy

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Diseases of digestive system in ruminant	24	24	48
2. Diseases of respiratory system in ruminant	24	24	48
3. Diseases of musculoskeletal system in ruminant	24	24	48
4. Diseases of urinary system in ruminant	24	24	48
5. Diseases of cardiovascular system in ruminant	24	24	48
6. Skin diseases in ruminant	24	24	48
Total	144	144	288

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming.

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures *	a1 to a5	b1 to b5		d1, d6
Practical sessions		b1 to b5	c1 to c3	d3, d6
Self-Learning activities	a1 to a5		C1 to c3	d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c3	d1 to d6

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b5		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a5	b1 to b5		d1
Student activities	a1, a5	B1 to b4	C1 to c3	d1 to d6

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential books (text books)

- Radostits O.M., Blood D.C. and Gay C.C. (2007): Veterinary Medicine, 9th Ed. Baillere Tindall, London.
- Smith B.P , Van Metre. and pusterla,N . (2019): Large Animal INTERNAL MEDICINE ,Sixth Ed.
- Matwichuk, C. L., Daniel, G.B., De Novo, R.C., Schultze, A.E., Schnidt, D.E. and Creevy, K.E. (2000): Veterinary Radiology and Ultrasound, 41(1): 78-84.
- Jameson, L., Fauci, A and Kasper,D . (2018): Harrison's Principles of Internal Medicine, 20th Ed.
- Noli, C ,Foster, A and Rosenkrantz, W.(2014): Veterinary Allergy ,First Ed.

8.2.: web sites and jouranls

- esarf.tripod.com/index.html.
- WWW.PubMed.com
- International of veterinary information services (IVIS)
- www.Vet.net.com
- Journal of animal science
- British journal of animal science

Course Coordinator

Dr. Naglaa goma

Head of Department

Prof.Dr.Medhat Nassif

xxCourse Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills			General & Transferable Skills							
			1	2	3	4	5	1	2	3	4	5	1	2	3	1	2	3	4	5	6		
1	1. Diseases of digestive system in ruminant	48			X		X		X	X				X			X		X	X		X	X
2	2. Diseases of respiratory system in ruminant	48	X		X			X				X	X	X	X			X					X
3	3. Diseases of musculoskeletal system in ruminant	48		X		X		X	X			X		X	X		X	X					X
4	4. Diseases of urinary system in	48	X			X		X	X	X			X	X	X		X	X				X	
5	5. Diseases of cardiovascular system in ruminant	48	X	X				X	X	X			X	X	X		X	X				X	
6	6. Skin diseases in ruminant	48		X				X			X	X			X		X	X	X				X



COURSE SPECIFICATION (2021-2022)

1 - Basic Information

Code number: 230/2

Course title: *Metabolic diseases*

Academic Year: PhD of veterinary medicine program

Total teaching hours: 192 h

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to
Upon successful completion of the course, the student will be able to Diagnose, treat metabolic diseases.

3 - INTENDED LEARNING OUTCOMES (I. L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Analyze the advanced clinical picture of Metabolic diseases.

- A2- Explain the pathogenesis of Metabolic diseases.
- A3- Identify the different methods for data collections.
- A4-Realize the methods used for his scientific research
- A5-comprehend the general aim for study metabolic diseases.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Differentiate between different Metabolic diseases
- B2 - Estimate, Identify and evaluate the articles and collected research papers of metabolic diseases
- B3-Criticize and Assess their own research data regarding the research area
- B4-Comment accurately upon the obtained results and discuss these results
- B5-Determine area where further research is necessary

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Perform clinical examination and proper sampling from diseased animals
- C2- Handle advanced molecular and serological techniques for diagnosis of Metabolic diseases.
- C3- Conduct research project using appropriate range of experimental techniques.

3-D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Formulate scientific meetings and time.

D2 -Develop the ethical behaviours between students and staff members as well as among the students themselves.

D3- Gain skills in problem solving

- D4- Acquire Communication skills
- D5- Attain Information technology skill
- D6- Use the continuous self learning (life long learning) strategy
- D7- Work in a team work and effective groups
- D8- Get discussion skills
- D9- Communicate effectively

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Introduction and course description	4	2	6
2. Parturient paresis, Parturient paresis in ewes, Lactation tetany of mares, Downer cow syndromes,	16	20	36
3-Hypomagnesaemic tetany, Hypomagnesaemic tetany of calf,	20	24	44
4- Post-parturient haemoglobinuria	20	34	54
5. Bovine ketosis, Ovine ketosis, Paralytic myoglobinuria	36	16	52
Total	96	96	192

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming.
- * **Practical sessions:**
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about poultry or dairy operations
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5	C1 to c3	d1, d9
Practical sessions		b1 to b5	c1 to c3	d3, d9
Self-Learning activities	a1 to a5	B1 , b5		d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c3	d1 to d9

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
6.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b5	C 2 ,c3	d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a5	b1 to b5		d1
Student activities	a1, a5		C1 to c3	d1 to d9

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential books (text books)

- Noli, C ,Foster, A and Rosenkrantz, Wayne.(2014): Veterinary Allergy ,First Ed.
 - Radostits O.M., Blood D.C. and Gay C.C. (2007): Veterinary Medicine, 9th Ed. Baillere Tindall, London.
 - Smith B.P , Van Metre. and pusterla,N . (2019): Large Animal INTERNAL MEDICINE ,Sixth Ed.
 - Kealy, J.K. and McAllister, H. (2005): Textbook of Diagnostic Radiology, ultrasonography of the dog and cat, 4th ed.: 1-19.
 - Matwichuk, C. L., Daniel, G.B., De Novo, R.C., Schultze, A.E., Schnidt, D.E. and Creevy, K.E. (2000): Veterinary Radiology and Ultrasound, 41(1): 78-84.
- Jameson, L., Fauci, A and Kasper,D . (2018): Harrison's Principles of Internal Medicine, 20th Ed

8.2.: web sites and jounanls

- google.Com
- arabvet.com
- esarf.tripod.com/index.html.
- Journal of Animal Science
- American Journal of Veterinary Research

. 8.3 : Periodicals, Web sites, etc..

- 8.3WWW.PubMed.com
- International of veterinary information services (IVIS)
- **www.Vet.net.com**



Course Coordinator

Dr. Naglaa gomaa

Head of Department

Prof.Dr.Medhat Nassif

Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills			General & Transferable Skills									
			1	2	3	4	5	1	2	3	4	5	1	2	3	1	2	3	4	5	6	7	8	9	
1	1. Introduction and course description	6	X											X	X	X	X				X	X	X	X	X
2	2. Parturient paresis, Parturient paresis in ewes, Lactation tetany of mares, Downer cow syndromes,	36	X				X		X	X	X			X	X		X		X			X	X	X	X
3	3. Hypomagnesaemic tetany, Hypomagnesaemic tetany of calf,	44		X					X	X	X			X	X	X	X		X			X	X	X	X
4	4. Post-parturient haemoglobinuria,	54		X								X		X			X				X		X	X	X
5	5. Bovine ketosis, Ovine ketosis, Paralytic myoglobinuria	52			X	X			X	X	X			X	X		X	X		X		X	X	X	X

COURSE SPECIFICATION (2021-2022)

1 - Basic Information

Code number: 231/2

Course title: Nutritional Deficiency Diseases

Academic Year: PhD of veterinary medicine program

Total teaching hours: 192 h

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to.
Upon successful completion of the course, the student will be able to Diagnose, treat nutritional deficiency diseases .

3 - INTENDED LEARNING OUTCOMES (I. L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1-Be aware with advanced clinical picture of Nutritional deficiency diseases.

- A2- Become familiar with different methods of treatment and control of Nutritional deficiency diseases.
- A3- Identify the different methods for data collections.
- A4-Realize the methods used for his scientific research
- A5-comprehend the general aim for study nutritional diseases.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Write and evaluate clinical reports about Nutritional deficiency diseases
- B2-Select the most suitable and economic line of treatment
- B3- Identify and evaluate clinical reports about Nutritional deficiency Diseases
- B4- Estimate and measure epidemiological data by analytical epidemiology
- B5-Determine area where further research is necessary

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Perform clinical examination and proper sampling from diseased animals
- C2- Distinguished basic laboratory skills for diagnosis of Nutritional deficiency Diseases
- C3- Carry out advanced molecular tests for diagnosis of Nutritional deficiency diseases.

3-D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Manage scientific meetings and time.

D2 – Secure research teams in the field of Nutritional deficiency diseases.

D3- Gain skills in problem solving

D4- Acquire Communication skills

D5- Attain Information technology skill

D6– Use the continuous self learning (life long learning) strategy

D7- Work in a team work and effective groups

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Deficiency of vitamin A	4	2	6
2. Deficiency of Vitamin E and Selenium	16	20	36
3-Hypomagnesaemic tetany, Hypomagnesaemic tetany of calf,	20	24	44
4- Copper and Zinc deficiency	20	34	54
5. <i>general</i> Nutritional deficiency Diseases examination	36	16	52
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming.

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d7
Practical sessions		b1 to b5	c1 to c3	d3, d7
Self-Learning activities	a1 to a5		C1 to c3	d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c3	d1 to d7

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b5		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a5	b1 to b5		d1
Student activities	a1, a5		C1 to c3	d1 to d7

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential books (text books)

- Radostits O.M., Blood D.C. and Gay C.C. (2007): Veterinary Medicine, 9th Ed. Baillere Tindall, London.
- Smith B.P , Van Metre. and pusterla,N . (2019): Large Animal INTERNAL MEDICINE ,Sixth Ed.
- Kealy, J.K. and McAllister, H. (2005): Textbook of Diagnostic Radiology, ultrasonography of the dog and cat, 4th ed.: 1-19.
- Matwichuk, C. L., Daniel, G.B., De Novo, R.C., Schultze, A.E., Schnidt, D.E. and Creevy, K.E. (2000): Veterinary Radiology and Ultrasound, 41(1): 78-84.

Jameson, L., Fauci, A and Kasper,D . (2018): Harrison's Principles of Internal Medicine, 20th Ed

8.2.: web sites and jouranls

- google.Com
- Journal of Animal Science.
- <http://www.merckvetmanual.com/mvm/index.jsp>
- arabvet.com
- esarf.tripod.com/index.html.
- 3WWW.PubMed.com
- International of veterinary information services (IVIS)
- www.Vet.net.com

Course Coordinator

Dr. Naglaa gomaa

Head of Department

Prof.Dr.Medhat Nassif

Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills			General & Transferable Skills							
			1	2	3	4	5	1	2	3	4	5	1	2	3	1	2	3	4	5	6	7	
1	1. Deficiency of vitamin A	6	X		X			X	X	X				X	X	X	X		X		X	X	
2	2. Deficiency of Vitamin E and Selenium	36	X				X		X	X	X			X	X		X		X		X		X
3	3-Hypomagnesaemic tetany, Hypomagnesaemic tetany of calf,	44	X	X		X	X	X	X	X			X	X	X	X		X	X	X			X
4	4- Cupper and Zinc deficiency	54		X		X	X		X	X		X	X		X		X			X			X
5	5. general Nutritional deficiency Diseases examination	52	X		X	X			X	X	X			X	X		X	X		X			X

COURSE SPECIFICATION (2021-2022)

1 - Basic Information

Code number: 232/2

Course title: **Skin Diseases**

Academic Year: PhD of veterinary medicine program

Total teaching hours: 144 h

Lectures: 48 hrs (48 weeks- 1hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to.

Upon successful completion of the course, the student will be able to Diagnose, treat Skin Diseases.

3 - INTENDED LEARNING OUTCOMES (I. L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Identify different methods of treatment and control of Skin diseases.

- A2- Analyze the clinical picture of skin diseases
- A3- Explain the pathogenesis of skin diseases
- A4- Realize the methods used for his scientific research.
- A5- comprehend the general aim for study skin diseases.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Select the proper suitable and economic line of treatment
- B2 - Differentiate between different skin diseases
- B3- Detect and evaluate clinical reports about Skin diseases
- B4- Comment accurately upon the obtained results and discuss these results
- B5- Determine area where further research is necessary

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Perform clinical examination and proper sampling from diseased animals
- C2- Distinguished basic laboratory skills for diagnosis of skin diseases
- C3- Handle advanced molecular and serological techniques for diagnosis of Skin diseases.

3-D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Formulate scientific meetings and time

D2 -Develop the ethical behaviours between students and staff members as well as among the students themselves.

D3- Gain skills in problem solving

D4- Acquire Communication skills

D5- Attain Information technology skill

D6- Use the continuous self learning (life long learning) strategy

D7- Work in a team work and effective groups

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1- Focal cutaneous hypoplasia and subcutaneous hypoplasia	8	2	10
2- Photosensitization, Alopecia and Dermatitis	8	18	26
3- general examination of the skin	8	20	28
4- Diagnosis of skin diseases and Treatment	8	20	28
5- allergic tests	8	20	28
6- prognosis of skin diseases	8	16	24
Total	48	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming.

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*		b1 to b5	c1 to c3	d1, d7
Practical sessions	a1 to a2	b1 to b5	c1 to c3	d3, d7
Self-Learning activities	a1 to a2			d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c3	d1 to d7

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year



7.c grads	50	20	20	10
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6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b2,b5	C1 to c3	d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a5	b1 to b5		d1
Student activities	a1, a5	b1 to b5	C1 to c3	d1 to d7

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential books (text books)

- Radostits O.M., Blood D.C. and Gay C.C. (2007): Veterinary Medicine, 9th Ed. Baillere Tindall, London.
- Smith B.P , Van Metre. and pusterla,N . (2019): Large Animal INTERNAL MEDICINE ,Sixth Ed.
- Kealy, J.K. and McAllister, H. (2005): Textbook of Diagnostic Radiology, ultrasonography of the dog and cat, 4th ed.: 1-19.
- Jameson, L., Fauci, A and Kasper,D . (2018): Harrison's Principles of Internal Medicine, 20th Ed.
- Noli, C ,Foster, A and Rosenkrantz, Wayne.(2014): Veterinary Allergy ,First Ed.

8.2.: web sites and jouranls

- esarf.tripod.com/index.html.
- WWW.PubMed.com
- International of veterinary information services (IVIS)
- www.Vet.net.com
- Journal of animal science
- British journal of animal science

Course Coordinator

Dr. Naglaa goma

Head of Department

Prof.Dr.Medhat Nassif

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	Topics	Hours	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills			General & Transferable Skills								
			1	2	3	4	5	1	2	3	4	5	1	2	3	1	2	3	4	5	6	7		
1	1- Focal cutaneous hypoplasia and subcutaneous hypoplasia	10	x		x	x	x		x	x				x		x			x	x		x		x
2	2- Photosensitization, Alopecia and Dermatitis	26	x		x				x				x	x	x	x	x						x	
3	3- general examination of the skin	28		x		x	x		x	x			x	x			x				x			x
4	4- Diagnosis of skin diseases and treatment	28	x	x		x			x	x	x			x	x	x		x				x		x
5	5- allergic tests	28		x	x	x			x	x	x			x	x			x	x			x		x
6	6- prognosis of skin diseases	24		x					x			x		x		x	x				x			x

COURSE SPECIFICATION (2021-2022)

1 - Basic Information

- Code number: 233/2
 - Course title: **Diseases of Newly Born Animals**
- Academic Year: PhD of veterinary medicine program
Total teaching hours: 144 hrs
Lectures: 48 hrs (48 weeks- 1hrs/week)
Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to.

Upon successful completion of the course, the student will be able to Diagnose, treat Newly Born Animal Diseases.

3 - INTENDED LEARNING OUTCOMES (I. L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Recognize the advanced laboratory techniques for diagnosis of Newly borne diseases.

- A2- Analyze the clinical picture of newly born diseases
- A3- Explain the pathogenesis of newly born animal diseases
- A4- Realize the methods used for his scientific research.
- A5- Identify different methods of treatment and control of Newly borne diseases

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Select the proper suitable and economic line of treatment
- B2 - Differentiate between different newly born diseases
- B3- Detect and evaluate clinical reports about Newly borne diseases
- B4- Comment accurately upon the obtained results and discuss these results
- B5- Determine area where further research is necessary

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Apply prevention and control strategy for Newly borne diseases
- C2- Distinguished basic laboratory skills for diagnosis of newly born diseases
- C3- Conduct research project using appropriate range of experimental techniques.

3-D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Formulate scientific meetings and time

D2 -Develop the ethical behaviours between students and staff members as well as among the students themselves.

D3- Gain skills in problem solving

D4- Acquire Communication skills

D5- Attain Information technology skill

D6- Use the continuous self learning (life long learning) strategy

D7- Work in a team work and effective groups

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1- Mycotic abomasitis and Navel Ill	8	2	10
2- general examination of newly born animal	8	18	26
3- Diagnosis of newly born diseases	8	20	28
4- Dehydration and Diarrhea	8	20	28
5-Biochemical analysis	8	20	28
6-CBC	8	16	24
Total	48	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming.

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5	c1 to c3	d1, d7
Practical sessions	a1 to a2		c1 to c3	d3, d7
Self-Learning activities		b1 to b5	c1 to c3	d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5		d1 to d7

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities



7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams		b1 to b5	C1 to c3	d4 , d5
Practical exams	a1 to a5		c1 to c3	d2, d3
Oral exams	a1 to a5	b1 to b5		d1
Student activities			C1 to c3	d1 to d7

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential books (text books)

- Radostits O.M., Blood D.C. and Gay C.C. (2007): Veterinary Medicine, 9th Ed. Baillere Tindall, London.
- Hungerford, T.G.(2010): "Diseases of Livestock." McGraw W. Hill, Book Co. Sydney
- Kealy, J.K. and McAllister, H. (2005): Textbook of Diagnostic Radiology, ultrasonography of the dog and cat, 4th ed.: 1-19.
- Jameson, L., Fauci, A and Kasper,D . (2018): Harrison's Principles of Internal Medicine, 20th Ed.
- Noli, C ,Foster, A and Rosenkrantz, Wayne.(2014): Veterinary Allergy ,First Ed.

8.2.: web sites and jouranls

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- International of veterinary information services (IVIS)
- www.Vet.net.com
- Journal of animal science
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	Topics	Hours	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills			General & Transferable Skills							
			1	2	3	4	5	1	2	3	4	5	1	2	3	1	2	3	4	5	6	7	
1	1- Mycotic abomasitis and Navel Ill	10	x	x	x	x			x	x				x	x	x		x	x		x	x	
2	2- general examination of newly born animal	26	x		x				x			x	x	x	x		x				x		
3	3- <i>Diagnosis of newly born diseases</i>	28	x			x			x	x			x	x		x		x	x			x	
4	4- Dehydration and Diarrhea	28	x						x	x	x			x	x		x				x		x
5	5-Biochemical analysis	28		x					x	x	x			x	x		x	x			x		x
6	6-CBC	24		x					x			x	x			x				x			x

COURSE SPECIFICATION (2021-2022)

1 - Basic Information

Code number: 234/2

Course title: **Wild Animal Medicine**

Academic Year: PhD of veterinary medicine program

Total teaching hours: 192 h

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to

Upon successful completion of the course, the student will be able to Diagnose, treat wild animal diseases.

3 - INTENDED LEARNING OUTCOMES (I. L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Realize the different causes of Zoo and wild animal diseases.

• A2- Analyze the clinical picture of wild and zoo medicine diseases.

• A3- Identify the different methods for data collections.

• A4-Recognize the methods used for his scientific research.

• A5-comprehend the general aim for study wild animal diseases.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

• B1- Differentiate between different Zoo and wild diseases

• B2-Estimate, Identify and evaluate the articles and collected research papers of equine diseases

• B3- Identify and evaluate clinical reports about wild and zoo medicine diseases

• B4-Comment accurately upon the obtained results and discuss these results

• B5-Determine area where further research is necessary

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

• C1- Handle advanced molecular and serological techniques for diagnosis of Zoo and wild diseases.

• C2- Manipulate advanced molecular tests for diagnosis of Zoo and wild diseases.

• C3- Conduct research project using appropriate range of experimental techniques.

3-D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Evolve research teams in the field of Zoo and wild diseases.

D2 -Develop the ethical behaviours between students and staff members as well as among the students themselves.

D3- Handle scientific meetings and time

D4- Acquire Communication skills

D5- Attain Information technology skill

D6- Use the continuous self learning (life long learning) strategy

D7- Work in a team work and effective groups

D8- Get discussion skills

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
<u>Diseases of Non-human Primates</u>	4	2	6
<u>Diseases of Felidae</u>	20	18	38
<u>Diseases of Wild Dogs and Hyenas</u>	16	20	36
<u>Diseases of Bears</u>	20	20	40
<u>Diseases of Artiodactyla</u>	20	20	40
<i>General</i> wild and zoo examination	16	16	32
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming.

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*		b1 to b5		d1, d8
Practical sessions	a1 to a5	b1 to b5	c1 to c3	d3, d8
Self-Learning activities	a1 to a5		c1 to c3	d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c3	d1 to d8

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written	Oral examination	Practical examination	Activities
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	examination			
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b5		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a5	b1 to b5		d1
Student activities	a1, a5	b1 to b5	c1 to c3	d1 to d8

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

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- Gosden, C. (2004): "Exotics and Wildlife- a manual of Veterinary nursing care." British library cataloguing in publication Data
- Matwichuk, C. L., Daniel, G.B., De Novo, R.C., Schultze, A.E., Schnidt, D.E. and Creevy, K.E. (2000): Veterinary Radiology and Ultrasound, 41(1): 78-84.
- Jameson, L., Fauci, A and Kasper, D . (2018): Harrison's Principles of Internal Medicine, 20th Ed.
- Noli, C ,Foster, A and Rosenkrantz, Wayne.(2014): Veterinary Allergy ,First Ed.

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- WWW.PubMed.com
- International of veterinary information services (IVIS)
- www.Vet.net.com
- Journal of zoo and wild life medicine
- Journal of animal science
- British journal of animal science

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	Topics	Hours	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills			General & Transferable Skills								
			1	2	3	4	5	1	2	3	4	5	1	2	3	1	2	3	4	5	6	7	8	
1	<u>Diseases of Non-human Primates</u>	6	X						X	X				X		X		X			X		X	X
2	<u>Diseases of Felidae</u>	38			X				X			X		X	X		X		X			X		
3	<u>Diseases of Wild Dogs and Hyenas</u>	36				X			X	X				X			X			X			X	X
4	<u>Diseases of Bears</u>	40	X						X	X	X			X		X					X		X	X
5	<u>Diseases of Artiodactyla</u>	40		X					X	X	X			X	X		X	X		X			X	X
6	<i>General wild and zoo examination</i>	32		X					X			X		X			X						X	X



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Pathology

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy

(Pathology)



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Pathology

Program Specification for PhD Degree

(2021-2022)

A- Administrative information:

- 1- Awarding Body:** Kafrelsheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Pathology
- 4- Program Title:** PhD Degree in Veterinary Medicine (Pathology)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years

B- Professional information:

1- Aims of the Program:

This PhD program aim is to render the postgraduate able to:

- Allow graduate to create new knowledge and understanding in Pathology through the process of research and inquiry.
- Enable graduate to achieve competency in modern technology
- Provide the graduate with the opportunity to develop communication skills, recent techniques and tools in the field of Pathology and experience of scientific research skills.
- Giving the graduate the ability to be creative to advance Pathology through new scientific research.

- Enable graduate to achieve capability in modern technology to develop practical research project.
- Demonstrate an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and present their own research data for the improvement of the animal health.
- Have the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibit awareness about current pathological problems and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of Pathology.

2- Academic standards:

Academic reference standards (ARS) adopted by the faculty committee No (1) 14/9/2014

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Mastering the basics and methodologies of scientific research in pathology for better diagnosis of veterinary diseases.
- 2) Performing continuous effort to add knowledge about diagnosis of different diseases.
- 3) Analysis macroscopical and microscopical findings concerning large

- animal, poultry or fish affections.
- 4) Integrating data collected from farms with related laboratory findings to reach the accurate diagnosis of diseases.
 - 5) Showing deep awareness with the ongoing pathological problems and modern theories in diagnosing infectious and non-infectious diseases.
 - 6) Identifying the main causes of animal infections and suggesting the appropriate methods of animal protection.
 - 7) Mastering of a wide range of professional skills in pathology laboratory and modern pathological techniques performed for measuring mechanism of action of pathogenic and non-pathogenic insults.
 - 8) Acquiring trends towards developing modern methods and tools in diagnostic pathology.
 - 9) Using appropriate technological means including molecular pathology, IHC, ISH to serve professional practice.
 - 10) Communicating effectively with, pathologists, students and colleagues and leading work team through professional scale.
 - 11) Making decision in different professional situations especially under field conditions to deal with epidemic issues.
 - 12) Using of the available resources efficiently in the development of new techniques and work to find new resources.
 - 13) Being aware with his role in society development and community preservation from toxicants and animal pathogens.
 - 14) Acting with integrity, credibility and according to the rules of profession.
 - 15) Realizing the importance of self and life-long learning and progress.

4-Programme outcomes [intended learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

- a.1. Define recent theories, principles and knowledge in identifying the pathogenesis of different animal diseases in the field of pathology and related fields.
- a.2. Describe principles, methodologies and ethics of scientific research and its tools including using laboratory animals in pathological research and legal ways for extrapolation of research findings of other pathologists.
- a.3. Classify legal and ethical principles of dealing with pathologic cases.
- a.4. Recognize principles and the basics of quality assurance in laboratory examination of tissues under light and electron microscope.
- a.5. Outline the effect of different pathogens and toxicants on the environment and methods of prevention of environmental pollution.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1. Analyze and evaluate information about gross and microscopic alterations caused by different causes.
- b.2. Distinguish professional problems in pathology using available data under field or laboratory conditions.
- b.3. Perform scientific research studies that can give significant impact on the diagnosis of different diseases.
- b.4. Formulating scientific papers in pathology with the ability to match and discuss his findings with those of other scientists.
- b.5. Outline risks of infectious and non infectious agents.
- b.6. Planning to enhance the performance in the laboratory diagnosis of different diseases.
- b.7. Make professional decisions about the nature of disease and suggesting further investigations and search for new evidences.
- b.8. Trying new staining methods and immunopathologic techniques for detection of fine pathological alterations
- b.9. Lead a discussion based on pathological evidences to reach a perfect diagnosis of animal problems.

c. Practical and professional skills:

At the end of the program, postgraduate will inquire the ability of:

- c.1.** Develop basic and modern professional skills concerning tissue examination in cases of different diseases.
- c.2.** Write and evaluate professional pathological reports and matching the control (normal) with abnormal tissues.
- c.3.** Enhance and modernize methods of staining, tissue preparation and image collection by specialized microscopic techniques.
- c.4.** Improve modern technological means to serve professional practice.
- c.5.** Stimulate the improvement of veterinary medicine by applying recent molecular techniques in pathology, and developing performance of veterinarians in the field.

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1.** Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology in the improvement of pathology professional practice.
- d.2.** Utilize information technology to serve professional practice.
- d.3.** Teach others and evaluate their performance.
- d.4.** Self-evaluate and identify personal learning requirements
- d.5.** Use of different sources for obtaining information and knowledge.
- d.6.** Lead team under different professional circumstances.
- d.7.** Manage scientific meetings with the ability to manage time efficiently

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, and seminars.

6-Assessments:

The program depends on different assessment ways:

a. Course assessment:

1. Final written exam
 - To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
2. Practical exam
 - To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
3. Oral exam
 - To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.

b. Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work

c. PhD Thesis assessment

- Annual reports adopted by the Faculty.
- Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
- Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1,2; b1,2
Oral	a1-2; b1,2
Practical	C1-5
Qualifying Exam	a1-5; b1-9
Thesis	a3-5; b1-9; C1-5; d1-7

7. Program structure

a. Program duration (years):

PhD degree from 3-5 years and it should not exceed a period of six years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law.

b. Program courses:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council so that include 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c- Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d- Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met.

. Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Pathology includes:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.	1	1
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and Cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2

	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2

	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2

	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Clinical pathology				
	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology				
	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology				
	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology				
	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
81- Advanced immunology			2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2

	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1
Hygiene and control of milk and dairy products	208/2	108- Hygienic control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2

	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2

	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/ 2	134- Stress diseases during animals transport.		
Infectious diseases	235/ 2	135- Infectious diseases of cattle	2	2
	236/ 2	136- Infectious diseases of sheep and goat	2	2
	237/ 2	137- Infectious diseases camel	2	2
	238/ 2	138 Infectious diseases of equine	2	2
	239/ 2	139- Infectious diseases of pet animals	2	2
	240/ 2	140- Infectious diseases lab animals	1	2
	241/ 2	141- Infectious diseases of udder and newly born animals	2	2
	242/ 2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		

Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2

Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in polutry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses	285/2	185- advanced zoonoses (specific	2	2

		courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)		
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases	302/2	202- Biology of fish.	2	2

and management	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (Pathology) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medical science lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.

3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.
5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.
7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.
8. The applicant should submit a seminar(Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).
9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met:Pass

all supplementary curriculums and acceptance of the seminar presented by the applicant.

10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and in case of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.

11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards it to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.

12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:



1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade	Percentage
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Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
I	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

program Co-ordinator:

Prof. Dr. Eman abdelaziz

Head of Department:

Prof. Dr. Ahmed ali elswak

Matching program ILOs with ARS - Matrix

Program ILOs	ARS																										
	K&U (a)					I.S. (b)									P.P. (c)					G.T. (d)							
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7	
K&U	1	2	3	4	5																						
I.S.						1	2	3	4	5	6	7	8	9													
P.P.															1	2	3	4	5								
G.T.																				1	2	3	4	5	6	7	



Program Specification Matrix

PhD in Veterinary Medical Sciences (Pathology)

Courses		Total Contact hours/ course	No. of hours / week			K.U (a)					I.S (b)									P.P (c)					G.T (d)							
						Lect.	Lab.	Total	1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5
Predocutorial courses (10-12 theoretical and practical hours weekly for 12 months)						x	x				x	x	x							x	x	x				x	x	x	x	x	x	x
Qualification exam								x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Thesis								x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		



ARS for PhD in Veterinary Medicine **(Pathology)**

1) Graduate attributes

The graduate should have the ability for:

- 1) Mastering the basics and methodologies of scientific research in Pathology for better diagnosis of veterinary diseases.
- 2) Performing continuous effort to add knowledge about diagnosis of bacterial, viral and parasitic diseases.
- 3) Analysis and criticism of macroscopical and microscopical findings concerning large animal, poultry or fish affections.
- 4) Integrating data collected from farms with related laboratory findings to reach the correct diagnosis of cause of disease.
- 5) Showing deep awareness with the ongoing pathological problems and modern theories in diagnosing infectious and non-infectious diseases.
- 6) Identifying the main causes of animal infections and suggesting the appropriate methods of animal protection.
- 7) Mastering of a wide range of professional skills in pathology laboratory and modern pathological techniques performed for measuring mechanism of action of pathogenic and non-pathogenic insults.
- 8) Acquiring trends towards developing modern methods and tools in diagnostic pathology.
- 9) Using appropriate technological means including molecular pathology, IHC, ISH to serve professional practice.
- 10) Communicating effectively with, pathologists, students and colleagues and leading work team through professional scale.
- 11) Making decision in different professional situations especially under field conditions to deal with epidemic issues.
- 12) Using of the available resources efficiently in the development of new techniques and work to find new resources.
- 13) Being aware with his role in society development and community preservation from toxicants and animal pathogens.
- 14) Acting with integrity, credibility and according to the rules of profession.
- 15) Realizing the importance of self and life-long learning and progress.

A) Knowledge and understanding

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Recent theories, principles and knowledge in the field of pathology and related fields	Recent theories, principles and knowledge in the field of specialization and related areas
2)	Principles methodologies and ethics of scientific research in the field of pathology	Basics, methodologies and ethics of scientific research and its different tools
3)	Legal and ethical principles of pathological techniques	Legal and ethical principles of professional practice in the area of specialization
4)	Principles and the basics of quality assurance in laboratory examination of different pathogens	Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Awareness with the effect of pathological examination on environment	Awareness with the effect of professional practice on the environment and methods of its maintain and development

B) Intellectual skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analyzing and evaluating information about the pathological picture of diseases and their causative agents	Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solving pathological problems using available macro- and microscopical findings	Solving professional problems using available data
3)	Performing scientific research that can give significant impact on the diagnosis of animal diseases	Conducting scientific research studies that add to knowledge
4)	Formulating scientific papers in Pathology and discussing different findings with other researchers	Formulating scientific papers
5)	Risk-assessment of poisons, pathogens and nutritional causes of diseases	Risk-assessment in the field of specialization
6)	Planning to enhance the performance in the diagnosis of animal affections.	Planning to enhance the performance in field of specialization
7)	Making professional decisions about the pathogenesis, PM lesions and microscopical and ultrastructural findings	Making professional decisions under different professional contexts
8)	Trying new techniques for detection of fine pathological alterations	Creation and innovative in the area of specialization
9)	Dialogue and discussion based on microscopical	Dialogue and discussion based on

evidences and proofs	evidences and proofs
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C) Professional and practical skills

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills in diagnosis of reproductive, toxicological, parasitic, microbial and nutritional diseases including case history, recording clinical signs, PM lesions, and advanced laboratory techniques		Mastering basic and modern professional skills in the area of specialization
2)	Writing and evaluating professional pathological reports involving the effect of pathogens on different body systems		Writing and evaluating professional reports
3)	Evaluating and modernizing methods of staining and processing of different tissues for pathological examination		Evaluating and modernizing methods and tools in the area of specialization
4)	Using modern technological means to serve diagnosis and control of animal outbreaks		Using modern technological means to serve professional practice
5)	Planning for the improvement of veterinary medicine by applying recent molecular techniques in pathology, and developing performance of others		Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Communicating effectively with pathologists, other health professionals, and health related agencies.		Effective communication
2)	Using the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.		Utilizing information technology to serve development of professional practice
3)	Presenting information clearly in written, electronic and oral forms		Teaching others and evaluating their performance
4)	Establishment of life-long self-learning required for continuous professional development.		Self-assessment and continuous learning
5)	Using different resources to obtain knowledge and information		Using different resources to obtain knowledge and information
6)	Team working and leading a team in familiar professional contexts		Team working and leading a team in familiar professional contexts
7)	Management of time and open discussions in the professional field		Management of scientific meetings with the ability to manage time efficiently

ثالثاً: برامج الدكتوراه

١ - مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادراً على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطاً و مطوراً للعلاقات البينية بينها
٥. إظهار و عيا عميقاً بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حلولاً مبتكرة لحلها
٧. إتقان نطاقاً واسعاً من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تنميتها و العمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصادقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢ - المعايير القياسية العامة

المعرفة و الفهم:

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً علي الفهم و الدراية بكل من:
أ- النظريات و الأساسيات و الحديث من المعارف في مجال التخصص و المجالات ذات العلاقة

ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة

ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص

ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص

ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و وطرق تنمية البيئة و صيانتها

المهارات الذهنية

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً على:

أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها

ب- حل المشاكل المتخصصة استناداً علي المعطيات المتاحة

ج- إجراء دراسات بحثية تضيف إلى المعارف

د- صياغة أوراق علمية

هـ- تقييم المخاطر في الممارسات المهنية

و- التخطيط لتطوير الأداء في مجال التخصص

ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة

ح- الابتكار/ الإبداع

ط- الحوار و النقاش المبني علي البراهين والأدلة

المهارات المهنية

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً على:

أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص

ب- كتابة و تقييم التقارير المهنية

ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص

د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية

هـ- التخطيط لتطوير الممارسة المهنية و تنمية أداء الآخرين

المهارات العامة و المنتقلة

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً على:

أ- التواصل الفعال بأنواعه المختلفة

ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية

- ت- تعليم الآخرين وتقييم أداءهم
- ث- التقييم الذاتي والتعلم المستمر
- ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
- ح- العمل في فريق وقيادة فرق العمل
- خ- إدارة اللقاءات العلمية والقدرة علي إدارة الوقت

Course specification (2021-2022)

1 - Basic Information:

Code number: 163 (2)

Course title: General Pathology and Oncology (Advanced).

Academic Year: PhD program

Total teaching hours: 192hrs

Lectures: 96hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

The student will be able to:

- Define the basic principles of different disease pathogenesis
- Provide basic information about etiology, tissue response in the form of tumors, and the mechanisms of tumor development.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1-Define the basic principles of animal disease.

A2-Discuss the pathogenesis of different animal affections.

A3-Describe the gross and microscopic features of various pathological lesions.

A4-Recognize the basic terminology for various tumors.

A5-Differentiate the cellular alterations of different tumors.

A6-Identify the different types of tumors in various body organs and tissues.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1- Illustrate the histological features of pathological processes in order to achieve proper diagnosis.

B2- Evaluate the pathological affection even in cases associated with rare data.

B3- Judge the different microscopical findings to get appropriate interpretations of pathological cases.

B4- Distinguish between benign and malignant tumors in emphasis to gross and microscopic criteria of malignancy.

B5- Analyze and evaluate subject-specific theories and principles related to diagnosis and differential diagnosis of the different lesions and tumors.

B6- Differentiate between tumors and tumor-like malformations.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

C1- Perform tissue specimens for pathological diagnosis and develop practical experience in the histological techniques.

C2- Examine tumors grossly or microscopically using medical terms of pathology and differentiate between the different types of tumors.

C3- Assign the macro- and microscopical findings and present them in a proper pathological report.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Coach and work in groups.

D2-Classify different duties

D3- Utilize computer and internet skills.

D4-Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
<i>Disturbances of cell metabolism</i>	44	22	22
<i>Inflammation and Repair</i>	34	17	17
<i>Disturbances of Circulation</i>	38	19	19
<i>Disturbances of growth and Neoplasia</i>	36	18	18
<i>Molecular basis of Carcinogenesis</i>	40	20	20
Total	192	96	96

5- TEACHING & LEARNING METHODS:

***Lectures:**

using data show, white board and over head projector.

***Practical and small group sessions:**

Practical training: Practical demonstrations, practice of skills, and discussions.

*** Self learning**

Computer researches and faculty library visits to prepare essays and presentations.

Histopathological Drawings.

Library researches.

Internet researches.

Discussion in the researches.

Preparation of scientific reports.

*** Audiovisual**

Television circle in the practical laboratory.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	One examination at the end of the academic Year	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)

	(49th week)		
7.c grads	50	25	25

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Microscopes, slides, projector slides, Data show.

8-2: Recmended books:

- *Basics of Oncology by Frederick O. Stephens and Karl Reinhard Aigner, Springer, USA, 2010.*
- *Robbins & Cotran Pathologic Basis of Disease. Vinay Kumar, Nelso Fausto, Abul Abbas. Saunders; 7 edition, USA, 2004.*
- *Fundamentals of Toxicologic Pathology. Wanda M. Haschek., Colin G. Rousseaux, Matthew A. Wallig. Academic Press; 2 edition, 2009, USA.*

8-3: SUGGESTED books:

- *Veterinary pathology Textbook. (By Thomas Carlyle Jones, Ronald Duncan Hunt and Norval W. King, - Wiley-Blackwell, U.S.A., 1997).*
- *Walter and Israel(1996): general pathology ,6th.*
- *veterinary pathology: Jones, hunt and king (1997).*
- *Pathology of demostic animals. academic press. Jobb, K.V.F. Keennedy, B.C. and PALMER, N,(1985)*

8.4: web sites and jouranlsand so on

- *IVIS*
- *Environmental Protection Agency (EPA)*
- *Food and Drug Administration (FDA)*
- *PubMed*
- *Science direct*

Intended learning out comes

TOPIC	K.U (a)	IS (b)	P.P.S (c)	G.T.S (d)
<i>Disturbances of cell metabolism</i>	A1,A2, A3,A4, A5,A6	B1,B3,B5, B6	C1,C2,C3	D1,D2,D3,D4
<i>Inflammation and Repair</i>	A2,A3, A5,A6	B1,B2,B4	C1,C2	D1,D2,D3,D4
<i>Disturbances of Circulation</i>	A1,A5, A6	B2,B4,B5	C2,C3	D1,D2,D3,D4
<i>Disturbances of growth and Neoplasia</i>	A1,A2, A3,A4, A5,A6	B3,B6	C1,C2,C3	D1,D2,D3,D4
<i>Molecular basis of Carcinogenesis</i>	A2,A6	B6	-	D1,D2,D3,D4
Total				

Evaluation Intended learning out comes

Methods	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectua l	Practical	general	
Written examination	A1,A2,A3,A4,A5,A6	B1,B2,B3,B4 ,B5,B6		D3,D4	50
Oral examination	A1,A2,A3,A4,A5,A6	B1,B2, ,B4,B5		D4	25
Practical examination			C1,C2,C3	D1,D2,	25

Course Coordinator:

Prof. Dr. Eman Abdelaziz

Head of Department:

Prof. Dr. Ahmed Elsawak

Course specification (2021-2022)

1 - Basic Information:

Code number: 164(2)

Course title: Pathology of Microbial and Parasitic Animal Diseases

Academic Year: PhD program

Total teaching hours: 192hrs

Lectures: 96hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

Enable students to:

- *Elucidate the pathogenesis of microbial and parasitic diseases*
- *Perform postmortem and histopathological examination of diseases caused by infective agents in different animal species.*

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Discuss the pathogenesis of microbial and parasitic diseases in different animal species.

A2- Recognize macro- and microscopical findings of diseased animals in relation to their causative agents.

A3- List the microbial and parasitic diseases.

A4- Describe the gross and microscopic features of various pathological lesions.

A5- Describe the legal and ethical basics of dealing with pathological cases in different animal.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1- Investigate the histopathological lesions induced by microbial and parasitic diseases.

B2- Differentiate between the microbial or parasite disease on gross and microscopical pathological bases and other pathogens.

B3- Analyze the histopathological alterations in relation to the chronicity of the disease.

B4- Interpret the results of Post Mortum and histopathological examination.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

C1- Apply essential techniques in microbial and parasitic pathology and get experience in sampling, postmortem techniques and slide preparation.

C2- Examine grossly and microscopically between different infectious agents.

C3- Demonstrate the lesions both grossly or microscopically using medical terms of pathology and write them in a conclusive report.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Coach and work in groups.

D2- Classify different duties

D3- Utilize computer and internet skills.

D4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
<i>General principles of microbial pathogenesis</i>	12	6	6

Bacterial diseases	28	14	14
Viral diseases	36	18	18
Fungal diseases	28	14	14
Mycoplasmal diseases	16	8	8
Protozoa I diseases	36	18	18
Parasitic diseases	36	18	18
Total	192	96	96

5- TEACHING & LEARNING METHODS:

*Lectures:

using data show, white board and over head projector.

*Practical and small group sessions:

Practical training: Practical demonstrations, practice of skills, and discussions.

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

Histopathological Drawings.

Library researches.

Internet researches.

Discussion in the researches.

Preparation of scientific reports.

Audiovisual/Television circle in the practical laboratory.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)
7.c grads	50	25	25

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Microscopes, slides, projector slides, Data show.

8-2: Recmonded books:

- *A Textbook of Veterinary Special Pathology Infectious Diseases of Livestock and Poultry. : A.K. Katiyar, J.L. Vegad. nternational Book Distributing Co (March 1, 2002)*
- *Pathology of domestic animals, 4th ed. by Jubb K.V.F., Kennedy P.G. and Palmer N. (1994).*

8-3: SUGGESTED books:

- *Robbins & Cotran Pathologic Basis of Disease. Vinay Kumar, Nelso Fausto,Abul Abbas. Saunders; 7 edition, USA, 2004*

- *Veterinary pathology Textbook. (By Thomas Carlyle Jones, Ronald Duncan Hunt and Norval W. King, - Wiley-Blackwell, U.S.A., 1997).*

8.4: web sites and journalsand so on

- *PubMed*
- *Science direct*
- *Environmental Protection Agency (EPA)*
- *Food and Drug Administration (FDA)*
- *EPA: Integrated Risk Information System (IRIS)*
- *Egyptian Journal of Comparative Pathology and Clinical Pathology*
- *Pathologia Veterinaria*
- *American Journal of Pathology*
- *Journal of Pathology and Bacteriology*
- *Archive of Pathology*
- *Veterinary Record IVIS*

Intended learning outcomes

TOPIC	K.U (a)	IS (b)	P.P.S (c)	G.T.S (d)
<i>General principles of microbial pathogenesis</i>	A1,A5	B1	C2	D1,D2,D3,D4
<i>Bacterial diseases</i>	A1,A2,A3,A4	B2,B3	C1,C2,C3	D1,D2,D3,D4
<i>Viral diseases</i>	A2,A3,A4	B3,B4	C2,C3	D1,D2,D3,D4
<i>Fungal diseases</i>	A1,A2,A3,A4	B2,B3,B4	C3	D1,D2,D3,D4
<i>Mycoplasmal diseases</i>	A2,A3,A4	B1,B3	C2	D1,D2,D3,D4
<i>Protozoa I diseases</i>	A2,A3	B3,B4	C1,C3	D1,D2,D3,D4
<i>Parasitic diseases</i>	A1,A2,A3,A4	B1,B2,B3	C1,C3	D1,D2,D3,D4
<i>Total</i>				

Intended learning outcomes Evaluation

Methods	Knowledge	I.L.O.S Evaluation			Marks allocated
		Intellectual	Practical	general	
Written examination	A1,A2,A3,A4,A5	B1,B2,B3		D3	50
Oral examination	A1,A2,A3,A4,A5	B1,B2,B3,B4		D4	25
Practical examination			C1,C2,C3	D1,D2	25

Course Coordinator:
Dr. Eman Abdelaziz

Head of Department:
Prof. Dr. Ahmed Elsawak

Course specification (2021-2022)

1 - Basic Information:

Code number: 165 (2)
Course title: Pathology of nutritional deficiencies
Academic Year: PhD program
Total teaching hours: 144hrs
Lectures: 48hr
Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

Upon successful completion of the course, the student will be able to:

- Elucidate mechanisms of action of nutritional deficiencies at the cellular levels.
- Weigh up the various pathological alteration caused by nutritional causes on different body systems.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Discuss the scientific progress in the field of Pathology of nutritional deficiencies.
- A2- Describe principles of disease processes in different organs induced by nutritional deficiency.
- A3- Recognize the macro- and microscopical alterations induced by malnutrition.
- A4- Describe principles of disease processes in different organs induced by nutritional deficiency.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Differentiate the histopathological lesions induced by nutritional deficiency from those caused by microbial agents and chemicals.
- B2- Correlate the macro- and microscopical findings with the conditions of malnutrition.
- B3- Analyze the microscopical findings to get appropriate interpretations of pathological cases.
- B4- Inspect the mechanism of production of pathological changes by malnutrition.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Apply essential techniques in nutritional pathology and get experience in PM examination, sampling, and report writing.
- C2- Examine the lesions both grossly or microscopically using medical terms of pathology and differentiate between the different types of lesions in the same category.
- C3- Demonstrate the differences between tissue/organ appearance in health and malnutrition.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1- Coach and work in groups.
- D2- Classify different duties
- D3- Utilize computer and internet skills.
- D4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
Disturbance in cell metabolism	21	7	14

Classification of nutritional diseases	24	8	16
Pathology of Vitamin Deficiencies	24	8	16
Pathology of Mineral deficiencies	21	7	14
Pathology of Protein deficiencies	24	8	16
Pathology of Fat deficiencies	15	5	10
Differential diagnosis of diseases induced by nutritional deficiencies.	15	5	10
Total	144	48	96

5- TEACHING & LEARNING METHODS:

*Lectures:

using data show, white board and over head projector.

*Practical and small group sessions:

Practical training: Practical demonstrations, practice of skills, and discussions.

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

Histopathological Drawings.

Library researches.

Internet researches.

Discussion in the researches.

Preparation of scientific reports.

* Audiovisual

Television circle in the practical laboratory.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	One examination at the end of the academic Year 49th week	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)
7.c grads	50	20	30

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Microscopes, slides, projector slides, Data show.

8-2: Recmended books:

- Pathology of domestic animals, 4th ed. by Jubb K.V.F., Kennedy P.G. and Palmer N. (1994).*

8-3: SUGGESTED books:

- Robbins & Cotran Pathologic Basis of Disease. Vinay Kumar, Nelso Fausto, Abul Abbas. Saunders; 7 edition, USA, 2004*

- *Veterinary pathology Textbook. (By Thomas Carlyle Jones, Ronald Duncan Hunt and Norval W. King, - Wiley-Blackwell, U.S.A., 1997).*

8.4: web sites and journalsand so on

- *PubMed*
- *Science direct*
- *IVIS*
- *Environmental Protection Agency (EPA)*
- *Food and Drug Administration (FDA)*
- *EPA: Integrated Risk Information System (IRIS)*
- *Egyptian journal of comparative pathology*
- *American journal of pathology.*
- *Journal of veterinary science*

Intended learning outcomes

TOPIC	K.U (a)	IS (b)	P.P.S (c)	G.T.S (d)
Disturbance in cell metabolism	A1,A2,A3	B1,B2,B3,B4	C1,C2,C3	D1,D2,D3,D4
Classification of nutritional diseases	A1	B1	-	D1,D2,D3,D4
Pathology of Vitamin Deficiencies	A2,A3,A4	B2,B3,B4	C1,C2,C3	D1,D2,D3,D4
Pathology of Mineral deficiencies	A2,A3,A4	B2,B3,B4	C1,C2	D1,D2,D3,D4
Pathology of Protein deficiencies	A3,A4	B4	C3	D1,D2,D3,D4
Pathology of Fat deficiencies	A2,A4	B3	-	D1,D2,D3,D4
Differential diagnosis of diseases induced by nutritional deficiencies.	A1,A2,A3,A4	B3,B4	C3	D1,D2,D3,D4
Total				

Intended learning outcomes Evaluation

Methods	I.L.O.S Evaluation			general	Marks allocated
	Knowledge	Intellectual	Practical		
Written examination	A1,A2,A3,A4	B1,B3,B4		D3,	50
Oral examination	A1,A2,A3,A4	B1,B2,B3,B4		D4	20
Practical examination		B3	C1,C2,C3	D1,D2	30

Course Coordinator:

Dr. Eman Abdelaziz

Head of Department:

Prof. Dr. Ahmed Elsawak

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 166(2)

Course title: Environmental pollution Pathology

Academic Year: PhD program

Total teaching hours: 144hrs

Lectures: 48hr

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

Upon successful completion of the course, the student will be able to:

- Manifestations of toxic cell injury.
- Elucidate mechanisms of action of pollutants at the cellular levels.
- Weigh up the toxic insults of the pollutants on different body organ and tissues.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Discuss the basics of pathology including gross and microscopical alterations in relation to environmental pollutants.

A2- Define the pathogenesis of diseases caused by different environmental pollutants.

A3- Discuss the toxic insult on different body organs and tissues at the macro- and microscopical level.

A4- Explain the mechanism toxic injury induced by pollutants on body organs.

A5- Outline the safety measures and basics of quality assurance to prevent environmental pollution.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1- Correlate the gross and histopathological alterations in relation to dose and time of exposure to various pollutants.

B2- Diagnose the pathological affection even in cases associated with rare data.

B3- Relate different knowledge with the microscopical findings to get appropriate interpretations of pathological cases.

B4- Identify etiological agent on gross and microscopical pathological bases.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

C1- Perform essential techniques in environmental pathology.

C2- Examine the lesions both grossly or microscopically using medical terms of pathology and differentiate between the different types of lesions in the same category during exposure to pollutants.

C3- Apply the safety measures and basics of quality assurance to prevent environmental pollution.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Coach and work in groups.

D2- Classify different duties

D3- Utilize computer and internet skills.

D4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
<i>Disturbance in cell metabolism</i>	21	7	14
<i>Manifestations of toxic cell Injury</i>	15	5	10
<i>Types and sources of environmental pollutants</i>	15	5	10
<i>Environmental carcinogenesis</i>	15	5	10
<i>Developmental toxicological Pathology</i>	15	5	10
<i>Pathology of different environmental pollutants</i>	15	5	10
<i>Effect of environmental pollutants on birds</i>	15	5	10
<i>Effect of environmental pollutants on fish</i>	12	4	8
<i>Environmental endocrine disruptors</i>	12	4	8
<i>Techniques in environmental Pathology</i>	9	3	6
Total	144	48	96

5- TEACHING & LEARNING METHODS:

*Lectures:

using data show, white board and over head projector.

*Practical and small group sessions:

Practical training: Practical demonstrations, practice of skills, and discussions.

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

Histopathological Drawings.

Library researches.

Internet researches.

Discussion in the researches.

Preparation of scientific reports.

* Audiovisual

Television circle in the practical laboratory.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	One examination at the end of the academic Year 49th week	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)
7.c grads	50	20	30

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Microscopes, slides, projector slides, Data show.

8-2: Recmended books:

- *Fundamentals of Toxicologic Pathology*. Wanda M. Haschek., Colin G. Rousseaux, Matthew A. Wallig. Academic Press; 2 edition, 2009, USA.

8-3: SUGGESTED books:

- *Robbins & Cotran Pathologic Basis of Disease*. Vinay Kumar, Nelso Fausto, Abul Abbas. Saunders; 7 edition, USA, 2004
- *Veterinary pathology Textbook*. (By Thomas Carlyle Jones, Ronald Duncan Hunt and Norval W. King, - Wiley-Blackwell, U.S.A., 1997).
- *Pathology of domestic animals, 4th ed.* by Jubb K.V.F., Kennedy P.G. and Palmer N. (1994).

8.4: web sites and jouranlsand so on

- PubMed
- Science direct
- IVIS
- Environmental Protection Agency (EPA)
- Food and Drug Administration (FDA)
- EPA: Integrated Risk Information System (IRIS)
- Egyptian Journal of Comparative Pathology and Clinical Pathology
- Pathologia Veterinaria
- American Journal of Pathology
- Archive of Pathology
- Veterinary Record IVIS

Intended learning out comes

TOPIC	K.U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Disturbance in cell metabolism	A1,A2, A3,A4	B1,B2,B3,B4	-	D1,D2,D3,D4
Manifestations of toxic cell Injury	A2,A3	B3,B4	-	D1,D2,D3,D4
Types and sources of environmental pollutants	A2,A4	B2	-	D1,D2,D3,D4
Environmental carcinogenesis	A3,A4	B1,B2	C1,C3	D1,D2,D3,D4
Developmental toxicological Pathology	A1,A3	B4	-	D1,D2,D3,D4

Pathology of different environmental pollutants	A1,A5	-	C3	D1,D2,D3,D4
Effect of environmental pollutants on birds	A2,A3,A5	B2,B4	C1,C2	D1,D2,D3,D4
Effect of environmental pollutants on fish	A2,A3,A5	B2,B3	C1,C2	D1,D2,D3,D4
Environmental endocrine disruptors	A1	B2	C1,C3	D1,D2,D3,D4
Techniques in environmental Pathology	A4,A5	B4	C1,C3	D1,D2,D3,D4
Total				

Evaluation Intended learning out comes

Methods	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectual	Practical	general	
Written examination	A1,A2,A3,A4,A5	B1,B3,B4		D3	50
Oral examination	A1,A2,A3,A4,A5	B2,B4		D4	20
Practical examination		B2	C1,C2,C3	D1,D2	30

Course Coordinator:

Dr. Nagwan El-Habashi

Head of Department:

Prof. Dr. Ahmed Elsawak

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 167(2)

Course title: Reproductive Pathology

Academic Year: Master programs

Total teaching hours: 144hrs

Lectures: 48hr

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

Upon successful completion of the course, the student will be able to:

- Elucidate mechanisms of affection of reproductive system in both male and female animals.
- Weigh up the toxic insults of the poison on reproductive organs and tissues.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Define the basics of pathology including gross and microscopical alterations in reproductive organs.

A2- Recognize basic terminology for morphologic alterations in reproductive system.

A3- Discuss the basic principles of pathology

A4- Describe the diseased conditions in the genital system in both male & female animals.

A5- Explain the mechanisms of pathological alterations caused by infectious or non-infectious agents in the genital systems.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1- Analyze and judge the gross, microscopical and ultrastructural findings in genital organs to reach the correct diagnosis.

B2- Manage problems of diagnosis of reproductive diseases even in cases associated with rare data.

B3- Relate different knowledge with the microscopical findings to get appropriate interpretations of different reproductive diseases.

B4- Characterize risks during necropsy of animals dying from infectious reproductive diseases.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

C1- Apply recent techniques and tools necessary to diagnose and characterize different reproductive diseases by gross, microscopical and ultrastructural investigations.

C2- Provide a professional and conclusive pathological report on scientific bases.

C3- Practice essential laboratory skills that underpin techniques associated with sampling, processing, staining and microscopical examination.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Coach and work in groups.

D2- Classify different duties

D3- Utilize computer and internet skills.

D4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
<i>Pathology of the males reproductive System</i>	33	11	22
<i>Pathology of the female reproductive System</i>	36	12	24
<i>Failure of Pregnancy including early embryonic mortality, abortion, stillbirth</i>	39	13	26
<i>Fetal Abnormalities</i>	36	12	24
<i>Total</i>	144	48	96

5- TEACHING & LEARNING METHODS:

*Lectures:

using data show, white board and over head projector.

*Practical and small group sessions:

Practical training: Practical demonstrations, practice of skills, and discussions.

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

Histopathological Drawings.

Library researches.

Internet researches.

Discussion in the researches.

Preparation of scientific reports.

* Audiovisual

Television circle in the practical laboratory.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	One examination at the end of the academic Year 49th week	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)
<u>7.c grads</u>	50	20	30

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Microscopes, slides, projector slides, Data show.

8-2: Recmonded books:

- *Pathology of domestic animals, 4th ed. by Jubb K.V.F., Kennedy P.G. and Palmer N. (1994).*

8-3: SUGGESTED books:

- *Robbins & Cotran Pathologic Basis of Disease. Vinay Kumar, Nelso Fausto, Abul Abbas. Saunders; 7 edition, USA, 2004*
- *Veterinary pathology Textbook. (By Thomas Carlyle Jones, Ronald Duncan Hunt and Norval W. King, - Wiley-Blackwell, U.S.A., 1997).*

8.4: web sites and jouranlsand so on

- PubMed
- Science direct
- IVIS
- Environmental Protection Agency (EPA)
- Food and Drug Administration (FDA)
- EPA: Integrated Risk Information System (IRIS)
- Egyptian Journal of Comparative Pathology and Clinical Pathology
- Pathologia Veterinaria
- American Journal of Pathology
- Archive of Pathology
- Veterinary Record IVIS

Intended learning out comes

TOPIC	K.U (a)	IS (b)	P.P.S (c)	G.T.S (d)
<i>Pathology of the males reproductive System</i>	A1,A2,A3,A4. A5	B2,B3,B4	C1,C2,C3	D1,D2,D3,D 4
<i>Pathology of the female reproductive System</i>	A3,A4,A5	B1,B2	C2	D1,D2,D3,D 4
<i>Failure of Pregnancy including early embryonic mortality, abortion, stillbirth</i>	A4	B3	-	D1,D2,D3,D 4
<i>Fetal Abnormalities</i>	A2	-	-	D1,D2,D3,D 4
Total				

Evaluation Intended learning out comes

Methods	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectual	Practical	general	
Written examination	A1,A2,A3,A4,A5	B1,B2,B3,B4		D3	50
Oral examination	A1,A2,A3,A4,A5	B1,B3		D4	20
Practical examination		B2	C1,C2,C3	D1,D2	30

Course Coordinator:
Dr. Samah Salem

Head of Department:
Prof. Dr. Ahmed Elsawak

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 168(2)

Course title: **Poultry Pathology**

Academic Year: PhD program

Total teaching hours: 192hrs

Lectures: 96hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

To provide student with basic knowledge and skills concerning normal structure of the different systems of different birds species (cytology, cell biology) and their diseases, an appropriate background covering microscopic examination and histogenesis of the different systems of different species of birds and their diseases.

Enable students to differentiate the normal structures of different systems of different species of birds and their diseases.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Describe normal structure of the different systems of different species of birds as well as pathological alterations developed in their diseases.

A2- Differentiate the normal tissue of the different systems of different species of birds and their diseases.

A3- *Outline safety measures and basics of quality assurance in pathology lab to prevent spread of avian pathogens.*

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1- Develop a correlation between pathogenesis of pathological changes induced in systems of different species of birds by diseases, gross pathological changes and their clinical picture.

B2- Create difference between the pathological changes induced in systems of different species of birds by bacterial, viral and parasitic diseases.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

C1-Examine stained tissue slides obtained from diseases of birds under light and reading electron microscope.

C2-Compare between the pathological pictures of diseases in different species of birds.

C3-Identify the difference between pathological alterations induced in the bird diseases compared with the same changes in domestic animals.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Coach and work in groups.

D2-Classify different duties

D3- Utilize computer and internet skills.

D4-Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
Digestive system Diseases	44	22	22
Respiratory system Diseases	34	17	17
Urogenital system Diseases	38	19	19
Immune system Diseases	36	18	18
Endocrine system, nervous system, skin Diseases	40	20	20
Total	192	96	96

5- TEACHING & LEARNING METHODS:

*Lectures:

using data show, white board and over head projector.

*Practical and small group sessions:

Practical training: Practical demonstrations, practice of skills, and discussions.

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

Histopathological Drawings.

Library researches.

Internet researches.

Discussion in the researches.

Preparation of scientific reports.

* Audiovisual

Television circle in the practical laboratory.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)
<u>7.c grads</u>	50	25	25

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Microscopes, slides, projector slides, Data show.

8-2: Recommended books:

- Walter and Israel(1996): general pathology ,6th.
- Jones, hunt and king (1997): veterinary pathology.

- Jobb, K.V.F. Kennedy, B.C. and PALMER, N, (1985) : Pathology of domestic animals. academic press.
- Dijk, J E van; Gruys, E (Erik); Mouwen, J M V M. 2007 Color atlas of veterinary pathology : general morphological reactions of organs and tissues, 2nd ed. Edinburgh ; New York : Saunders Elsevier, 2007.
- David E. Swayne, John R. Glisson, Larry R. McDougald, Lisa K. Nolan, David L. Suarez, Venugopal L. Nair (2013): Diseases of Poultry
- Quinn, P J; Markey, B K (Bryan K); Leonard, F C; FitzPatrick, E S; Fanning, S; Hartigan, P J. (2011) Veterinary microbiology and microbial disease, Second Edition. Chichester, West Sussex, UK : Wiley-Blackwell

8-3: SUGGESTED books:

- *Ivan Dinev: Diseases of Poultry A Colour Atlas 2nd Edition*

8.4: web sites and journalsand so on

- WWW.PubMed.com
- www.Vet.net.com
- *Egyptian journal of comparative pathology*
- *American journal of pathology.*
- *Journal of veterinary science*

Intended learning outcomes

TOPIC	K.U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Digestive system Diseases	A1 A2 A3	B1-B2	C1-C2- C3-	D1-D2-D4
Respiratory system Diseases	A1- A2- A3	B1,B2	C1-C2-C3	D1-D2-D3- D4
Urogenital system Diseases	A1- A2- A3	B1,B2	C1-C2-C3	D1-D2-D4
Immune system Diseases	A1- A2- A3	B1,B2	C1-C2-C3	D1-D2-D4
Endocrine system, nervous system, skin Diseases	A1- A2- A3	B1,B2	C1-C2-C3	D1-D2-D4
Total				

Intended learning outcomes Evaluation

Methods	Knowledge	I.L.O.S Evaluation			Marks allocated
		Intellectual	Practical	general	
Written examination	A1.A2. A3	B1.B2		D3,	50
Oral examination	A1.A2. A3	B1.B2		D4	25
Practical examination		B2	C1.C2.C3.	D1,D2,	25

Course Coordinator:

Dr. Nagwan El-Habashi

Head of Department:

Prof. Dr. Ahmed Elsawak

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 169(2)
Course title: Experimental Pathology
Academic Year: PhD program
Total teaching hours: 144hrs
Lectures: 48hrs
Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

Upon successful completion of the course, the student will be able to:

- Be aware with the pathogenesis of different infective agents in lab animals.
- Diagnose the infectious and non-infectious diseases of experimental animals (mouse, rat, rabbit, hamster and G. pig) by histopathological examination.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Discuss the basics of pathology including gross and microscopical alterations in experimental animals.
A2- Discuss the pathogenesis of diseases caused by different causative agents in lab animals.
A3- Express the scientific progress in the field of experimental Pathology.
A4- List the safety measures and basics of quality assurance in pathology lab.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Differentiate the histopathological lesions induced in experimental animals by infectious diseases from those caused by metabolic disorders or chemicals.
B2- Manage problems of diagnosis of pathological affection even in cases associated with rare data.
B3- Relate different knowledge with the microscopical findings to get appropriate interpretations of pathological cases.
B4- Characterize risks during necropsy of experimental animals dying from infectious diseases.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Practice PM examination, sampling, and report writing and design an experiment for pathological investigations.
C2- Examine the lesions in experimental animals both grossly and microscopically to reach appropriate diagnosis.
C3- Apply essential laboratory skills that underpin techniques associated with sampling, processing, staining and microscopical examination.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1- Coach and work in groups.
D2- Classify different duties
D3- Utilize computer and internet skills.
D4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
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Basics of pathology of experimental animals (rats, mice, hamster, guinea pig and rabbits)	9	3	6
Experimental pathology strategy in lab animals	15	5	10
Experimental animal genetics and genomics species, strains, and substrains	15	5	10
Immunologic idiosyncracies of experimental animals	15	5	10
Infections of laboratory animals: effects on research	7	2	5
Viral infections in experimental animals	8	3	5
Bacterial infections in experimental animals	15	5	10
Mycotic infections in experimental animals	7	2	5
Parasitic diseases in experimental animals	8	3	5
Nutritional and metabolic disorders in experimental animals	8	3	5
Behavioral disorders in experimental animals	7	2	5
Environment-related disease in experimental animals	7	2	5
Aging, degenerative, and miscellaneous disorders in experimental animals	8	3	5
Neoplasms in experimental animals	15	5	10
Total	144	48	96

5- TEACHING & LEARNING METHODS:

*Lectures:

using data show, white board and over head projector.

*Practical and small group sessions:

Practical training: Practical demonstrations, practice of skills, and discussions.

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

Histopathological Drawings.

Library researches.

Internet researches.

Discussion in the researches.

Preparation of scientific reports.

* Audiovisual

Television circle in the practical laboratory.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)
7.c grads	50	20	30

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Microscopes, slides, projector slides, Data show.

8-2: Recommended books:

- *Pathology of Laboratory Rodents and Rabbits. Dean H. Percy, Stephen W. Barthold. Wiley-Blackwell; 3 edition (2007).*

8-3: SUGGESTED books:

- *Robbins & Cotran Pathologic Basis of Disease. Vinay Kumar, Nelso Fausto, Abul Abbas. Saunders; 7 edition, USA, 2004*
- *Veterinary pathology Textbook. (By Thomas Carlyle Jones, Ronald Duncan Hunt and Norval W. King, - Wiley-Blackwell, U.S.A., 1997).*

8.4: web sites and journalsand so on

- *Archive of Pathology*
- *Veterinary Record/IVIS*
- *PubMed*
- *Science direct*
- *IVIS*
- *Environmental Protection Agency (EPA)*
- *Food and Drug Administration (FDA)*
- *EPA: Integrated Risk Information System (IRIS)*
- *Egyptian Journal of Comparative Pathology and Clinical Pathology*
- *Pathologia Veterinaria*
- *American Journal of Pathology*
- *Journal of Pathology and Bacteriology*

Intended learning outcomes

TOPIC	K.U (a)	LS (b)	P.P.S (c)	G.T.S (d)
Basics of pathology of experimental animals (rats, mice, hamster, guinea pig and rabbits)	A3	B4	-	D1,D2,D3,D4
Experimental pathology strategy in lab animals	A1,A4	B1	C3	D1,D2,D3,D4
Experimental animal genetics and genomics species, strains, and substrains	A2,A3	B2,B4	C1	D1,D2,D3,D4
Immunologic idiosyncracies of experimental animals	A3	B1,B2,B3	C2,C3	D1,D2,D3,D4
Infections of laboratory animals: effects on research	A2	B3	-	D1,D2,D3,D4
Viral infections in experimental animals	A1,A2 A3	B2,B3,B4	C2,C3	D1,D2,D3,D4

Bacterial infections in experimental animals	A1,A2, A3	B1,B2,B3,B4	C1,C2,C3	D1,D2,D3,D4
Mycotic infections in experimental animals	A1,A2	B2,B4	C2	D1,D2,D3,D4
Parasitic diseases in experimental animals	A2	B4	-	D1,D2,D3,D4
Nutritional and metabolic disorders in experimental animals	A3	B2	-	D1,D2,D3,D4
Behavioral disorders in experimental animals	-	B1	C1	D1,D2,D3,D4
Environment-related disease in experimental animals	A1	B3	C2	D1,D2,D3,D4
Aging, degenerative, and miscellaneous disorders in experimental animals	A2	B2	-	D1,D2,D3,D4
Neoplasms in experimental animals	A1,A2, A3	B1,B2,B3,B4	C1,C2,C3	D1,D2,D3,D4
Total				

Intended learning out comes Evaluation

Methods	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectua I	Practical	general	
Written examination	A1,A2,A3,A4	B1,B2,B3		D3	50
Oral examination	A1,A2,A3,A4	B1,B2,B3,B4		D4	20
Practical examination		B3	C1,C2,C3	D1,D2	30

Course Coordinator:

Dr. Walied Sobhi Kotb

Head of Department:

Prof. Dr. Ahmed Elsawak

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 170(2)
Course title: Toxicological Pathology
Academic Year: PhD program
Total teaching hours: 192hrs
Lectures: 96hrs
Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

Upon successful completion of the course, the student will be able to:

- ❖ Manifestations of toxic cell injury.
- ❖ Elucidate mechanisms of action of poisons at the cellular levels.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Discuss the basics of pathology including gross and microscopical alterations caused by different toxins.
- A2- Discuss the pathogenesis of toxic agents in different animal species.
- A3- Recognize scientific progress in the field of toxopathology.
- A4- Recall basics and ethics of scientific research dealing with different animal toxins.
- A5- Describe the legal and ethical basics of dealing with pathological cases in different animal.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Analyze the gross and histopathological alterations in relation to dose and time of exposure to various toxicants.
- B2- Manage risks during necropsy of animals dying from toxins.
- B3- Relate different knowledge with the microscopical findings to get appropriate interpretations of pathological cases.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Apply recent techniques and tools necessary to diagnose intoxication.
- C2- Provide a professional and conclusive pathological report on scientific bases.
- C3- Process dosing, sampling, labeling and preservation of samples and estimate the general and special toxic effects in-vivo and in-vitro. In addition, detecting metals and organic poisons in biological samples.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1- Coach and work in groups.
- D2- Classify different duties
- D3- Utilize computer and internet skills.
- D4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
-------	-------------	-------------------	---------------------

Introduction to pathology,	22	11	11
Disorders of cell metabolism and homeostasis	34	17	17
Inflammation and repair	20	10	10
Immunology and immunopathology	18	9	9
Toxins and genetic disorders	20	10	10
Toxins causing neoplasia and carcinogenesis	22	11	11
Toxins and hematopoietic system	20	10	10
Pathological affections of toxins on the immune system	18	9	9
Pathological affections of toxins on different body organs	18	9	9
Total	192	96	96

5- TEACHING & LEARNING METHODS:

*Lectures:

using data show, white board and over head projector.

*Practical and small group sessions:

Practical training: Practical demonstrations, practice of skills, and discussions.

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

Histopathological Drawings.

Library researches.

Internet researches.

Discussion in the researches.

Preparation of scientific reports.

* Audiovisual

Television circle in the practical laboratory.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)
<u>7.c grads</u>	50	25	25

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Microscopes, slides, projector slides, Data show.

8-2: Recommended books:

- Handbook of Toxicology: Derelanko, M.J. and Hollinger, M.A., 2nd ed., CRC Press , Boca Raton, 2002.
- Toxicology. Osweiler, G.D., The National Veterinary Medical Series for Independent Study Blackwell Pub., 1996.

8-3: SUGGESTED books:

- Principles and Methods of Toxicology: Hayes, A.W., 5th ed., CRC Press, New York, 2007.
- Introduction to toxicology. Timbrell, J., - 3rd ed., Taylor & Francis, USA, 2003.
- Casarett & Doull's Toxicology. The Basic Science of Poisons. Klaassen, C.D., 6th edition, McGraw-Hill, New York, 2001.

8.4: web sites and journalsand so on

- *Archiv Toxicol.* - Springerlink
- *Bull. Environ. Contam. Toxicol.* - Springerlink
- *Environ. Toxicol.* – Interscience
- *Food Chem. Toxicol.* - Elsevier
- *Reprod. toxicol.* - Elsevier
- *Toxicol. Appl. Pharmacol.* – Elsevier
- PubMed
- Science direct
- IVIS
- Environmental Protection Agency (EPA)
- Food and Drug Administration (FDA)
- EPA: Integrated Risk Information System (IRIS)

Intended learning outcomes of each topic during academic year

TOPIC	K.U (a)	LS (b)	P.P.S (c)	G.T.S (d)
Introduction to pathology,	A4	B3	-	D1-D2-D4
Disorders of cell metabolism and homeostasis	A1,A2, A3	B1,B2,B3	C3	D1-D2-D3- D4
Inflammation and repair	A2,A3	B2,B3	C2	D1-D2-D4
Immunology and immunopathology	A1	B1	-	D1-D2-D3- D4
Toxins and genetic disorders	A2,A4	B2	-	D1-D2-D3- D4
Toxins causing neoplasia and carcinogenesis	A1,A2, A3,A4	B1	C3	D1-D2-D3- D4
Toxins and hematopoietic system	A3	B1,B2	-	D1-D2-D4
Pathological affections of toxins on the immune system	A2	B3	C1	D1-D2-D4
Pathological affections of toxins on different body	A1,A2,	B2	C2,C3	D1-D2-D4

organs	A3,A4, A5			
Total				

Evaluation Intended learning out comes

Methods	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectua I	Practical	general	
Written examination	A1,A2,A3,A4,A5	B1,B2,B3		D3	50
Oral examination	A1,A2,A3,A4,A5	B1,B2,B3		D4	25
Practical examination			C1,C2,C3	D1,D2	25

Course Coordinator:

Dr. Samah Salem

Head of Department:

Prof. Dr. Ahmed Elsawak

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 171(2)
Course title: Surgical Pathology
Academic Year: PhD program
Total teaching hours: 192hrs
Lectures: 96hrs
Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

Upon successful completion of the course, the student will be able to:

- ❖ Recognize and evaluate pathological changes resulting from wounds and carcinogenesis.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Define the basics of surgical pathology and be aware with the basic terminology for accidental injuries and neoplastic growth.
- A2- Discuss the pathogenesis of different lesions related to the field of surgical pathology.
- A3- Recognize scientific progress in the field of surgical pathology.
- A4- Identify the macro- and microscopical alterations induced by injuries and cancer.
- A5- Outline the safety measures and basics of quality assurance during surgical interference.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Analyze and judge the gross, microscopical and ultrastructural findings of different surgical lesions.
- B2- Manage problems of diagnosis of surgical affection even in cases associated with rare data.
- B3- Relate different knowledge with the microscopical findings to get appropriate interpretations of surgical lesions.
- B4- Analyze new methods of tissue processing and staining in order to increase professional performance.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Apply accurate and effective PM examination of carcasses.
- C2- Determine tissue specimens for pathological diagnosis of diseases.
- C3- Demonstrate practical experience in the histological techniques.
- C4- Provide the macro- and microscopical findings and present them in a proper pathological report.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1- Coach and work in groups.
- D2- Classify different duties
- D3- Utilize computer and internet skills.
- D4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
Special Diagnostic Techniques in Surgical Pathology	48	24	24

Inflammation and Repair	48	24	24
Oncology	48	24	24
Surgical pathological affections in different body organs	48	24	24
Total	192	96	96

5- TEACHING & LEARNING METHODS:

*Lectures:

using data show, white board and over head projector.

*Practical and small group sessions:

Practical training: Practical demonstrations, practice of skills, and discussions.

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

Histopathological Drawings.

Library researches.

Internet researches.

Discussion in the researches.

Preparation of scientific reports.

* Audiovisual

Television circle in the practical laboratory.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)
<u>7.c grads</u>	50	25	25

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Microscopes, slides, projector slides, Data show.

8-2: Recommended books:

- Differential Diagnosis in Surgical Pathology. Paolo Gattuso, MD, Vijaya B. Reddy, MD, Odile David, MD, Daniel J. Spitz, MD, and Meryl H. Haber, MD.

8-3: SUGGESTED books:

- Robbins & Cotran Pathologic Basis of Disease. Vinay Kumar, Nelso Fausto, Abul Abbas. Saunders; 7 edition, USA, 2004
- Veterinary pathology Textbook. (By Thomas Carlyle Jones, Ronald Duncan Hunt and Norval W. King, - Wiley-Blackwell, U.S.A., 1997).
- Pathology of domestic animals, 4th ed. by Jubb K.V.F., Kennedy P.G. and Palmer N. (1994)

8.4: web sites and jouranlsand so on

- PubMed
- Science direct
- IVIS
- Environmental Protection Agency (EPA)
- Food and Drug Administration (FDA)
- EPA: Integrated Risk Information System (IRIS)
- J. of comparative pathology
- Vet. Record
- Am.J.of vet.pathology
- Am.J.of vet.med. association
- Teratog. Carcinogen. Mutagen.
- Toxicol. Pathol
- Veterinary RecordIVIS

Intended learning out comes

TOPIC	K.U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Special Diagnostic Techniques in Surgical Pathology	A1,A2, A3,A4, A5	B1,B2,B3,B4	-	D1-D2-D3- D4
Inflammation and Repair	A2,A3, A4	B2,B3	C1,C2,C3	D1-D2-D3- D4
Oncology	A2,A3	B1	C4	D1-D2-D3- D4
Surgical pathological affections in different body organs	A1,A2	B2,B3	C3	D1-D2-D3- D4
Total				

Evaluation Intended learning out comes

Methods	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectual	Practical	general	
Written examination	A1,A2,A3,A4,A5	B1,B2,B3,B4		D3	50
Oral examination	A1,A2,A3,A4,A5	B4		D4	25
Practical examination		B1,B4	C1,C2,C3,C4	D1,D2,	25

Course Coordinator:

Dr. Walied Sbhi Kotb

Head of Department:

Prof. Dr. Ahmed Elsawak

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 172 (2)
Course title: Lab. Animal Pathology
Academic Year: PhD programs
Total teaching hours: 96 hrs
Lectures: 48hrs
Practical: 48 hrs

2 - OVERALL AIMS OF THE COURSE:

Upon successful completion of the course, the student will be able to:

- Be aware with the pathogenesis of different infective agents in lab animals.
- Diagnose the infectious and non-infectious diseases of experimental animals (mouse, rat, rabbit, hamster and G. pig) by histopathological examination.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Discuss the basics of pathology including gross and microscopical alterations in experimental animals.
A2- Discuss the pathogenesis of diseases caused by different causative agents in lab animals.
A3- Express the scientific progress in the field of experimental Pathology.
A4- Describe the legal and ethical basics of dealing with pathological cases in different animal.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Differentiate the histopathological lesions induced in experimental animals by infectious diseases from those caused by metabolic disorders or chemicals.
B2- Manage problems of diagnosis of pathological affection even in cases associated with rare data.
B3- Relate different knowledge with the microscopical findings to get appropriate interpretations of pathological cases.
B4- Characterize risks during necropsy of experimental animals dying from infectious diseases.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Practice PM examination, sampling, and report writing and design an experiment for pathological investigations.
C2- Examine the lesions in experimental animals both grossly and microscopically to reach appropriate diagnosis.
C3- Apply essential laboratory skills that underpin techniques associated with sampling, processing, staining and microscopical examination.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1- Coach and work in groups.
D2- Classify different duties
D3- Utilize computer and internet skills.
D4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

4. semester topics:-

TOPIC	Total hours (Semester)	Hours for lecture	Hours for practical
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Basics of pathology of experimental animals (rats, mice, hamster, guinea pig and rabbits)	6	3	3
Experimental pathology strategy in lab animals	10	5	5
Experimental animal genetics and genomics species, strains, and substrains	10	5	5
Immunologic idiosyncracies of experimental animals	10	5	5
Bacterial, viral, parasiti and mycotic infections in experimental animals	10	5	5
Nutritional and metabolic disorders in experimental animals	10	5	5
Behavioral disorders in experimental animals	10	5	5
Environment-related disease in experimental animals	10	5	5
Aging, degenerative, and miscellaneous disorders in experimental animals	10	5	5
Neoplasms in experimental animals	10	5	5
Total	96	48	48

5- TEACHING & LEARNING METHODS:

*Lectures:

using data show, white board and over head projector.

*Practical and small group sessions:

Practical training: Practical demonstrations, practice of skills, and discussions.

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

Histopathological Drawings.

Library researches.

Internet researches.

Discussion in the researches.

Preparation of scientific reports.

* Audiovisual

Television circle in the practical laboratory.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)
7.c grads	25	10	15

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- *Practical Department Notes: available for students to purchase from the department.*
- Microscopes, slides, projector slides, Data show.

8-2: Recommended books:

- *Pathology of Laboratory Rodents and Rabbits. Dean H. Percy, Stephen W. Barthold. Wiley-Blackwell; 3 edition (2007).*

8-3: SUGGESTED books:

- *Robbins & Cotran Pathologic Basis of Disease. Vinay Kumar, Nelso Fausto, Abul Abbas. Saunders; 7 edition, USA, 2004*
- *Veterinary pathology Textbook. (By Thomas Carlyle Jones, Ronald Duncan Hunt and Norval W. King, - Wiley-Blackwell, U.S.A., 1997).*

8.4: web sites and journalsand so on

- *Archive of Pathology*
- *Veterinary Record/IVIS*
- *PubMed*
- *Science direct*
- *IVIS*
- *Environmental Protection Agency (EPA)*
- *Food and Drug Administration (FDA)*
- *EPA: Integrated Risk Information System (IRIS)*
- *Egyptian Journal of Comparative Pathology and Clinical Pathology*
- *Pathologia Veterinaria*
- *American Journal of Pathology*
- *Journal of Pathology and Bacteriology*

Intended learning outcomes

TOPIC	K.U (a)	LS (b)	P.P.S (c)	G.T.S Oopp;l;p;p=;';(d)
Basics of pathology of experimental animals (rats, mice, hamster, guinea pig and rabbits)	A3	B4	-	D1,D2,D3,D4
Experimental pathology strategy in lab animals	A1,A4	B1	C3	D1,D2,D3,D4
Experimental animal genetics and genomics species, strains, and substrains	A2,A3	B2,B4	C1	D1,D2,D3,D4
Immunologic idiosyncracies of experimental animals	A3	B1,B2,B3	C2,C3	D1,D2,D3,D4
Bacterial, viral, parasiti and mycotic infections in experimental animals	A1,A2 A3	B1,B2,B3,B4	C1,C2,C3	D1,D2,D3,D4
Nutritional and metabolic disorders in experimental animals	A3	B2	-	D1,D2,D3,D4
Behavioral disorders in experimental animals	-	B1	C1	D1,D2,D3,D4
Environment-related disease in experimental animals	A1	B3	C2	D1,D2,D3,D4

Aging, degenerative, and miscellaneous disorders in experimental animals	A2	B2	-	D1,D2,D3,D4
Neoplasms in experimental animals	A1,A2,A3	B1,B2,B3,B4	C1,C2,C3	D1,D2,D3,D4
Total				

Intended learning out comes Evaluation

Methods	Knowledge	I.L.O.S Evaluation			Marks allocated
		Intellectua l	Practical	general	
Written examination	A1,A2,A3,A4	B1,B2,B3		D1,D2	25
Oral examination	A1,A2,A3	B1,B2,B3,B4		D4	10
Practical examination		B3	C1,C2,C3	D3,D4	15

Course Coordinator:

Dr. Walied Sobhi Kotb

Head of Department:

Prof. Dr. Ahmed Elsawak

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 173 (2)
Course title: Genetical Pathology
Academic Year: PhD program
Total teaching hours: 96 hrs
Lectures: 48hrs
Practical: 48 hrs

2 - OVERALL AIMS OF THE COURSE:

Upon successful completion of the course, the student will be able to:

- Be aware with the pathogenesis of different genetic lesions.
- Diagnose genetic diseases by histopathological examination.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Discuss the basics of pathology including gross and microscopical alterations in genetic lesions.
A2- Discuss the pathogenesis of diseases caused by different genetic factors.
A3- Define the basic principles of genetical animal diseases.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Differentiate the histopathological lesions by genetic diseases from those caused by metabolic disorders or chemicals.
B2- Relate different knowledge with the microscopical findings to get appropriate interpretations of pathological cases.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Practice PM examination, sampling, and report writing and design an experiment for pathological investigations.
C2- Examine the lesions both grossly and microscopically to reach appropriate diagnosis.
C3- Apply essential laboratory skills that underpin techniques associated with sampling, processing, staining and microscopical examination.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1- Coach and work in groups.
D2- Classify different duties
D3- Utilize computer and internet skills.
D4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

4. semester topics:-

TOPIC	Total hours (Semester)	Hours for lecture	Hours for practical
Basics of pathology	12	6	6
Genomic imperfections	18	9	9
Errors in histogenesis	12	6	6
Congenital abnormalities	12	6	6

Innate resistance to diseases	18	9	9
Genetics and tumor formation	24	12	12
Total	96	48	48

5- TEACHING & LEARNING METHODS:

*Lectures:

using data show, white board and over head projector.

*Practical and small group sessions:

Practical training: Practical demonstrations, practice of skills, and discussions.

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

Histopathological Drawings.

Library researches.

Internet researches.

Discussion in the researches.

Preparation of scientific reports.

* Audiovisual

Television circle in the practical laboratory.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)	One examination at the end of the academic Year (49th week)
<u>7.c grads</u>	25	10	15

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Practical Department Notes: available for students to purchase from the department.*
- Microscopes, slides, projector slides, Data show.

8-2: Recmended books:

- Muri,s Text Book of Pathology 2001

8-3: SUGGESTED books:

- Veterinary pathology Textbook. (By Thomas Carlyle Jones, Ronald Duncan Hunt and Norval W. King, - Wiley-Blackwell, U.S.A., 1997).*

8.4: web sites and jouranlsand so on

- Archive of Pathology*
- Veterinary Record/IVIS*
- PubMed*
- Science direct*
- IVIS*
- Egyptian Journal of Comparative Pathology and Clinical Pathology*
- Pathologia Veterinaria*

- *American Journal of Pathology*
- *Journal of Pathology and Bacteriology*

Intended learning out comes

TOPIC	K.U (a)	IS (b)	P.P.S (c)	G.T.S (d)
Basics of pathology	A1,A2, A3	B1	C1,C2,C3	D1,D2,D3,D4
Genomic imperfections	A2	B2	-	D1,D2,D3,D4
Errors in histogenesis	A2	-	-	D1,D2,D3,D4
Congenital abnormalities	A1,A2	B1,B2	C1,C2,C3	D1,D2,D3,D4
Innate resistance to diseases	A2	-	-	D1,D2,D3,D4
Genetics and tumor formation	A1,A2	B2	C1,C2,C3	D1,D2,D3,D4
Total				

Intended learning out comes Evaluation

Methods	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectual	Practical	general	
Written examination	A1,A2,A3	B1,B2		D1,D2	25
Oral examination	A1,A2	B1,B2		D4	10
Practical examination		B1,B2	C1,C2,C3	D3,D4	15

Course Coordinator:

Dr. Walied Sobhi Kotb

Head of Department:

Prof. Dr. Ahmed Elsayak

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 174(2)

Course title: **Fish Pathology**

Academic Year: PhD program

Total teaching hours: 144hrs

Lectures: 48hr

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

To provide student with basic knowledge *and skills* concerning normal structure of the different systems of different species of fish (cytology, cell biology) and their diseases, an appropriate background covering microscopic examination and histogenesis of the different systems of different species of fish and their diseases.

Enable students to differentiate the normal structures of different systems of different species of fish and their diseases.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Describe normal structure of the different systems of different species of fish, cytology and cell biology and their diseases.

A2- Identify the normal tissue of the different systems of different species of fish and their diseases.

A3- Describe the legal and ethical basics of dealing with pathological cases in aquatic animal.

A4- Outline basics and ethics of scientific research dealing with different fish diseases.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1- Develop a correlation between pathogenesis of pathological changes induced in systems of different species of fish by diseases, gross pathological changes and their clinical picture.

B2- Create difference between the pathological changes induced in systems of different species of fish by bacterial, viral and parasitic diseases.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

C1- Examine stained tissue slides obtained from diseases of fish under light and reading electron microscope.

C2- Compare between the pathological pictures of diseases in different species of fish.

C3- Identify the difference between pathological alterations induced in the fish diseases compared with the same changes in domestic animals.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Coach and work in groups.

D2- Classify different duties

D3- Utilize computer and internet skills.

D4-Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

4. semester topics:-

TOPIC	Total hours (Semester)	Hours for lecture	Hours for practical
Digestive system Diseases	33	11	22
Respiratory system Diseases	24	8	16
Genital system Diseases	30	10	20
Immune system Diseases	27	9	18
Sense organs, skin diseases	30	10	20
Total	144	48	96

5- TEACHING & LEARNING METHODS:

*Lectures:

using data show, white board and over head projector.

*Practical and small group sessions:

Practical training:Practical demonstrations, practice of skills, and discussions.

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

Histopathological Drawings.

Library researches.

Internet researches.

Discussion in the researches.

Preparation of scientific reports.

* Audiovisual

Television circle in the practical laboratory.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	One examination at the end of the	One examination at the end of the academic Year	One examination at the end of the

	academic Year 49th week	(49th week)	academic Year (49th week)
7.c grads	50	25	25

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Practical Department Notes: available for students to purchase from the department.
- Microscopes, slides, projector slides, Data show.

8-2: Recmended books:

- Walter and Israel(1996): general pathology ,6th.
- Dijk, J E van; Gruys, E (Erik); Mouwen, J M V M. 2007 Color atlas of veterinary pathology : general morphological reactions of organs and tissues, 2nd ed.Edinburgh ; New York : Saunders Elsevier, 2007.
- Quinn, P J; Markey, B K (Bryan K); Leonard, F C; FitzPatrick, E S; Fanning, S; Hartigan, P J. (2011) Veterinary microbiology and microbial disease, Second Edition.
- Chichester, West Sussex, UK : Wiley-Blackwell
- Ronald J. Roberts(2012)Fish Pathology, Fourth Edition Copyright © 2012 Blackwell Publishing Ltd

8-3: SUGGESTED books:

Hugh Ferguson, Ellen Bjerkas(2006) Systemic Pathology of Fish: A Text and Atlas of Normal Tissue Responses in Teleosts, and Their Responses in Disease.

8.4: web sites and jouranlsand so on

- WWW.PubMed.com
- www.Vet.net.com
- *Egyptian journal of comparative pathology*
- *Americanjournal of pathology.*
- *Journal of veterinary science*

Intended learning out comes of each topic during academic year

TOPIC	K.U (a)	LS (b)	P.P.S (c)	G.T.S (d)
Digestive system Diseases	A1 A2- A3-A4	B1-B2	C1-C2- C3-	D1-D2-D4
Respiratory system Diseases	A1-A2- A3-A4	B1,B2	C1-C2-C3	D1-D2-D3- D4
Genital system Diseases	A1-A2- A3-A4	B1,B2	C1-C2-C3	D1-D2-D4
Immune system Diseases	A1-A2- A3-A4	B1,B2	C1-C2-C3	D1-D2-D4
Sense organs, skin diseases	A1-A2- A3-A4	B1,B2	C1-C2-C3	D1-D2-D4
Total				

Intended learning out comes Evaluation

Methods	Knowledge	I.L.O.S Evaluation			Marks allocated
		Intellectual	Practical	general	
Written examination	A1.A2.A3.A4	B1.B2		D1,D2	50
Oral examination	A1.A2. A3.A4	B1.B2		D4	20
Practical examination Activities		B2	C1.C2.C3.	D3,D4	20
					10

Course Coordinator:

Dr. Nagwan El-Habashi

Head of Department:

Prof. Dr. Ahmed Elsawak



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Anatomy and Embryology

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy

(Anatomy and Embryology)

Kafrelsheikh University

Faculty of Veterinary Medicine

Department of Anatomy and Embryology

Program Specification for PhD Degree

(2021-2022)

A- Administrative information:

- 1- Awarding Body:** Kafrelsheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Anatomy and Embryology
- 4- Program Title:** PhD Degree in Veterinary Medicine (Anatomy and Embryology)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years

B- Professional information:

1- Aims of the Program:

- Allow graduate to create new knowledge and understanding in Anatomy and Embryology through the process of research and inquiry.
- Enable graduate to achieve competency in modern technology
- Provide the graduate with the opportunity to develop communication skills, recent techniques and tools in the field of Anatomy and Embryology and experience of scientific research skills.
- Giving the graduate the ability to be creative to advance Anatomy and Embryology through new scientific research.

- Enable graduate to achieve capability in modern technology to develop practical research project.
- Demonstrate an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and present their own research data for the improvement of the Anatomy and Embryology.
- Have the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibit awareness about current Anatomy and Embryology and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of Anatomy and Embryology.

2- Academic standards:

**Academic reference standards (ARS) adopted by the faculty committee No(1)
14/9/2014**

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Mastering the basics and methodologies of scientific research in anatomical & embryological branches for better dealing with anatomical problems professionally.
- 2) Performing continuous effort to add knowledge about recent dissecting tools and newest anatomical techniques used for comparative anatomy.
- 3) Analysis and criticism of anatomical information in dissecting lab. and fields related to anatomy.
- 4) Integrating data collected from the case history with related dissecting

- findings to reach the correct diagnosis of cause of anatomical abnormalities.
- 5) Showing deep awareness with the ongoing anatomical problems and modern theories in dissecting animals and controlling cases of abnormalities.
 - 6) Identifying the main causes of organs malformations and suggesting the appropriate methods of carcass dissection.
 - 7) Mastering of a wide range of professional skills in dissecting laboratory performed for comparative anatomy.
 - 8) Acquiring trends towards developing modern methods and tools in advanced anatomy, and developmental anatomy analysis.
 - 9) Communicating effectively with anatomists, surgeons, pathologists, students and colleagues and leading work team through professional scale.
 - 10) Making decision in different professional situations especially under field conditions to deal with abnormal cases of bone fracture or injury.
 - 11) Using of the available resources efficiently in the development of new techniques and work to find new resources.
 - 12) Being aware with his role in society development and community preservation from the abnormal animals in the environment.
 - 13) Acting with integrity, credibility and according to the rules of profession.
 - 14) Realizing the importance of self and life-long learning and progress.

4-Programme outcomes [intended learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

- a.1. Recognize recent theories, principles and knowledge in anatomy and embryology.
- a.2. Apply Principles methodologies and ethics of scientific research and its tools in anatomy and embryology
- a.3. Define legal and ethical principles of the area of anatomy and embryology.
- a.4. Recognize Principles and the basics of quality assurance the field of anatomy and embryology.
- a.5. Apply knowledge and understanding in of anatomy and embryology for enhancing animal health.

- a.6. Explain the effect of professional anatomical practice on perfect surgical and medicinal intervention.
- a.7. Describe the principles, methodologies and ethics of scientific research in anatomy and embryology.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1. Analyze and evaluate anatomical information from the dissecting finding and trace evidence detected from the case history.
- b.2. Assess risk in the field of anatomy.
- b.3. Solve professional problems in anatomy and embryology using available data under field or laboratory conditions.
- b.4. Perform scientific research studies that can give significant impact on the control of certain defect in developing animals.
- b.5. Confirm scientific papers in anatomy and embryology with the ability to match and discuss the own findings with those of other scientists.
- b.6. Manage and lead scientific open discussion in the field of anatomy and embryology based on evidences and proofs.
- b.7. Make professional decisions about presence of abnormal anatomical cause of death and suggesting further investigations and search for new evidences.
- b.8. Explore the possible causes of anomalies and therefore suggesting creative and innovative control for overcoming the problem.
- b.9. Order a discussion based on anatomical and embryological evidences and proofs including biological trace evidence and molecular anatomy.

c. Practical and professional skills:

At the end of the program, postgraduate will inquire the ability of:

- c.1. Perform the professional anatomical skills
- c.2. Select and perform relevant statistical analysis on data obtained for their own research.
- c.3. Perform essential laboratory skills that help techniques to do easier associated with Anatomy research.
- c.4. Planning to develop anatomical practices and improve others performance.

c.5. Demonstrate competence in IT including word processing, data handling and information retrieval.

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1.** Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology.
- d.2.** Utilize information technology to serve professional practice.
- d.3.** Teach others and evaluate their performance.
- d.4.** Self-evaluate and identify personal learning requirements
- d.5.** Lead team under different professional circumstances.
- d.6.** Correlate the different sources for obtaining information and knowledge.
- d.7.** Manage scientific meetings with the ability to manage time efficiently.

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions,

6-Assessments:

The program depends on different assessment ways:

- a. Course assessment:
 - 1. Final written exam
 - To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
 - 2. Practical exam
 - To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
 - 3. Oral exam
 - To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.
- b. Qualifying examination
The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work
- c. PhD Thesis assessment

- Annual reports adopted by the Faculty.
- Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
- Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1-2; b1,2,3
Oral	a1-2; b1,2,3
Practical	c1-2
Qualifying Exam	a1-7; b1-9
Thesis	a3-7; b4-9; c1-5; d1-7

7. Program structure

a. Program duration (years):

PhD degree from 3-5 years and it should not exceed a period of five years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law.

b. Program courses:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council so that include 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. The student will

entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c-Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d-Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion .

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Anatomy and Embryology includes:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular	2	2

		system		
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of urogenital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2

	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		

Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2

	162/2	62- Fish nutrition	1	2
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2

Bacteriology and Virology	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
81- Advanced immunology			2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1
Hygiene and control of milk and dairy products	208/2	108- Hygiene and control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2

	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2

	233/2	133 - diseases of newly born animals	2	2
	234/2	134- Stress diseases during animals transport.		
Infectious diseases	235/2	135- Infectious diseases of cattle	2	2
	236/2	136- Infectious diseases of sheep and goat	2	2
	237/2	137- Infectious diseases camel	2	2
	238/2	138 Infectious diseases of equine	2	2
	239/2	139- Infectious diseases of pet animals	2	2
	240/2	140- Infectious diseases lab animals	1	2
	241/2	141- Infectious diseases of udder and newly born animals	2	2
	242/2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific	2	2

		courses in ruminants- equine- pet animals)		
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their	2	2

		evaluation in polutry		
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures- specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2

engineering	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medicine (Anatomy and Embryology) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medical science lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.
3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.
5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.

7. The applicant should conduct an innovative research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.

8. The applicant should submit a seminar(Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).

9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met: Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.

10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and in case of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.

11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards it to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.

12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**

b- The final degree of each course which has 3 hours (lecture and practical) per week is 100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.

12. Marking scale as follow:-

Grade		Percentage
Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
1	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

Program Coordinator

Head of Department

Prof. Dr.

Prof. Dr.

Matching program ILOs with ARS - Matrix

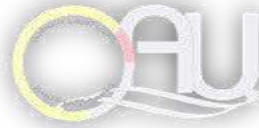
Program ILOs	ARS																																
	K&U (a)						I.S. (b)									P.P. (c)					G.T. (d)												
	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7						
K&U	1 2	3	4	5	6	7																											
I.S.							1	3	4	5	2	6	7	8	9																		
P.P.																1	3	2	4	5													
G.T.																											1	2	3	4	6	5	7



Program Specification Matrix

PhD in Veterinary Medicine (Anatomy and Embryology)

Courses		Total Contact hours/course	No. of hours / week			K.U (a)								I.S (b)									P.P (c)					G.T (d)								
Code	Name		Lect.	Lab.	Total	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7		
Predocutorial courses (10-12 theoretical and practical hours weekly for 12 months)						x	x							x	x	x									x	x	x			x	x	x	x	x	x	x
Qualification exam								x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Thesis								x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Anatomy and Embryology



ARS for PhD in Veterinary Medicine (Anatomy and Embryology)

1) Graduate attributes

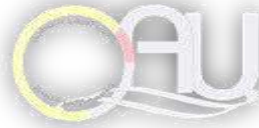
The graduate should have the ability for:

Upon successful completion of the program, the graduate has the ability for:

1. Mastering basics and methodologies of anatomical and embryological scientific research.
2. Continuous effort to add knowledge in the field of Anatomy and Embryology.
3. Analysis and criticism to anatomical and embryological information in relation to associated fields (surgery, theriogenology, medicine, histology, physiology.... Etc.).
4. Integration to anatomical and embryological knowledge with related information and extrapolation and improvement their interrelationship.
5. Showing deep awareness with the ongoing anatomical problems and modern theories in the area of Anatomy and Embryology.
6. Identifying professional anatomical problems and suggesting innovative solutions to the certain anatomical problem.
7. Mastering of a wide range of professional skills in the Anatomy and Embryology.
8. Acquiring trends towards developing modern methods and dissecting tools in practicing Anatomy and Embryology.
9. Using appropriate technological means to serve professional anatomical practice.
10. Communicating effectively and leading work team through professional scale in the dissecting room.
11. Making decision in different in different professional situations.
12. Using of the available resources in the related department serving the field of Anatomy and Embryology efficiently.
13. Being aware with his role in society development and community preservation.
14. Acting with integrity, credibility and according to the rules of anatomical profession.
15. Realizing the importance of self and life-long learning and progress in the field of Anatomy and Embryology

A) Knowledge and understanding

Adopted ARS	NARS (PhD)
<i>By the end of this program the graduate should</i>	<i>By the end of this program the</i>



	<i>understand and accommodate the following:</i>	<i>graduate should understand and accommodate the following:</i>
1)	Advanced theories, principles and specialized knowledge in Anatomical and embryological field.	Recent theories, principles and knowledge in the field of specialization and related areas
2)	Principles, methodologies and ethics of scientific research and its different tools in the area of Anatomy and Embryology.	Basics, methodologies and ethics of scientific research and its different tools
3)	Diagnose and manage the same anatomical problem in different species.	Legal and ethical principles of professional practice in the area of specialization
4)	Recognize principles and the basics of quality assurance in the area of Anatomy and Embryology.	Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Be aware with the effect of professional anatomical practice on perfect surgical and medicinal intervention	Awareness with the effect of professional practice on the environment and methods of its maintain and development
6)	Principles, methodologies and ethics of anatomical and embryological research.	Recent theories, principles and knowledge in the field of specialization and related areas

B) Intellectual skills

	Adopted ARS	NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Judging and evaluating anatomical and embryonic information	Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solving problems in the field of anatomy and diagnostic imaging	Solving professional problems using available data
3)	Performing scientific anatomical research studies that can give significant impact on the field of Anatomy and Embryology.	Conducting scientific research studies that add to knowledge
4)	Publish scientific articles in specialized conferences and journals	Formulating scientific papers
5)	Risk-assessment in the field of anatomy specially using formalin, stains and other chemicals in research	Risk-assessment in the field of specialization
6)	Share and lead scientific open discussion in the	Planning to enhance the performance in



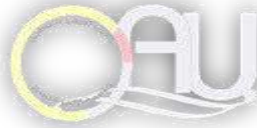
	field of Anatomy and Embryology based on evidences and proofs.	field of specialization
7)	Make professional decisions and suggestion for dealing with anatomical field problem under different contexts.	Making professional decisions under different professional contexts
8)	Plan to enhance the performance in field of Anatomy and Embryology.	Creation and innovation in the area of specialization
9)	Lead open discussions in a specific area	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills concerning preparation of animal body, staining, dissection and diagnostic imaging.	Mastering basic and modern professional skills in the area of specialization
2)	Write and interpret professional anatomical reports.	Writing and evaluating professional reports
3)	Evaluate and modernize methods and dissecting tools in the Anatomy and Embryology.	Evaluating and modernizing methods and tools in the area of specialization
4)	Use modern technological means to serve professional anatomical practice.	Using modern technological means to serve professional practice
5)	Plan for the improvement of professional anatomical practice and developing performance of others.	Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Communicating effectively with physicians, other health professionals, and health related agencies.	Effective communication
2)	Using the sources of biomedical information and	Utilizing information technology to



	communication technology to remain current with advances in knowledge and practice.	serve development of professional practice
3)	Presenting information clearly in written, electronic and oral forms	Teaching others and evaluating their performance
4)	Establishment of life-long self-learning required for continuous professional development.	Self-assessment and continuous learning
5)	Using different resources to obtain knowledge and information	Using different resources to obtain knowledge and information
6)	Team working and leading a team in familiar professional contexts	Team working and leading a team in familiar professional contexts
7)	Management of time and open discussions in the professional field	Management of scientific meetings with the ability to manage time efficiently

ثالثا: برامج الدكتوراه

١ - مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطا و مطورا للعلاقات البيئية بينها
٥. إظهار وعيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حلولاً مبتكرة لحلها
٧. إتقان نطاقا واسعا من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تنميتها والعمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصادقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢ - المعايير القياسية العامة

المعرفة و الفهم:

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا علي الفهم و الدراية بكل من:

- أ- النظريات و الأساسيات و الحديث من المعارف في مجال التخصص و المجالات ذات العلاقة
- ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
- ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
- ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
- ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و طرق تنمية البيئة و صيانتها

المهارات الذهنية

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

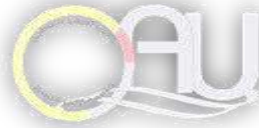
- أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها

- ب- حل المشاكل المتخصصة استنادا علي المعطيات المتاحة
 - ج- إجراء دراسات بحثية تضيف إلى المعارف
 - د- صياغة أوراق علمية
 - هـ- تقييم المخاطر في الممارسات المهنية
 - و- التخطيط لتطوير الأداء في مجال التخصص
 - ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة
 - ح- الابتكار/ الإبداع
 - ط- الحوار والنقاش المبني علي البراهين والأدلة
- المهارات المهنية**

- بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
 - ب- كتابة و تقييم التقارير المهنية
 - ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
 - د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
 - هـ- التخطيط لتطوير الممارسة المهنية وتنمية أداء الآخرين
- المهارات العامة و المنقلة**

- بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- التواصل الفعال بأنواعه المختلفة
 - ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية
 - ت- تعليم الآخرين وتقييم أداءهم
 - ث- التقييم الذاتي والتعلم المستمر
 - ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
 - ح- العمل في فريق وقيادة فرق العمل
 - خ- إدارة اللقاءات العلمية و القدرة علي إدارة الوقت





Course specification (2021 / 2022)

1 - Basic Information:

Code number: 101/2

Course title: Applied and surface Anatomy

Academic Year: Doctorate of Veterinary Medicine Program

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, Master students should be able to:

- Gain basic knowledge and detailed information about the advanced applied and surface anatomy in domestic animals which enable student to identify sites for anesthesia and surgical operation in the animal which will help student during clinical interference.
- Establish advanced methods to use these anatomical information in clinics (medicine, surgery, obstetrics.....etc).

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Define the different anatomical landmarks in the animal body important to clinical branches for diagnostic and surgical purpose.
- A2- Identify the different regions of the body in relation to the surface of the body.
- A3- Point the topographical anatomy of the different organs in the domestic animal and superficial lymph nodes.
- A4- Label the different landmarks of the area of percussion and auscultation of the vital thoracic organs in all farm animals.
- A5- Recite the suitable site for nerve block and epidural anaesthesia.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Explore the suitable sites for anesthesia or nerve block.
- B2- Detect the area for percussion, auscultation and the area of heart beat measure in animal successfully.
- B3- Relate the surface arterial and nerve supply to the physiological functions.
- B4- Manage the anatomical features of all body organs and superficial lymph nodes to aid in future surgery and medicine such as (endoscopy, cesarian section, laparotomy, castration).
- B5- Analyze inquiries from the animal owners and the official authorities reports (e.g. Forensic Medicine) and how to answer it.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:



By the end of the course, students should be able to:

- C1- Employ recent techniques and tools adopted to evaluate the different body region through surface anatomy knowledge on the living animals.
- C2- Apply techniques associated with determination of sites of bony landmarks and emergence of nerves.
- C3- Dissect skin and superficial nerve supply.
- C4- Detect the area for percussion, auscultation and the area of heart beat measure in animal successfully.
- C5- Determine the sites of all lymph nodes, paravertebral and epidural anesthesia in the animal body.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- D.1. Communicate effectively with his professors, and collages.
- D.2. Utilize different sources of knowledge and information
- D.3. Use information technology to serve the professional practice.
- D.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Applied and surface anatomy of the head and neck	25	25	50
2. Applied and surface anatomy of the thorax	24	22	46
3. Applied and surface anatomy of the abdomen	22	24	46
4. Applied and surface anatomy of the limbs	25	25	50
Total	96	96	192

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming
- * **Practical sessions:**
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports

- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.



Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d4
Practical sessions		b1 to b5	c1 to c5	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c5	d1 to d4

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a. Used methods	Written examination	oral examination	Practical examination	Activities
7.b. Time	At the end of the academic year	At the end of the academic year	following the end of the academic year	All over the academic year
7.c. Grades	50	20	20	10

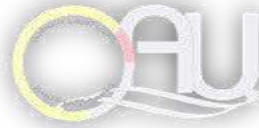
6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b5		d4
Practical exams			c1 to c5	d2, d3
Oral exams	a1 to a5	b1 to b5		d1
Student activities	a1, a5			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Veterinary Anatomy of Domestic Mammals, König, H.E., Liebich, H. Manson Publishing Ltd; 5th Edition (2020).
- Essentials of Clinical Anatomy of the Equine Locomotor System. Jean-Marie Denoix. CRC Press; 1st edition (2019).
- Miller and Evan's Anatomy of the Dog. John W. Hermanson, Alexander de Lahunta. Saunders, 5th Edition (2019).
- Text book of Veterinary Anatomy. Dyce, K.M; Sack, W.O. and Wensing C.J.G. 5th Ed., (2017). Saunders Publ. Co.



- Nickel, R., Schummer, A., Seiferle, E. / Parey, P. (1987). The Anatomy of the Domestic animals part 3 (circulatory system), Berlin, Germany
- Getty, R (1975). Sisson and Grossman's The Anatomy of the Domestic Animals volume 1& 2. 5th edition, W B Saunders.

8-2: Recommended books:

- Veterinary Medical Terminology. Dawn E. Christenson. Saunders, 3rd Edition (2019).
- Essentials of Clinical Anatomy of the Equine Locomotor System. Jean-Marie Denoix. CRC Press; 1st edition (2019).
- Saunders Veterinary Anatomy Flash Cards, Saunders; 1 Crds edition (2009).
- Avian Anatomy: Textbook and Colour Atlas. Horst E. Koenig, Ruediger Korbel, Hans-Georg Liebich, Corinna Klupiec. 5m Publishing, 2nd edition (2016).
- An Illustrated Guide to Veterinary Medical Terminology, Janet Amundson Romich, Delmar Cengage Learning; 3rd edition (2008).
- Boyd, J.S. (1991): Color Atlas Of Clinical Anatomy Of The Dog and Cat. St. Louis, Mosby. Year book

8.3: Egyptian Knowledge Bank, Scientific websites and journals

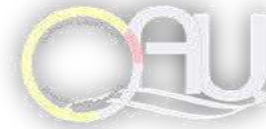
- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- World Association of Veterinary Anatomists
- Anatomia Histologia Embryologia
- Anatomical Record
- Journal of Anatomy
- Journal of Veterinary Anatomy
- Cells, tissues and organs
- Journal of Developmental Biology
- Journall of Morphology

Course Coordinator

Head of Department

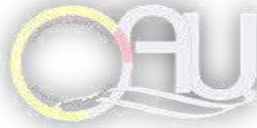
Dr. Foad Farrag

Prof. Mohammed El-Ghannam



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hr	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills					General & Transferable Skills			
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4
Applied and surface anatomy of the head and neck	25	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Applied and surface anatomy of the thorax	24	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Applied and surface anatomy of the abdomen	22	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Applied and surface anatomy of the limbs	25	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓



Course specification (2021 / 2022)

1 - Basic Information:

Code number: 102/2

Course title: Anatomical techniques and Superficial Anatomy

Academic Year: Doctorate of Veterinary Medicine Program

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, Master students should be able to:

- Gain basic knowledge and detailed information about anatomical techniques and superficial anatomy in domestic animals.
- Know the topographical anatomy of the internal organ and other structures that can be examined through body surface.
- Establish advanced methods to use these anatomical information in clinics (medicine, surgery, obstetrics.....etc).

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Describe the different body regions in the domestic animals.

A2- Be aware with the suitable site for nerve block and epidural anaesthesia.

A3-Identify the sites of the important bony landmarks which used as a guide for surgical operations.

A4- Know the different anatomical techniques used in animal dissection and preservation of carcass and different body organs.

A5- Label the topographical anatomy of the different organs in the domestic animal.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1- Relate the surface arterial and nerve supply to the physiological functions.

B2- Detect the anatomical obstacles to percussion and auscultation.

B3- Discover the specific organs in relation to the surface of the body.

B4- Determine the suitable sites for anesthesia or nerve block.

B.5 Analyze the anatomical features of all body organs to aid in endoscopy, cesarian section, laparotomy, and castration.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

C1- Dissect the skin and superficial arterial and nerve supply.

C2- Palpate and identify sites of bony landmarks and superficial lymph nodes.

C4- Determine the sites of paravertebral and epidural anesthesia in the animal body.

C5- Use surface anatomy for surgical interference and medical examination.

C6- Detect the area for percussion, auscultation.



3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- D.1. Communicate effectively with his professors, and collages.
- D.2. Utilize different sources of knowledge and information
- D.3. Use information technology to serve the professional practice.
- D.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
5. Anatomical techniques	25	25	50
6. Superficial anatomy of head and neck	24	22	46
7. Superficial anatomy of trunk	22	24	46
8. Superficial anatomy of limbs	25	25	50
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d4
Practical sessions		b1 to b5	c1 to c6	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c6	d1 to d4

6. METHODS FOR STUDENTS With limited capabilities:-



- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a. Used methods	Written examination	oral examination	Practical examination	Activities
7.b. Time	At the end of the academic year	At the end of the academic year	following the end of the academic year	Allover the academic year
7.c. Grades	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
6.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b5		d4
Practical exams			c1 to c5	d2, d3
Oral exams	a1 to a5	b1 to b5		d1
Student activities	a1, a5			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

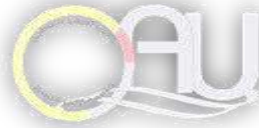
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8-2: Recommended books:

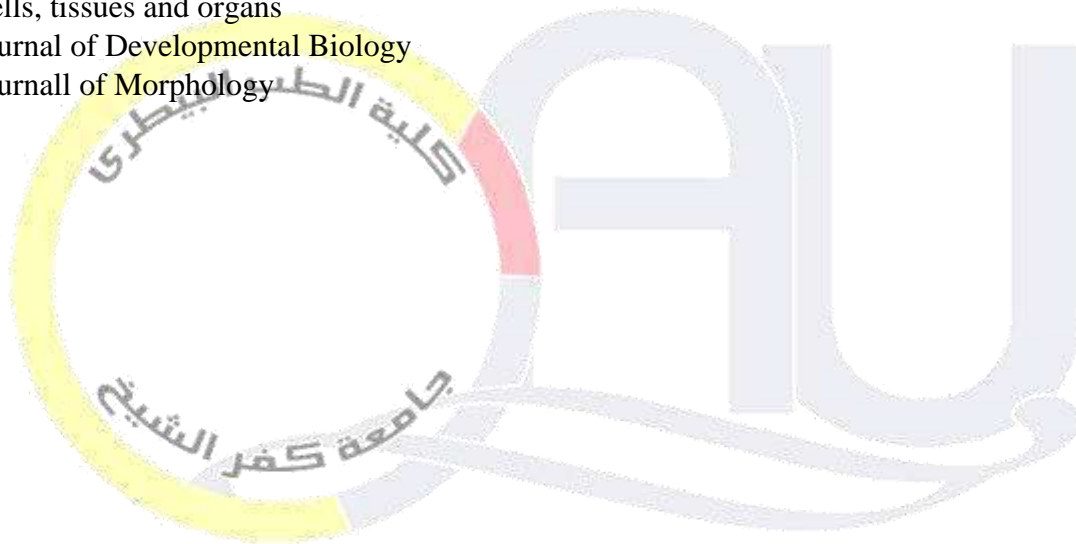
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- Anatomical Record
- Journal of Anatomy
- Journal of Veterinary Anatomy
- Cells, tissues and organs
- Journal of Developmental Biology
- Journall of Morphology



Course Coordinator

Head of Department

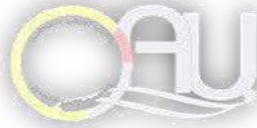
Dr. Foad Farrag

Prof. Mohammed El-Ghannam



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hr	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills						General & Transferable Skills			
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	6	1	2	3	4
Anatomical techniques	25				✓				✓		✓	✓		✓		✓		✓	✓	✓	✓
Superficial anatomy of head and neck	24	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
Superficial anatomy of trunk	22	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
Superficial anatomy of limbs	25	✓	✓	✓		✓	✓		✓	✓		✓	✓	✓	✓			✓	✓	✓	✓



Course specification (2021 / 2022)

1 - Basic Information:

Code number: 103/2

Course title: Osteology and Arthrology

Academic Year: **Doctorate of Veterinary Medicine Program**

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, Master students should be able to:

- Gain basic knowledge and detailed information about comparative features of bones types & structures of joints of different animal species.
- Use modern techniques for bone and joint examination as radiography and Ultrasonography.
- Establish advanced methods to use these anatomical information in clinics (medicine, surgery,.....etc).

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Define the anatomical terms concerned with osteology and arthrology.
- A2- Describe bones regarding to the structure, type, function, blood supply and muscular attachment in domestic animals.
- A3- Know the different anatomical features and types of joints in different domestic animals.
- A4- Follow up the growth and ossification of bones in relation to the age both macroscopically and radiographically.
- A5- Identify the different anatomical landmarks of the skeleton important to clinical branches.

3-B: INTELLECTUAL SKILLS:

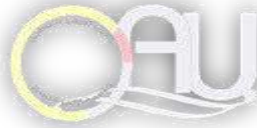
By the end of the course, students should be able to:

- B1- Interpret the anatomical problems of the skeleton and joints in the veterinary field and try to solve it on a scientific basis.
- B2- Construct the appropriate technique for joints dissection and bone preparation.
- B3- Differentiate between various animal species depending upon differences in bone and joints.
- B4- Recognize the sites of the different bursae and tendon sheaths which may benefit in treatment of pathological conditions.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Dissect bones and joint and its blood vessels and have the skill to inject joints.
- C2- Apply the photographs of bones and joints taken in recent techniques (Ultrasonography, X rays, C.T, and M.R.I).
- C3- Discover the normal anatomical and malconfuigation of some joints in the limb of the animal.



C4- Figure out the synovial sacs in the animal body.

C5- Palpate and identify the skeletal prominence of the regions in different animals that aid the diagnosis of the fracture and dislocation.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

D.1. Communicate effectively with his professors, and collages.

D.2. Utilize different sources of knowledge and information

D.3. Use information technology to serve the professional practice.

D.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
9. General Osteology and Arthrology	25	25	50
10. Bones and joints of the thoracic limb	24	22	46
11. Bones and joints of the pelvic limb	22	24	46
12. Bones and joints of the axial skeleton	25	25	50
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b4		d1, d4
Practical sessions		b1 to b4	c1 to c5	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b4	c1 to c5	d1 to d4



6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a. Used methods	Written examination	oral examination	Practical examination	Activities
7.b. Time	At the end of the academic year	At the end of the academic year	following the end of the academic year	Allover the academic year
7.c. Grades	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
6.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b4		d4
Practical exams			c1 to c5	d2, d3
Oral exams	a1 to a5	b1 to b4		d1
Student activities	a1, a5			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

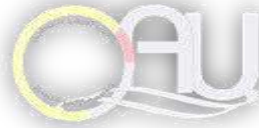
8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

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- Essentials of Clinical Anatomy of the Equine Locomotor System. Jean-Marie Denoix. CRC Press; 1st edition (2019).
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- Getty, R (1975). Sisson and Grossman's The Anatomy of the Domestic Animals volume 1& 2. 5th edition, W B Saunders.

8-2: Recomendated books:

- Veterinary Medical Terminology. Dawn E. Christenson. Saunders, 3rd Edition (2019).



- Essentials of Clinical Anatomy of the Equine Locomotor System. Jean-Marie Denoix. CRC Press; 1st edition (2019).
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- Boyd, J.S. (1991): Color Atlas Of Clinical Anatomy Of The Dog and Cat. St. Louis, Mosby. Year book

8.3: Egyptian Knowledge Bank, Scientific websites and journals

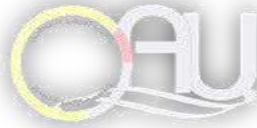
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- Anatomia Histologia Embryologia
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- Journal of Anatomy
- Journal of Veterinary Anatomy
- Cells, tissues and organs
- Journal of Developmental Biology
- Journall of Morphology

Course Coordinator

Dr. Foad Farrag

Head of Department

Prof. Mohammed El-Ghannam



Course specification (2021 / 2022)

1 - Basic Information:

Code number: 104/2

Course title: Comparative Digestive System

Academic Year: Doctorate of Veterinary Medicine Program

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, Master students should be able to:

- Gain basic knowledge and detailed information about structure and components of digestive system in domestic animals and how these organs adapted with their prospective function (structure-function relationship).
- Identify the comparative features of digestive organs of different animal species.
- Establish advanced methods to use these anatomical information in clinics (medicine, surgery,.....etc).

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Define the basic anatomical terminology about the digestive system and the abdominal and pelvic cavity.
- A2- Identify the main comparative features in the different organs of the digestive system between monogastric and ruminant animals.
- A3- Recognize how these organs adapted with their prospective function (structure-function relationship).
- A4- Describe how can palpate organs which contact with abdominal wall in live animals.
- A5- Study the blood and autonomic nerve supply to all parts of the digestive system and their roles in regulation of digestion process.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Analyze the anatomical changes in digestive tract and glands in relation to age of animals.
- B2- Relate the structural- functional relationship of the different parts of the digestive system within the abdominal and pelvic cavity.
- B3- Construct the appropriate technique for external palpation of digestive organs which lie in contact to body wall and floor.
- B4- Differentiate between different parts of the digestive system in different animal species.
- B5- Recognize the anatomical basics about digestive system to be used in future in surgical interference such as using stomach tube or applying rumenotomy.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:



- C1- Employ recent techniques for better understanding of digestive anatomy and to evaluate the normal and abnormal structure of digestive system.
- C2- Use the radiographic anatomy and other images for digestive organs investigation in clearing some field inquire.
- C3- Implement surface anatomy of the digestive tract on the living animals and in approaching some field cases.
- C4- Dissect the abdominal viscera, the wall of the abdomen, and pelvis and recognize the comparative anatomy of the digestive organs.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- D.1. Communicate effectively with his professors, and collages.
- D.2. Utilize different sources of knowledge and information
- D.3. Use information technology to serve the professional practice.
- D.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
13. Oral cavity and pharynx	30	30	60
14. Abdominal cavity and esophagus	18	18	36
15. Monocular Stomach, Ruminant Stomach	18	18	36
16. Intestine, Liver, pancreas and salivary glands	30	30	60
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports

* **Distance Teaching and Learning:**

Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.



Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d4
Practical sessions		b1 to b5	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c4	d1 to d4

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a. Used methods	Written examination	oral examination	Practical examination	Activities
7.b. Time	At the end of the academic year	At the end of the academic year	following the end of the academic year	Allover the academic year
7.c. Grades	50	20	20	10

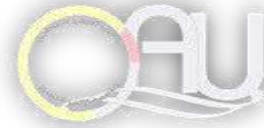
6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b5		d4
Practical exams			c1 to c4	d2, d3
Oral exams	a1 to a5	b1 to b5		d1
Student activities	a1, a5			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

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8-2: Recommended books:

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8.3: Egyptian Knowledge Bank, Scientific websites and journals

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- Journal of Developmental Biology
- Journall of Morphology

Course Coordinator

Head of Department

Dr. Foad Farrag

Prof. Mohammed El-Ghannam



Course specification (2021 / 2022)

1 - Basic Information:

Code number: 105/2

Course title: Comparative Urogenital System

Academic Year: Doctorate of Veterinary Medicine Program

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, Master students should be able to:

- Gain basic knowledge and detailed information about structure and components of urogenital system in domestic animals and how these organs adapted with their prospective function (structure-function relationship).
- Perform differential diagnosis concerning the components of urinary and reproductive systems in male and female animals.
- Establish advanced methods to use these anatomical information in clinics (theriogenology, medicine, surgery,.....etc).

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Define the anatomical terminology of the urogenital system.
- A2- Identify the main comparative features in the different organs of the urogenital system among different domestic animals.
- A3- Know how these organs adapted with their prospective function (structure-function relationship).
- A4- Describe how can palpate urogenital organs through rectum and abdomen in live animals.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Perform differential identification of kidneys, testis and other parts of the urogenital system in different species.
- B2- Illustrate the anatomical structure of reproductive organs to their physiological functions.
- B3- Manage the several diagnostic imaging techniques like Radiography and Ultrasonography.
- B4- Confirm the position of the kidney under the transverse processes of lumbar vertebrae for palpation, biopsy and radiology.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Dissect the urinary system of domestic animals.
- C2- Investigate the reproductive system in both male and female animals.
- C3- Implement surface anatomy knowledge on the living animals and in approaching some field cases.



C4- Apply of recent techniques (ultrasonography) for better understanding of urogenital system.

3-D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- D.1. Communicate effectively with his professors, and collages.
- D.2. Utilize different sources of knowledge and information
- D.3. Use information technology to serve the professional practice.
- D.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
17. Urinary system	15	15	30
18. Anatomy of Male genital system	24	22	46
19. Anatomy of Female genital system	22	24	46
20. Comparative urogenital organs	35	35	70
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports

* **Distance Teaching and Learning:**

Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b4		d1, d4
Practical sessions		b1 to b4	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b4	c1 to c4	d1 to d4



6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a. Used methods	Written examination	oral examination	Practical examination	Activities
7.b. Time	At the end of the academic year	At the end of the academic year	following the end of the academic year	Allover the academic year
7.c. Grades	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
6.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b5		d4
Practical exams			c1 to c4	d2, d3
Oral exams	a1 to a5	b1 to b5		d1
Student activities	a1, a5			d1 to d4

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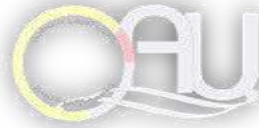
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8-2: Recomendated books:

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- Cells, tissues and organs
- Journal of Developmental Biology
- Journall of Morphology

Course Coordinator

Dr. Foad Farrag

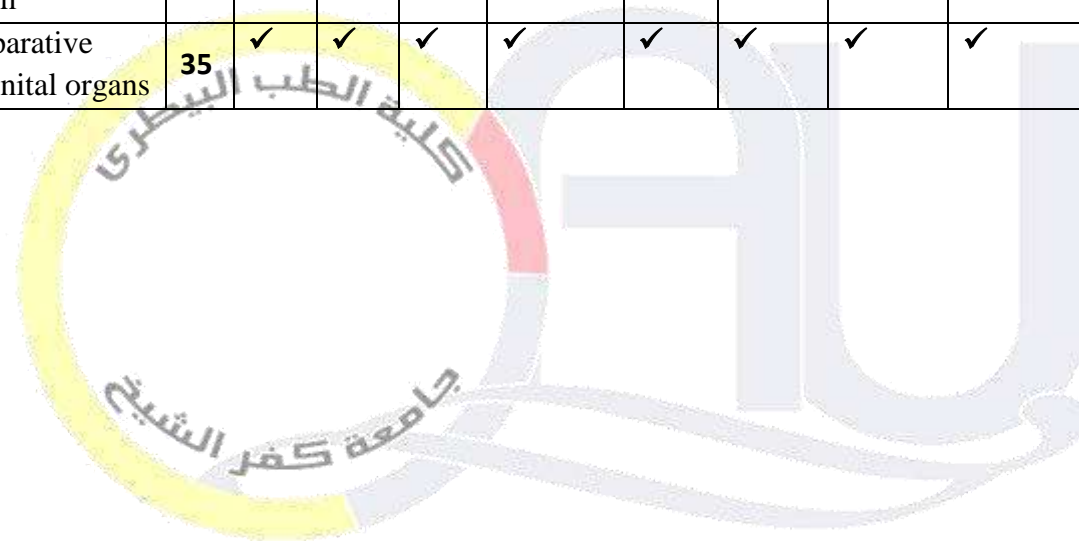
Head of Department

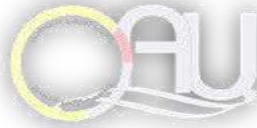
Prof. Mohammed El-Ghannam



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hr	Knowledge & Understanding				Intellectual Skills				Practical & Professional Skills				General & Transferable Skills			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Urinary system	15	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓
Anatomy of Male genital system	24	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
Anatomy of Female genital system	22	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
Comparative urogenital organs	35	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓





Course specification (2021 / 2022)

1 - Basic Information:

Code number: 106/2

Course title: Comparative Respiratory System

Academic Year: Doctorate of Veterinary Medicine Program

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, Master students should be able to:

- Gain basic knowledge and detailed information about structure and components of Respiratory system in domestic animals and how these organs adapted with their prospective function (structure-function relationship).
- Identify the comparative features of Respiratory organs of different animal species.
- Establish advanced methods to use these anatomical information in clinics (theriogenology, medicine, surgery,.....etc).

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Recognize the structure of Respiratory system forming organs in domestic animals.
A2- Identify the main comparative features in the different organs of the Respiratory system among different domestic animals.
A3- Know how these organs adapted with their prospective function (structure-function relationship).
A4- Describe the area of lung auscultation in live animals.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Construct the appropriate technique for lung auscultation.
B2- Discover the structure of the thoracic wall, area of auscultation and percussion in different animals.
B3- Relate the anatomical structure of components of the respiratory system to their physiological functions

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Employ recent techniques and tools adopted to evaluate the normal and abnormal structure of respiratory system.
C2- Apply techniques associated with determination respiratory organs normal site and position.
C3- Analyze the pictures of recent techniques (ultrasonography) for better understanding of applied respiratory anatomy.
C4- Investigate the suitable sites for anesthesia or nerve block of the thoracic wall and upper respiratory tract.

3- D: GENERAL and transferable SKILLS:



By the end of studying the course, the graduate should be able to:

- D.1. Communicate effectively with his professors, and collages.
- D.2. Utilize different sources of knowledge and information
- D.3. Use information technology to serve the professional practice.
- D.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
21. Anatomy of nasal cavity & it's content	25	25	50
22. Anatomy of larynx & it's comparative	24	22	46
23. Anatomy of trachea & it's comparative	22	24	46
24. Anatomy of lung & it's comparative	25	25	50
Total	96	96	192

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming
- * **Practical sessions:**
- * **Self-Learning activities:** Mini reviews from the web and the library Making individual reports
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b3	c1 to c4	d1 to d4

6. METHODS FOR STUDENTS With limited capabilities:-



- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a. Used methods	Written examination	oral examination	Practical examination	Activities
7.b. Time	At the end of the academic year	At the end of the academic year	following the end of academic year	Allover the academic year
7.c. Grades	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b3		d4
Practical exams			c1 to c4	d2, d3
Oral exams	a1 to a4	b1 to b3		d1
Student activities	a1, a4			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Veterinary Anatomy of Domestic Mammals, König, H.E., Liebich, H. Manson Publishing Ltd; 5th Edition (2020).
- Essentials of Clinical Anatomy of the Equine Locomotor System. Jean-Marie Denoix. CRC Press; 1st edition (2019).
- Miller and Evan's Anatomy of the Dog. John W. Hermanson, Alexander de Lahunta. Saunders, 5th Edition (2019).
- Text book of Veterinary Anatomy. Dyce, K.M; Sack, W.O. and Wensing C.J.G. 5th Ed., (2017). Saunders Publ. Co.
- Nickel, R., Schummer, A., Seiferle, E. / Parey, P. (1987). The Anatomy of the Domestic animals part 3 (circulatory system), Berlin, Germany
- Getty, R (1975). Sisson and Grossman's The Anatomy of the Domestic Animals volume 1& 2. 5th edition, W B Saunders.

8-2: Recommended books:

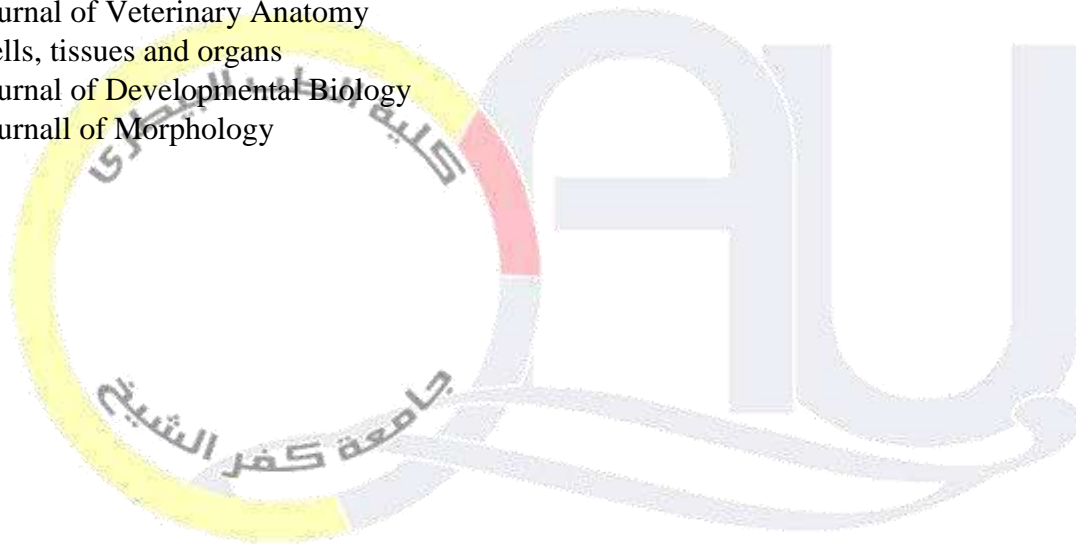
- Veterinary Medical Terminology. Dawn E. Christenson. Saunders, 3rd Edition (2019).
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- An Illustrated Guide to Veterinary Medical Terminology, Janet Amundson Romich, Delmar Cengage Learning; 3rd edition (2008).
- Boyd, J.S. (1991): Color Atlas Of Clinical Anatomy Of The Dog and Cat. St. Louis, Mosby. Year book

8.3: Egyptian Knowledge Bank, Scientific websites and journals

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- World Association of Veterinary Anatomists
- Anatomia Histologia Embryologia
- Anatomical Record
- Journal of Anatomy
- Journal of Veterinary Anatomy
- Cells, tissues and organs
- Journal of Developmental Biology
- Journal of Morphology



Course Coordinator

Head of Department

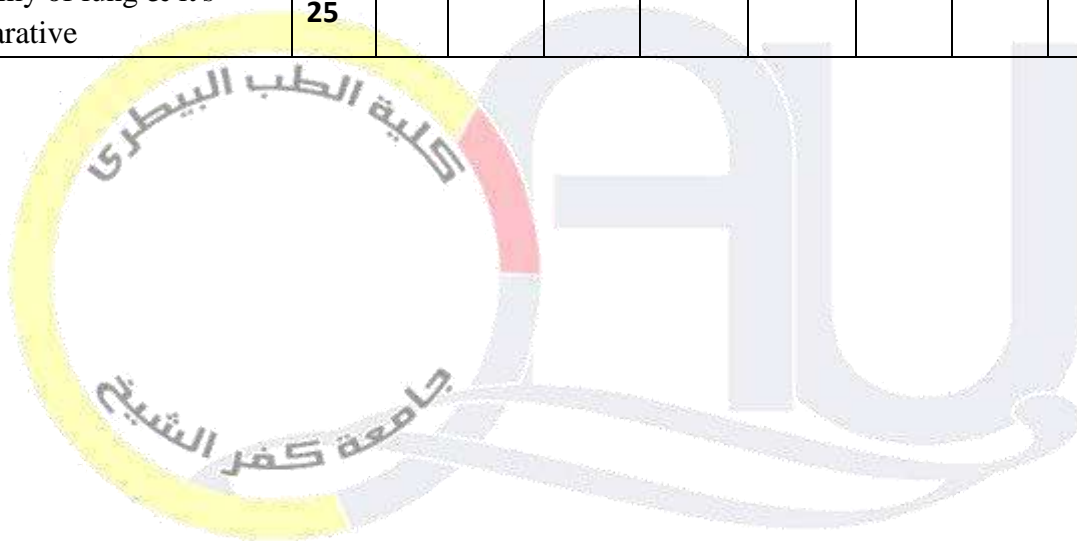
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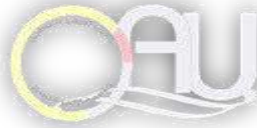
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Course Matrix for achievement of Intended Learning Outcomes

Topics	Hr	Knowledge & Understanding				Intellectual Skills			Practical & Professional Skills				General & Transferable Skills			
		1	2	3	4	1	2	3	1	2	3	4	1	2	3	4
Anatomy of nasal cavity & it's content	25	✓	✓	✓				✓	✓	✓	✓		✓	✓	✓	✓
Anatomy of larynx & it's comparative	24	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
Anatomy of trachea & it's comparative	22	✓	✓	✓				✓	✓	✓	✓		✓	✓	✓	✓
Anatomy of lung & it's comparative	25	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓





Course specification (2021 / 2022)

1 - Basic Information:

Code number: 107/2

Course title: Comparative Cardiovascular and Lymphatic System

Academic Year: Doctorate of Veterinary Medicine Program

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, Master students should be able to:

- Gain basic knowledge and detailed information about structure and components of Cardiovascular and Lymphatic system in domestic animals and how these organs adapted with their prospective function (structure-function relationship).
- Identify the comparative features of Cardiovascular and Lymphatic organs of different animal species.
- Establish advanced methods to use these anatomical information in clinics (theriogenology, medicine, surgery,.....etc).

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Define the anatomical terms related to the cardiovascular and lymphatic system.
- A2- Identify the main comparative features in the different organs of the Cardiovascular and Lymphatic system among different domestic animals.
- A3- Explain the various types of circulation (fatal, pulmonary, portal and systematic) in all domestic animals
- A4- Recognize the anatomical aspects of the lymph formation, lymph vascular system and lymphatic structures in domestic animals.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Analyze the changes occurring to the fetal circulation with age in relation to function.
- B2- Construct the appropriate technique for heart auscultation and external palpated lymph nodes.
- B3- Relate the anatomical structure of the circulatory system and lymphatics to their physiological functions.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

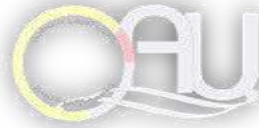
By the end of the course, students should be able to:

- C1- Dissect the heart and blood and lymphatic vessels of different domesticated animal.
- C2- Investigate the position of the heart in the body with reference to external landmarks and how to palpate the heart beat successfully.
- C3- Determine the area for percussion, auscultation in different animals.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- D.1. Communicate effectively with his professors, and collages.



- D.2. Utilize different sources of knowledge and information
D.3. Use information technology to serve the professional practice.
D.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
25. Anatomy of Spleen	25	25	50
26. Anatomy of Lymph nodes	24	22	46
27. Anatomy of the Heart	22	24	46
28. Arteries, Veins and capillaries	25	25	50
Total	96	96	192

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming
- * **Practical sessions:**
- * **Self-Learning activities:** Mini reviews from the web and the library Making individual reports
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c3	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b3	c1 to c3	d1 to d4

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.



7. STUDENT ASSESSMENT:-

7.a. Used methods	Written examination	oral examination	Practical examination	Activities
7.b. Time	At the end of the academic year	At the end of the academic year	following the end of the academic year	All over the academic year
7.c. Grades	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b3		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a4	b1 to b3		d1
Student activities	a1, a4			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

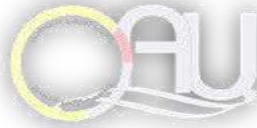
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8-2: Recommended books:

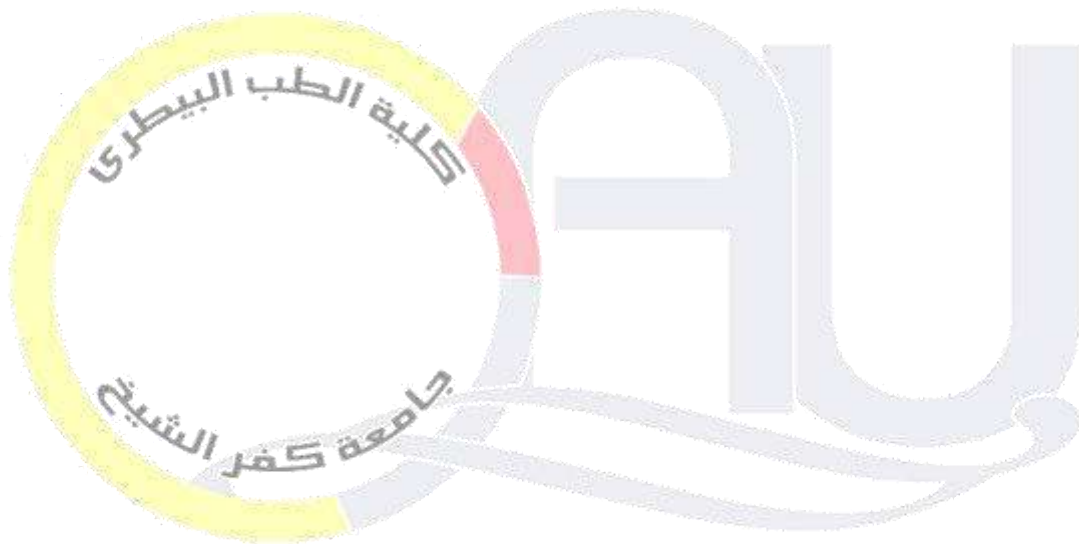
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- Anatomia Histologia Embryologia
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- Cells, tissues and organs
- Journal of Developmental Biology
- Journal of Morphology



Course Coordinator

Head of Department

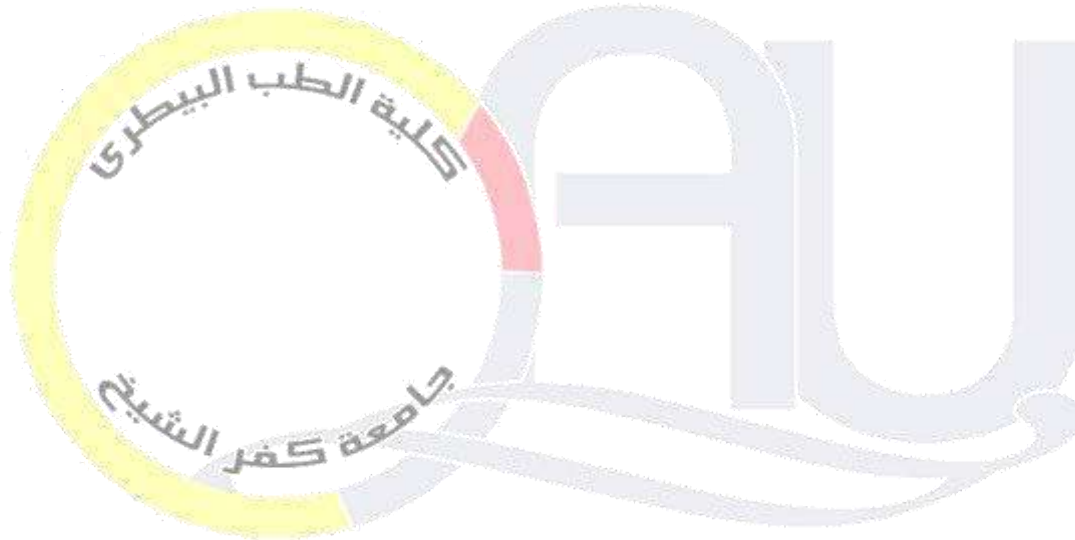
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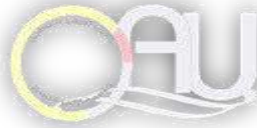
Prof. Mohammed El-Ghannam



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hr	Knowledge & Understanding				Intellectual Skills			Practical & Professional Skills			General & Transferable Skills			
		1	2	3	4	1	2	3	1	2	3	1	2	3	4
Anatomy of Spleen	25	✓	✓			✓		✓	✓			✓	✓	✓	✓
Anatomy of Lymph nodes	24	✓	✓		✓	✓	✓	✓	✓			✓	✓	✓	✓
Anatomy of the Heart	22	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Arteries, Veins and capillaries	25	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓





Course specification (2021 / 2022)

1 - Basic Information:

Code number: 108/2

Course title: Comparative nervous system, endocrine glands and sense organs

Academic Year: Doctorate of Veterinary Medicine Program

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, Master students should be able to:

- Gain basic knowledge and detailed information about structure and components of nervous system, endocrine glands and sense organs in domestic animals and how these organs adapted with their prospective function (structure-function relationship).
- Identify the comparative features of nervous system, endocrine glands and sense organs of different animal species.
- Establish advanced methods to use these anatomical information in clinics (theriogenology, medicine, surgery,.....etc).

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Define the basic terms used in the nervous and endocrine system.

A2- Realize the main comparative features in the different organs of the nervous system, endocrine glands and sense organs among different domestic animals.

A3- Recognize the topographical anatomy of the spinal and cranial nerves in fore-and-hind limbs domestic animal.

A4- Enumerate the peripheral nervous system in different animals.

A5- Determine position of different endocrine glands in the body of different animals.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1- Identify the different anatomical nervous landmarks important to clinical branches.

B2- Construct the appropriate technique for determination the sites of nerve block and neurectomy.

B3- Combination of anatomical, physiological and clinical information for evaluation of certain process.

B4- Relate the anatomical structure of the nervous system and endocrine glands to their physiological functions.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

C1- Employ recent techniques and tools adopted to evaluate the normal and abnormal structure of nervous system, endocrine glands and sense organs.



- C2- Dissect the brain, spinal cord and nerves of domestic animals.
 C3- Determine the suitable sites for anesthesia, nerve block and neurectomy.
 C4- Prepare sections of brain and endocrine glands for advanced investigations.
 C5- Implement surface anatomy knowledge on the living animals and in approaching some field cases.
 C6- Demonstrate the position of cranial and spinal nerves in the body.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- D.1. Communicate effectively with his professors, and collages.
 D.2. Utilize different sources of knowledge and information
 D.3. Use information technology to serve the professional practice.
 D.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
29. Anatomy of central nervous system	25	25	50
30. Anatomy of peripheral nervous system	24	22	46
31. Anatomy of Endocrine glands	22	24	46
32. Anatomy of sense organs	25	25	50
Total	96	96	192

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming
- * **Practical sessions:**
- * **Self-Learning activities:** Mini reviews from the web and the library Making individual reports
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b4		d1, d4
Practical sessions		b1 to b4	c1 to c6	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b4	c1 to c6	d1 to d4



6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a. Used methods	Written examination	oral examination	Practical examination	Activities
7.b. Time	At the end of the academic year	At the end of the academic year	following the end of the academic year	Allover the academic year
7.c. Grades	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
6.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b4		d4
Practical exams			c1 to c6	d2, d3
Oral exams	a1 to a5	b1 to b4		d1
Student activities	a1, a5			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

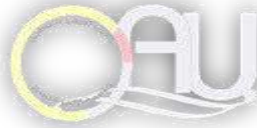
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- Essentials of Clinical Anatomy of the Equine Locomotor System. Jean-Marie Denoix. CRC Press; 1st edition (2019).
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- Getty, R (1975). Sisson and Grossman's The Anatomy of the Domestic Animals volume 1& 2. 5th edition, W B Saunders.

8-2: Recomendated books:

- Veterinary Medical Terminology. Dawn E. Christenson. Saunders, 3rd Edition (2019).



- Essentials of Clinical Anatomy of the Equine Locomotor System. Jean-Marie Denoix. CRC Press; 1st edition (2019).
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- Boyd, J.S. (1991): Color Atlas Of Clinical Anatomy Of The Dog and Cat. St. Louis, Mosby. Year book

8.3: Egyptian Knowledge Bank, Scientific websites and journals

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
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- Anatomia Histologia Embryologia
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- Cells, tissues and organs
- Journal of Developmental Biology
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Course Coordinator

Dr. Foad Farrag

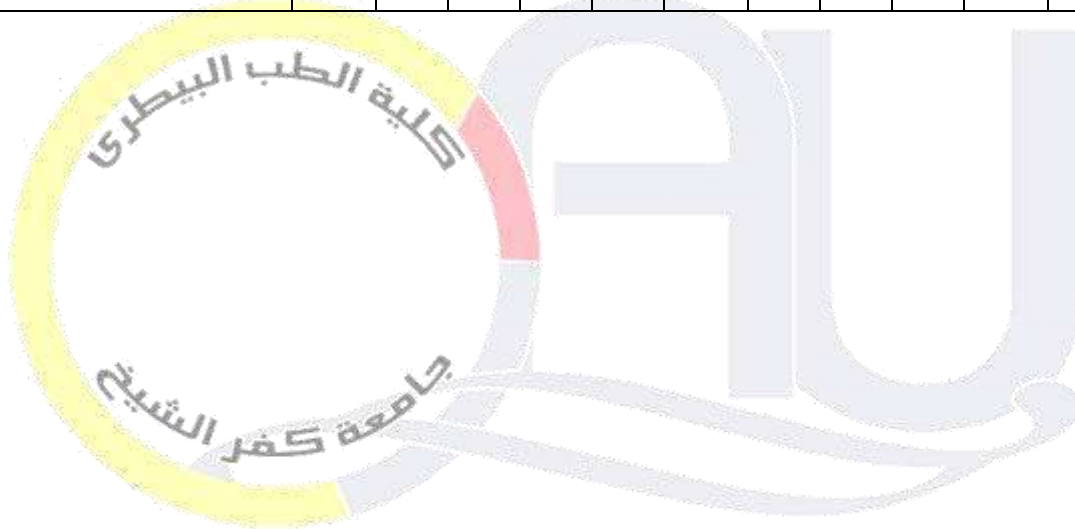
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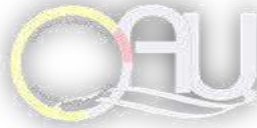
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Course Matrix for achievement of Intended Learning Outcomes

Topics	Hr	Knowledge & Understanding					Intellectual Skills				Practical & Professional Skills						General & Transferable Skills				
		1	2	3	4	5	1	2	3	4	1	2	3	4	5	6	1	2	3	4	
Anatomy of central nervous system	25	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Anatomy of peripheral nervous system	24	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Anatomy of Endocrine glands	22	✓	✓			✓			✓	✓	✓			✓			✓	✓	✓	✓	✓
Anatomy of sense organs	25	✓	✓				✓	✓	✓	✓	✓		✓		✓		✓	✓	✓	✓	✓





Course specification (2021 / 2022)

1 - Basic Information:

Code number: 109/2

Course title: General and Special Embryology

Academic Year: Doctorate of Veterinary Medicine Program

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, Master students should be able to:

- Gain basic knowledge and detailed information about general and special embryology in domestic animals and how animal body develops.
- Identify the organogenesis of animals and birds which will help in understanding the teratology and its causes.
- Establish advanced methods to use these anatomical information in clinics (theriogenology, medicine, surgery,.....etc).

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Recognize the different developmental steps of embryo.
- A2- Identify the main changes occur in fetus during development of organs.
- A3- Know how the undifferentiated cells (stem cells) can give rise to different cell lineage.
- A4- Determine how congenital malformations (anomalies) can be occur.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Interpret the problems in organogenesis and how this contributes in malformations.
- B2- Construct the appropriate technique for determination of normal embryogenesis.
- B3- Relate the normal developmental stages of embryogenesis and organogenesis to structure of different body organs.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

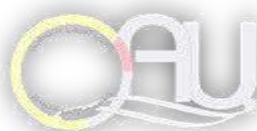
By the end of the course, students should be able to:

- C1- Employ recent techniques and tools adopted to evaluate the normal and abnormal structure of general and special embryology.
- C2- Apply techniques associated with determination the developmental changes during embryogenesis and organogenesis.
- C3- Prepare clay model for embryogenesis and organogenesis.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- D.1. Communicate effectively with his professors, and collages.
- D.2. Utilize different sources of knowledge and information



D.3. Use information technology to serve the professional practice.

D.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
33. General Embryology	40	40	80
34. Development of nervous system and sense organs and musculoskeletal	10	12	22
35. Development of digestive and respiratory system	24	26	50
36. Development of urogenital and circulatory system	22	18	40
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library Making individual reports

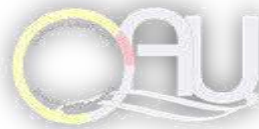
* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c3	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b3	c1 to c3	d1 to d4

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-



7.a. Used methods	Written examination	oral examination	Practical examination	Activities
7.b. Time	At the end of the academic year	At the end of the academic year	following the end of the academic year	Allover the academic year
7.c. Grades	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b3		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a4	b1 to b3		d1
Student activities	a1, a5			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

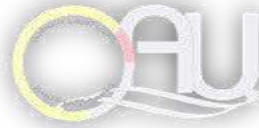
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- Text book of Veterinary Anatomy. Dyce, K.M; Sack, W.O. and Wensing C.J.G. 5th Ed., (2017). Saunders Publ. Co.
- Nickel, R., Schummer, A., Seiferle, E. / Parey, P. (1987). The Anatomy of the Domestic animals part 3 (circulatory system), Berlin, Germany
- Getty, R (1975). Sisson and Grossman's The Anatomy of the Domestic Animals volume 1& 2. 5th edition, W B Saunders.

8-2: Recommended books:

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- Essentials of Clinical Anatomy of the Equine Locomotor System. Jean-Marie Denoix. CRC Press; 1st edition (2019).
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- Avian Anatomy: Textbook and Colour Atlas. Horst E. Koenig, Ruediger Korbel, Hans-Georg Liebich, Corinna Klupiec. 5m Publishing, 2nd edition (2016).
- An Illustrated Guide to Veterinary Medical Terminology, Janet Amundson Romich, Delmar Cengage Learning; 3rd edition (2008).



- Boyd, J.S. (1991): Color Atlas Of Clinical Anatomy Of The Dog and Cat. St. Louis, Mosby. Year book

8.3: Egyptian Knowledge Bank, Scientific websites and journals

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- World Association of Veterinary Anatomists
- Anatomia Histologia Embryologia
- Anatomical Record
- Journal of Anatomy
- Journal of Veterinary Anatomy
- Cells, tissues and organs
- Journal of Developmental Biology
- Journal of Morphology



Course Coordinator

Head of Department

Dr. Foad Farrag

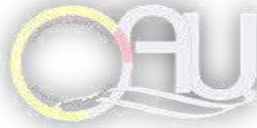
Prof. Mohammed El-Ghannam



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hr	Knowledge & Understanding				Intellectual Skills			Practical & Professional Skills			General & Transferable Skills			
		1	2	3	4	1	2	3	1	2	3	1	2	3	4
General Embryology	40	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓
Development of nervous system and sense organs and musculoskeletal	10		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Development of digestive and respiratory system	24		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Development of urogenital and circulatory system	22		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓





Course specification (2021 / 2022)

1 - Basic Information:

Code number: 110/2

Course title: Avian Anatomy

Academic Year: Doctorate of Veterinary Medicine Program

Total teaching hours: 144 hrs

Lectures: 96 hrs

Practical: 48 hrs.

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, Master students should be able to:

- Gain basic knowledge and detailed information about avian anatomy in domestic animals.
- Identify the main comparative features between birds and mammals.
- Establish advanced methods to use these anatomical information in bird clinics.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Recognize the structure of different types of bird.
- A2- Identify the main comparative features in the different organs of among different birds.
- A3- Know how birds adapted for flying.
- A4- Describe the most common sites for affections in bird body.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Interpret the problems in the structure of avian body.
- B2- Construct the appropriate technique for bird dissection.
- B3- Combine anatomical, physiological and clinical anatomical information for diagnosis of certain disease.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Employ recent techniques and tools adopted to evaluate the normal and abnormal structure of avian body.
- C2- Apply techniques associated with determination different organs normal site and position.
- C3- Detect the comparative anatomical differences between avian species.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- D.1. Communicate effectively with his professors, and collages.
- D.2. Utilize different sources of knowledge and information
- D.3. Use information technology to serve the professional practice.
- D.4. Manage time efficiently.



4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
37. Anatomy of avian digestive system	12	28	40
38. Anatomy of avian Respiratory system	12	28	40
39. Anatomy of avian urinary system	9	15	24
40. Anatomy of avian genital system	15	25	40
Total	48	96	144

5- TEACHING & LEARNING METHODS:

*** Advanced lectures:**

- PowerPoint presentations including videos, and whiteboard
- Discussion and brain storming

*** Practical sessions:**

*** Self-Learning activities:**

- Mini reviews from the web and the library
- Making individual reports

*** Distance Teaching and Learning:**

Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures *	a1 to a4	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c3	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b3	c1 to c3	d1 to d4

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-



7.a. Used methods	Written examination	oral examination	Practical examination	Activities
7.b. Time	At the end of the academic year	At the end of the academic year	following the end of the academic year	Allover the academic year
7.c. Grades	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b3		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a4	b1 to b3		d1
Student activities	a1, a5			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

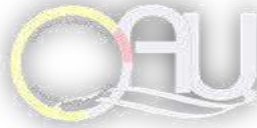
8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Veterinary Anatomy of Domestic Mammals, König, H.E., Liebich, H. Manson Publishing Ltd; 5th Edition (2020).
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- Journal of Developmental Biology
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Course Coordinator

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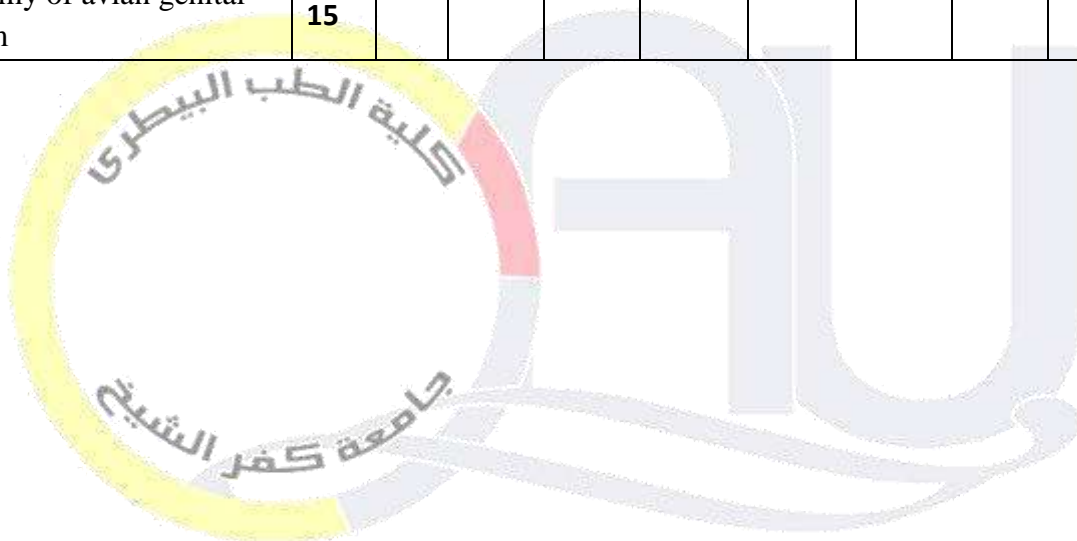
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Course Matrix for achievement of Intended Learning Outcomes

Topics	Hr	Knowledge & Understanding				Intellectual Skills			Practical & Professional Skills			General & Transferable Skills			
		1	2	3	4	1	2	3	1	2	3	1	2	3	4
Anatomy of avian digestive system	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Anatomy of avian Respiratory system	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Anatomy of avian urinary system	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Anatomy of avian genital system	15	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Animal Wealth Development

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy

(Animal Production)

Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Animal Wealth Development

Program Specification for PhD Degree
(2021-2022)

A- Administrative information:

- 1- Awarding Body:** Kafrelsheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Animal Wealth Development
- 4- Program Title:** PhD Degree in Veterinary Medicine (Animal Production)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years
- 7- Program Coordinator:** Prof. Dr. Mohamed Atef Helal

B- Professional information:

1- Aim of the Program:

- Allow graduate to create new knowledge and understanding in Animal Production through the process of research and inquiry.
- Enable graduate to achieve competency in modern technology
- Provide the graduate with the opportunity to develop communication skills, recent techniques and tools in the field of Animal Production and experience of scientific research skills.
- Giving the graduate the ability to be creative to advance Animal Production through new scientific research.

- Enable graduate to achieve capability in modern technology to develop practical research project.
- Demonstrate an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and present their own research data for the improvement of the animal and poultry production.
- Have the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibit awareness about current Animal Production problems and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of Animal and Poultry Production.

2- Academic standards:

**Academic reference standards (ARS) adopted by the faculty committee No (1)
14/9/2014**

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Mastering the basics and methodologies of scientific research Animal production for better dealing with productive and reproductive problems professionally.
- 2) Performing continuous effort to add knowledge about improvement of productive and reproductive efficiency of animals and poultry.
- 3) Analysis and criticism of information in animal production and related fields including genetics, behavior, physiology, economics, etc.



- 4) Integrating data collected from the animal and poultry farms with related experimental findings to reach the correct system for improvement of animal and poultry production.
- 5) Showing deep awareness with the ongoing animal and poultry production problems and modern theories in solving productive and reproductive problems.
- 6) Identifying the main causes of low production and infertility in animals and poultry farms and suggesting the appropriate solutions.
- 7) Mastering of a wide range of professional skills in experimental design, data collection, analysis, and interpretation of productive and reproductive data.
- 8) Acquiring trends towards developing modern methods and tools in Animal and poultry production.
- 9) Using appropriate technological means to serve professional practice.
- 10) Communicating effectively with animal breeders, students and colleagues and leading work team through professional scale.
- 11) Making decision in different professional situations especially under field conditions to deal with production and reproduction of animals and poultry.
- 12) Using of the available resources efficiently in the development of new techniques and work to find new resources.
- 13) Being aware with his role in society development and community preservation.
- 14) Acting with integrity, credibility and according to the rules of profession.
- 15) Realizing the importance of self and life-long learning and progress.

4-Programme Intended Learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

- a.1. Recognize recent theories, principles and knowledge in genetic and environmental improvement of animal production.
- a.2. Apply Principles methodologies and ethics of scientific research and its tools in improvement of productive and reproductive efficiency of animals and poultry
- a.3. Define legal and ethical principles of the area of animal production.

- a.4. Recognize Principles and the basics of quality assurance the field of animal production.
- a.5. Apply knowledge and understanding in of animal production for enhancing animal and poultry reproduction and production
- a.6. Recognize the effect of different animal and poultry production systems on the animal wealth and methods for maximizing production
- a.7. Describe the principles, methodologies and ethics of scientific research of animal production.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1. Assess and criticize different data and information in animal production
- b.2. Analyze and evaluate information about production and reproduction of animals and the eliciting from them
- b.3. Solve professional problems in animal production using available data under field or laboratory conditions.
- b.4. Perform scientific research studies that can give significant impact on the improvement of animal production.
- b.5. Conduct scientific research studies aiming at enhance animal production.
- b.6. Formulating scientific papers in animal production with the ability to match and discuss his own findings with those of other scientists.
- b.7. Asses risks in the field of animal production.
- b.8. Share and lead scientific open discussion in the field of animal production based on evidences and proofs.
- b.9. Planning to enhance the performance in the field of animal production.
- b.10. Make professional decisions and suggestions for improvement of animal and poultry production under different professional contexts
- b.11. Innovate new method or technique for improvement of animal production.
- b.12. Perform evidence-based discussion and conversation for his PhD defense

c. Practical and professional skills:



By the end of this program the graduate should be able to:

- c.1. Master the fundamental and recent professional skills in the field of animal production including experimental design, data collection, presentation and analysis.
- c.2. Write and evaluate professional productive and reproductive reports.
- c.3. Evaluate and modernize methods and tools in improvement of productive and reproductive efficiency of animal and poultry
- c.4. Use modern technological means to serve improvement of animal production.
- c.5. Plan for the development of a research project in the field of animal and production taking in consideration the methodology, ethical and bio-safety with precise cost estimation and time frame required

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1. Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology in the improvement of Animal and poultry production professional practice.
- d.2. Utilize information technology to serve professional practice.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements
- d.5. Lead team under different professional circumstances.
- d.6. Use of different sources for obtaining information and knowledge.
- d.7. Manage scientific meetings with the ability to manage time efficiently.

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, field visits and seminars.

6-Assessments:

The program depends on different assessment ways:

a. Course assessment:

1. **Final written exam:** to assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
2. **Practical exam:** to assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
3. **Oral exam:** to assess skills of intellectual analysis and discussion beside the basic scientific knowledge.

b. Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work

c. PhD Thesis assessment

- Annual reports adopted by the Faculty.
- Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
- Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1,4; b1,2,3
Oral	a1,4; b1,2,3
Practical	c1-3
Qualifying Exam	a2-7; b1-12
Thesis	a2-7; b1-12; c1-5; d1-7

7. Program structure

a. Program duration (years):

PhD degree duration at least 3 years and it should not exceed a period of 5 years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law (article 18).

b. Program courses:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council should include at least 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. These courses must not be previously studied in the Mater program. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c- Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d- Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion.

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Animal production include:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Animal Production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2



	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of	2	2



		skin, hooves, claws and Nails		
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal	144/2	44- Behavior and management of	2	3



behavior and management		ruminants (specific courses in cattle, buffalo, sheep, camels and goats)		
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and	2	2



		malnutrition		
	162/2	62- Fish nutrition	1	2
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3



	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
		81- Advanced immunology	2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1



Hygiene and control of milk and dairy products	208/2	108- Hygienic control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal	225/2	125- advanced general medicine	2	2



medicine	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/ 2	134- Stress diseases during animals transport.		
Infectious diseases	235/ 2	135- Infectious diseases of cattle	2	2
	236/ 2	136- Infectious diseases of sheep and goat	2	2
	237/ 2	137- Infectious diseases camel	2	2
	238/ 2	138 Infectious diseases of equine	2	2
	239/ 2	139- Infectious diseases of pet animals	2	2
	240/ 2	140- Infectious diseases lab animals	1	2
	241/ 2	141- Infectious diseases of udder and newly born animals	2	2
	242/ 2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2



	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology				
	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery				
	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2



	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in polutry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures- specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal	2	-



environment				
Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-



Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary medicine (Animal Production) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medicine lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.
3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.



5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.
7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.
8. The applicant should submit a seminar (Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).
9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met: Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.
10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and incase of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report



of examination committee to the post graduate studies committee and the faculty council.

11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards it to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.

12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:



- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade		Percentage
Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
I	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

Program Coordinator

Head of Department

Dr. Seham Mohammed Elkassas

Prof. Dr. Mohamed Atef Helal

Matching program ILOs with ARS-Matrix



Program ILOs	ARS																											
	K&U (a)						I.S. (b)									P.P. (c)					G.T. (d)							
	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7	
K&U	1	2	3	4	5	6																						
I.S.							1	3	4	6	7	8	10	11	12													
P.P.																1	2	3	4	5								
G.T.																					1	2	3	4	5	6	7	



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Animal Wealth Development



ARS for PhD in Veterinary Medicine (Animal Production)

1) Graduate attributes

The graduate should have the ability for:

- 1) Mastering the basics and methodologies of scientific research Animal and poultry production for better dealing with productive and reproductive problems professionally.
- 2) Performing continuous effort to add knowledge about improvement of productive and reproductive efficiency of animals and poultry.
- 3) Analysis and craterization of information in animal and poultry production and related fields including genetics, behavior, physiology, economics, etc.
- 4) Integrating data collected from the animal and poultry farms with related experimental findings to reach the correct system for improvement of animal and poultry production.
- 5) Showing deep awareness with the ongoing animal and poultry production problems and modern theories in solving productive and reproductive problems.
- 6) Identifying the main causes of low production and infertility in animals and poultry farms and suggesting the appropriate solutions.
- 7) Mastering of a wide range of professional skills in experimental design, data collection, analysis, and interpretation of productive and reproductive data.
- 8) Acquiring trends towards developing modern methods and tools in Animal and poultry production.
- 9) Using appropriate technological means to serve professional practice.
- 10) Communicating effectively with animal breeders, students and colleagues and leading work team through professional scale.
- 11) Making decision in different professional situations especially under field conditions to deal with production and reproduction of animals and poultry.
- 12) Using of the available resources efficiently in the development of new techniques and work to find new resources.
- 13) Being aware with his role in society development and community preservation.



- 14) Acting with integrity, credibility and according to the rules of profession.
- 15) Realizing the importance of self and life-long learning and progress.

A) Knowledge and understanding

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Recent theories, principles and knowledge in genetic and environmental improvement of animal and poultry production	Recent theories, principles and knowledge in the field of specialization and related areas
2)	Principles methodologies and ethics of scientific research and its tools in improvement of productive and reproductive efficiency of animals and poultry	Basics, methodologies and ethics of scientific research and its different tools
3)	Legal and ethical principles in the area of animal and poultry production.	Legal and ethical principles of professional practice in the area of specialization
4)	Principles and the basics of quality assurance in animal housing and management in the field of animal and poultry production	Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Awareness with the effect of different animal and poultry production systems on the animal wealth and methods for maximizing production	Awareness with the effect of professional practice on the environment and methods of its maintain and development
6)	the effect of professional practice on the environment and methods of environmental development and maintenance	

B) Intellectual skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analyzing and evaluating information about production and reproduction of animals and poultry and the eliciting from them	Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solving productive and reproductive problems using available data	Solving professional problems using available data
3)	Performing scientific research studies that can give	Conducting scientific research studies



	significant impact on the improvement of animal and poultry production.	that add to knowledge
4)	Formulating scientific papers in animal and poultry production	Formulating scientific papers
5)	Risk-assessment of in the field of animal and poultry production	Risk-assessment in the field of specialization
6)	Planning to enhance the performance in the field of animal and poultry production	Planning to enhance the performance in field of specialization
7)	Making professional decisions for improvement of animal and poultry production under different professional contexts	Making professional decisions under different professional contexts
8)	Creation and innovative in the area of specialization field of animal and poultry production	Creation and innovative in the area of specialization
9)	Dialogue and discussion based on productive and reproductive evidences and proofs	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills in the field of animal and poultry breeding and production		Mastering basic and modern professional skills in the area of specialization
2)	Writing and evaluating professional productive and reproductive reports		Writing and evaluating professional reports
3)	Evaluating and modernizing methods and tools in improvement of productive and reproductive efficiency of animal and poultry.		Evaluating and modernizing methods and tools in the area of specialization
4)	Using modern technological means to serve improvement of animal and poultry production		Using modern technological means to serve professional practice
5)	Planning for the maximizing productive and reproductive efficiency of animals and poultry by applying recent techniques in animal and poultry production		Planning for the improvement of professional practice and developing performance of others



D) General and transferable skill

Adopted ARS	NARS (PhD)
<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1) Effective communication with animal and poultry producers, students and veterinarians.	Effective communication
2) Utilizing information technology to serve development of animal and poultry production practice	Utilizing information technology to serve development of professional practice
3) Teaching others and evaluating their performance	Teaching others and evaluating their performance
4) Self-assessment and continuous learning	Self-assessment and continuous learning
5) Using different resources to obtain knowledge and information	Using different resources to obtain knowledge and information
6) Team working and leading a team in familiar professional contexts	Team working and leading a team in familiar professional contexts
7) Management of scientific meetings with the ability to manage time efficiently	Management of scientific meetings with the ability to manage time efficiently

ثالثا: برامج الدكتوراه

١- مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستتبطا و مطورا للعلاقات البنينة بينها
٥. إظهار وعيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حلول مبتكرة لحلها
٧. إتقان نطاقا واسعا من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تنميتها والعمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢- المعايير القياسية العامة

المعرفة و الفهم:

بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا علي الفهم والدراية بكل من:



أ- النظريات و الأساسيات والحديث من المعارف في مجال التخصص والمجالات ذات العلاقة

- ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
- ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
- ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
- ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و طرق تنمية البيئة وصيانتها

المهارات الذهنية

- بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
 - أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
 - ب- حل المشاكل المتخصصة استنادا علي المعطيات المتاحة
 - ج- إجراء دراسات بحثية تضيف إلى المعارف
 - د- صياغة أوراق علمية
 - هـ- تقييم المخاطر في الممارسات المهنية
 - و- التخطيط لتطوير الأداء في مجال التخصص
 - ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة
 - ح- الابتكار/ الإبداع
 - ط- الحوار و النقاش المبني علي البراهين والأدلة

المهارات المهنية

- بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
 - أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
 - ب- كتابة و تقييم التقارير المهنية
 - ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
 - د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
 - هـ- التخطيط لتطوير الممارسة المهنية و تنمية أداء الآخرين

المهارات العامة و المنتقلة

- بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
 - أ- التواصل الفعال بأنواعه المختلفة
 - ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية
 - ت- تعليم الآخرين و تقييم أداءهم
 - ث- التقييم الذاتي و التعلم المستمر
 - ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
 - ح- العمل في فريق و قيادة فرق العمل
 - خ- إدارة اللقاءات العلمية و القدرة علي إدارة الوقت



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 295/2

Course title: Advanced Animal Breeding and Improvement (تربية و تحسين حيوان متقدم)

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 96 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: ----

2 - OVERALL AIMS OF THE COURSE:

At the end of this course, the student must be acquire knowledge and skills related to quantitative genetics as related to improvement of animal populations, as well as genetic conservation.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Outline the aims, advantages and disadvantages of genetic improvement.
- a.2. Contrast farm animal traits from genetic improvement point of view.
- a.3. Discuss the causes of variation in economic traits.
- a.4. Classify mating systems.
- a.5. Identify the genetic parameters, different correlation, and selection response.
- a.6. Explain the types of selection.
- a.7. Discuss biotechnologies from animal breeding perspective.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Manage breeding problems.
- b.2. Deduce proper biotechnological approaches for genetic improvement

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

.....

3- D: GENERAL SKILLS:

By the end of this course, the student should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Efficiently make use of library facilities and IT tools.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Traits, Phenotypes, Genotypes and Genes in Populations	4	---	4



2. The Basic Model for Quantitative Traits	8	---	8
3. Gene and genotype frequencies	8	---	8
4. Mating Systems	8	---	8
5. Genetic Parameters	8	---	8
6. Correlations	8	---	8
7. Principles of Selection	8	---	8
8. Selection methods	8	---	8
9. Biotechnology and animal breeding	12	---	12
10. Markers for genetic improvement	12	---	12
11. Conservation of genetic materials	12	---	12
Total	96	---	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about animal breeding

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a7	b1 to b2	---	d1, d4
Self-Learning activities		b1 to b2	---	d2, d3, d4
Distance Teaching and Learning	a1 to a7	b1 to b2	---	d1 to d4

*Lectures may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during lectures.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year		Allover the academic year
7.c grads	25	20	-----	5

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS



Written exams	a1 to a7	b1 to b2		d4
Practical exams	-----	-----	-----	-----
Oral exams	a1 to a7	b1 to b2		d1
Student activities	a1, a5,			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Bourdon, R.M. 2000. Understanding Animal Breeding, 2nd Ed., Prentice Hall, Upper Saddle River, NJ 07458.
- Falconer, D. and Mackay, T., 1996. Introduction to Quantitative Genetics. 4th Edition. Longman.
- Phillips, C.J.C., 2010. Principles of Cattle Production. 2nd Ed., CAB International Wallingford, Oxon Ox10 8De, UK.
- Muir, W.M. and S.E. Aggrey . 2013. Poultry genetics, breeding and biotechnology. Library of Congress Cataloguing - in- Publication Data

8-2: Recommended books:

- Kinghorn, B., J. van der Werf, and M. Ryan. 2011. Animal Breeding. Use of New Technologies; Twynam Press.

8-3: Egyptian Knowledge Bank:

- Dahl GE, 2020. Animal Agriculture. Sustainability, Challenges and Innovations. Academic Press, Elsevier Inc.

Ignacy Miszta 2012. Animal Breeding and Genetics, Introduction. Department of Animal and Dairy Science Breeding and Genetics University of Georgia Athens USA.

DOI: https://doi.org/10.1007/978-1-4614-5797-8_908

Scientific Journals

- Journal of Animal Science.
- British Journal of Animal Science.
- American journal of poultry science
- International journal of Poultry Science.
- Journal of Applied Poultry Research

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- DeLaval Dairy Supply. <http://www.delaval.com/en/-/Dairy-knowledge-and-advice/>
- National Dairy Database: <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>
- The Babcock Institute: <http://babcock.cals.wisc.edu>
- The International Dairy Federation (IDF): <http://www.fil-idf.org/>

Course Coordinator

Head of Department

Dr. Seham Mohammed Elkassas

Prof. Dr. Mohamed Atef Helal



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intelle ctual Skills		General & Transferable Skills			
		1	2	3	4	5	6	7	1	2	1	2	3	4
1. Traits, Phenotypes, Genotypes and Genes in Populations	4	✓							✓	✓	✓	✓	✓	✓
2. The Basic Model for Quantitative Traits	8	✓		✓					✓	✓	✓	✓	✓	✓
3. Gene and genotype frequencies	8		✓	✓					✓	✓	✓	✓	✓	✓
4. Mating Systems	8				✓				✓	✓	✓	✓	✓	✓
5. Genetic Parameters	8					✓			✓	✓	✓	✓	✓	✓
6. Correlations	8					✓			✓	✓	✓	✓	✓	✓
7. Principles of Selection	8						✓		✓	✓	✓	✓	✓	✓
8. Selection methods	8						✓		✓	✓	✓	✓	✓	✓
9. Biotechnology and animal breeding	12							✓	✓	✓	✓	✓	✓	✓
10. Markers for genetic improvement	12							✓	✓	✓	✓	✓	✓	✓
11. Conservation of genetic materials	12							✓	✓	✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 296/2

Course title: Advanced Poultry Breeding and Improvement (تربية و تحسين دواجن متقدم)

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 96 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: -----

2 - OVERALL AIMS OF THE COURSE:

At the end of this course, the student must be acquire knowledge and skills related to quantitative genetics as related to improvement of animal populations, as well as genetic conservation.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Outline the aims, advantages and disadvantages of genetic improvement.
- a.2. Contrast farm animal traits from genetic improvement point of view.
- a.3. Discuss the causes of variation in economic traits.
- a.4. Classify mating systems.
- a.5. Identify the genetic parameters, different correlation, and selection response.
- a.6. Explain the types of selection.
- a.7. Discuss biotechnologies from animal breeding perspective.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Manage breeding problems.
- b.2. Deduce proper biotechnological approaches for genetic improvement

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

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3- D: GENERAL SKILLS:

By the end of this course, the student should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Efficiently make use of library facilities and IT tools.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Traits, Phenotypes, Genotypes and Genes in Populations	4	---	4



2. The Basic Model for Quantitative Traits	8	---	8
3. Gene and genotype frequencies	8	---	8
4. Mating Systems	8	---	8
5. Genetic Parameters	8	---	8
6. Correlations	8	---	8
7. Principles of Selection in poultry	8	---	8
8. Selection methods	8	---	8
9. Biotechnology and poultry breeding	12	---	12
10. Markers for genetic improvement in poultry	12	---	12
11. Conservation of genetic materials in poultry	12	---	12
Total	96	---	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about animal breeding

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a7	b1 to b2	---	d1, d4
Self-Learning activities		b1 to b2	---	d2, d3, d4
Distance Teaching and Learning	a1 to a7	b1 to b2	---	d1 to d4

*Lectures may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during lectures.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year		Allover the academic year
7.c grads	25	20	-----	5

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS



Written exams	a1 to a7	b1 to b2		d4
Practical exams	-----	-----	-----	-----
Oral exams	a1 to a7	b1 to b2		d1
Student activities	a1, a5,			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Bourdon, R.M. 2000. Understanding Animal Breeding, 2nd Ed., Prentice Hall, Upper Saddle River, NJ 07458.
- Falconer, D. and Mackay, T., 1996. Introduction to Quantitative Genetics. 4th Edition. Longman.
- Phillips, C.J.C., 2010. Principles of Cattle Production. 2nd Ed., CAB International Wallingford, Oxon Ox10 8De, UK.
- Muir, W.M. and S.E. Aggrey . 2013. Poultry genetics, breeding and biotechnology. Library of Congress Cataloguing - in- Publication Data

8-2: Recommended books:

- Kinghorn, B., J. van der Werf, and M. Ryan. 2011. Animal Breeding. Use of New Technologies; Twynam Press.

8-3: Egyptian Knowledge Bank:

- Dahl GE, 2020. Animal Agriculture. Sustainability, Challenges and Innovations. Academic Press, Elsevier Inc.

Ignacy Miszta 2012. Animal Breeding and Genetics, Introduction. Department of Animal and Dairy Science Breeding and Genetics University of Georgia Athens USA.

DOI: https://doi.org/10.1007/978-1-4614-5797-8_908

Scientific Journals

- Journal of Animal Science.
- British Journal of Animal Science.
- American journal of poultry science
- International journal of Poultry Science.
- Journal of Applied Poultry Research

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- DeLaval Dairy Supply. <http://www.delaval.com/en/-/Dairy-knowledge-and-advice/>
- National Dairy Database: <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>
- The Babcock Institute: <http://babcock.cals.wisc.edu>
- The International Dairy Federation (IDF): <http://www.fil-idf.org/>

Course Coordinator

Head of Department

Dr. Seham Mohammed Elkassas

Prof. Dr. Mohamed Atef Helal



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intelle ctual Skills		General & Transferable Skills			
		1	2	3	4	5	6	7	1	2	1	2	3	4
1. Traits, Phenotypes, Genotypes and Genes in Populations	4	✓							✓	✓	✓	✓	✓	✓
2. The Basic Model for Quantitative Traits	8	✓		✓					✓	✓	✓	✓	✓	✓
3. Gene and genotype frequencies	8		✓	✓					✓	✓	✓	✓	✓	✓
4. Mating Systems	8				✓				✓	✓	✓	✓	✓	✓
5. Genetic Parameters	8					✓			✓	✓	✓	✓	✓	✓
6. Correlations	8					✓			✓	✓	✓	✓	✓	✓
7. Principles of Selection in poultry	8						✓		✓	✓	✓	✓	✓	✓
8. Selection methods	8						✓		✓	✓	✓	✓	✓	✓
9. Biotechnology and poultry breeding	12							✓	✓	✓	✓	✓	✓	✓
10. Markers for genetic improvement in poultry	12							✓	✓	✓	✓	✓	✓	✓
11. Conservation of genetic materials in poultry	12							✓	✓	✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 297/2

Course title: Advanced Cattle and Buffalo Production (انتاج أبقار/جاموس متقدم)

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 192 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, students should have gained the basic principles and the essential practical skills in the field of cattle and buffalo production. The major topics covered are industry structure, evaluation of animal performance and principles of management, and production systems.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.)

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Outline the industry structure and production cycle of cattle and buffalo.
- a.2. Identify reproductive performance and breeds of cattle and buffalo.
- a.3. Explain lactation physiology, factors affecting milk yield and dry cow management.
- a.4. State the principles of judging and selection of dairy cattle and buffalo.
- a.5. Describe dairy records and correction of milk records for nongenetic factors.
- a.6. Define milking methods and milking routine.
- a.7. Summarize factors affecting beef cattle production and beef production systems

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Distinguish reasons and sources of production inefficiency in milk animals
- b.2. Modify management and breeding schedules in response to emerging technologies, and unexpected problems depending on available data.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Assess farm efficiency indices from current and retrospective performance data.
- c.2. Diagnose environmental problems and reasons of low production,
- c.3. Apply sound management practices to newborn, growing and mature animals.
- c.4. Predict Egyptian and standard breeds of cattle and buffaloes in a slideshow.
- c.5. Operate herd requirements in relation to a specified production system.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and colleagues.
- d.2. Efficiently make use of library facilities and IT tools.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements

4 - COURSE CONTENTS:

Topic	No. of hours
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	Lectures	Practical	Total
1. Cattle and buffalo industry structure in Egypt Reproduction-Production cycle	8	8	16
2. Reproductive performance of cattle and buffaloes	8	8	16
3. Breeds of cattle and buffaloes	8	8	16
4. Lactation and lactation curve	8	8	16
5. Factors affecting milk yield and composition	8	8	16
6. Managing the dry cow	8	8	16
7. Judging dairy cattle and buffalos	8	8	16
8. Record keeping	8	8	16
9. Correction of milk records for non-genetic factors	8	8	16
10. Milking methods and milking routine	8	8	16
11. Beef cattle production	16	16	32
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a6	b1 to b2		d1, d4
Practical sessions		b1 to b2	c1 to c5	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b2	c1 to c5	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities



7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b2		d4
Practical exams			c1 to c5	d2, d3
Oral exams	a1 to a6	b1 to b2		d1
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Phillips, C.J.C., 2016. Principles of Cattle Production. 2nd Ed., CAB International Wallingford, Oxon Ox10 8De, UK.
- Nelson, M.G. 2015. The Complete Guide to Small-Scale Farming: everything you need to know about raising beef and dairy cattle, rabbits, ducks, and other small animals. Atlantic Publishing Group, Ocala, Florida, USA

8-2: Recommended books:

- Nelson, M.G. 2015. The Complete Guide to Small-Scale Farming: everything you need to know about raising beef and dairy cattle, rabbits, ducks, and other small animals. Atlantic Publishing Group, Ocala, Florida, USA.
- Payne et al. (2010): Dairy Cattle Principles, Problems, Practices and Profit. 2nd Edition.

8-3: Egyptian Knowledge Bank:

- Beaver, BV and Höglund, DL. 2016. Efficient Livestock Handling. The Practical Application of Animal Welfare and Behavioral Science
- Das, DN. Paul, D. and Mondal, S. 2022. Emerging Issues in Climate Smart Livestock Production. Biological Tools and Techniques. Academic Press, Elsevier Inc.

Scientific Journals

- Tropical Animal Health and Production.
- Journal of Animal Science.
- Livestock Production Science.
- British Journal of Animal Science.

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- DeLaval Dairy Supply. <http://www.delaval.com/en/-/Dairy-knowledge-and-advice/>
- Lactation Biology: <http://classes.aces.uiuc.edu/ansci308/index.html>
- Heat Detection and Timing of Insemination for Cattle. Penn State, College of Agricultural Sciences, Cooperative Extension. <https://extension.psu.edu/heat-detection-and-timing-of-insemination-for-cattle> accessed 08/09/2017.
- National Dairy Database: <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>
- WWW Virtual Library for Dairy Production* (Oklahoma). <http://www.ansi.okstate.edu/library/dairy/>



Kafrelsheikh University
Faculty of Veterinary Medicine



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- US Dairy Export Council: <http://www.usdec.org/about/howeare.htm>
 - The International Dairy Federation (IDF): <http://www.fil-idf.org/>
 - Managing of dairy heifers: <http://www3.das.psu.edu/dcn/calfmgt/385/index.html>
 - Management Practices Associated with High-Producing U.S. Dairy Herds (USDA): http://www.aphis.usda.gov/vs/ceah/cahm/Dairy_Cattle/drymgmt.htm

Course Coordinator

Head of Department

Dr. Seham Mohammed Elkassas

Prof. Dr. Mohamed Atef Helal



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 298/2

Course title: Advanced Sheep and Goat Production (انتاج أغنام و ماعز متقدم)

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 192 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, students should have gained the basic principles and the essential practical skills in the field of sheep and goat production. The major topics covered are industry structure, evaluation of animal performance and principles of management, and production systems.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.)

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Express industry structure, production cycle and economic significance of sheep and goat.
- a.2. Summarize breeds and production systems of sheep and goat
- a.3. Discuss different management techniques for sheep and goat
- a.4. Highlight reproduction process and genetic improvement of sheep and goat
- a.5. Memorize flock health program for sheep and goat.
- a.6. Identify products, by-products and economics of production and marketing of sheep and goat
- a.7. Describe records and record keeping in sheep and goat

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Distinguish reasons and sources of production inefficiency in sheep and goat
- b.2. Modify management and breeding schedules in response to emerging technologies, and unexpected problems depending on available data.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Assess farm efficiency indices from current and retrospective performance data.
- c.2. Diagnose environmental problems and reasons of low production,
- c.3. Apply sound management practices to newborn, growing and mature animals.
- c.4. Identify Egyptian and standard breeds of sheep and goat in a slideshow.
- c.5. Operate flock requirements in relation to a specified production system.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Efficiently make use of library facilities and IT tools.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements



4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1- Sheep and goat industry structure in Egypt Production cycle	4	4	8
2- Economic significance of sheep and goats	8	8	16
3- Breeds of sheep and goats	12	12	24
4- Sheep and goat production systems	8	8	16
5- Sheep and goat management	8	8	16
6- Reproduction in sheep and goats	8	8	16
7- Genetic improvement of sheep and goats	8	8	16
8- Sheep and goat flock health	8	8	16
9- Sheep and goat products and by-products	8	8	16
10- Sheep and goat economics of production and marketing	12	12	24
11- Records and record keeping	12	12	24
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a7	b1 to b2		d1, d4
Practical sessions		b1 to b2	c1 to c5	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a7	b1 to b2	c1 to c5	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination	Activities
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
<u>7.c grads</u>	50	20	20	10



7. Student Assessment				
Intended Learning Outcomes Covered				
7.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b2		d4
Practical exams			c1 to c5	d2, d3
Oral exams	a1 to a7	b1 to b2		d1
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Alemu Yami and R.C. Merkel 2008. Sheep and Goat Production Handbook. Ethiopia Sheep and Goat Productivity Improvement Program. USAID
- Nelson, M.G. 2015. The Complete Guide to Small-Scale Farming: everything you need to know about raising beef and dairy cattle, rabbits, ducks, and other small animals. Atlantic Publishing Group, Ocala, Florida, USA

8-2: Recommended books:

- Nelson, M.G. 2015. The Complete Guide to Small-Scale Farming: everything you need to know about raising beef and dairy cattle, rabbits, ducks, and other small animals. Atlantic Publishing Group, Ocala, Florida, USA.
- Normet, K. 2017. Raising and Keeping Dairy Goats: A Practical Guide. Firefly Books Publishers.
- Simm, G., 1998. Genetic Improvement of cattle and sheep. Farming Press, Miller Freeman, UK, Ltd.

8-3: Egyptian Knowledge Bank:

- Beaver, BV and Höglund, DL. 2016. Efficient Livestock Handling. The Practical Application of Animal Welfare and Behavioral Science
- Das, DN. Paul, D. and Mondal, S. 2022. Emerging Issues in Climate Smart Livestock Production. Biological Tools and Techniques. Academic Press, Elsevier Inc.
- Morris, ST. 2017. Overview of sheep production systems. In: Advances in Sheep Welfare, Ferguson, DM, Lee, C and Fisher, A. (editors). Academic Press, Elsevier Inc.
- Simõesa, J. Abeciab, A. Cannasc, A. Delgadillod, JA Lacastae, D. Voigtg, K. and Chemineaug, P. 2021. Review: Managing sheep and goats for sustainable high yield production.
<https://doi.org/10.1016/j.animal.2021.100293>

Scientific Journals

- Tropical Animal Health and Production.
- Journal of Animal Science.
- Livestock Production Science.

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- DeLaval Dairy Supply. <http://www.delaval.com/en/-/Dairy-knowledge-and-advice/>
- National Dairy Database: <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>
- The Babcock Institute: <http://babcock.cals.wisc.edu>

Course Coordinator

Dr. Seham Mohammed Elkassas

Head of Department

Prof. Dr. Mohamed Atef Helal



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intelle-ctual Skills		Practical & Professional Skills					General & Transferable Skills			
		1	2	3	4	5	6	7	1	2	1	2	3	4	5	1	2	3	4
1- Sheep and goat industry structure in Egypt Production cycle	8	✓							✓	✓	✓					✓	✓	✓	✓
2- Economic significance of sheep and goats	16	✓							✓	✓	✓					✓	✓	✓	✓
3- Breeds of sheep and goats	24		✓						✓	✓				✓		✓	✓	✓	✓
4- Sheep and goat production systems	16		✓						✓	✓		✓				✓	✓	✓	✓
5- Sheep and goat management	16			✓					✓	✓				✓		✓	✓	✓	✓
6- Reproduction in sheep and goats	16				✓				✓	✓	✓	✓				✓	✓	✓	✓
7- Genetic improvement of sheep and goats	16				✓				✓	✓					✓	✓	✓	✓	✓
8- Sheep and goat flock health	16					✓			✓	✓			✓			✓	✓	✓	✓
9- Sheep and goat products and by-products	16						✓		✓	✓		✓				✓	✓	✓	✓
10- Sheep and goat economics of production and marketing	24							✓	✓	✓		✓			✓	✓	✓	✓	✓
11- Records and record keeping	24							✓	✓	✓		✓			✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 299/2

Course title: Advanced Poultry Production (انتاج دواجن متقدم)

Academic Year: **PhD of Veterinary Medicine Program**

Total teaching hours: 192 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, students should have gained the basic principles and the essential practical skills related to chicken biology, housing, production principles as well as quails, turkey, water fowl, ostrich and pigeon.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.)

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Discuss origin, domestication, and classification of poultry.
- a.2. Express basics and types of poultry housing and ventilation
- a.3. Explain how keep up hatching egg quality and artificial incubation
- a.4. Define requirements for chicken brooding and growing management
- a.5. Outline the rules of management and lighting systems of breeder and layer chicken
- a.6. Describe the management practices for broiler chicken.
- a.7. Recall the brooding, growing and rearing practices for Japanese quails, turkey, ostrich, water fowls and pigeons.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Formulate a program for fertile egg production of chicken, quails, turkey, ducks, geese and ostrich.
- b.2. Innovate the appropriate method of brooding, breeding rearing systems of poultry with economic production
- b.3. Interpret unexpected problems in poultry houses and hatcheries as soon as possible, depending on the case history and performance data.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Assess farm efficiency indices from current and retrospective performance data.
- c.2. Diagnose environmental problems and reasons of low production,
- c.3. Apply sound management practices to eggs, chicks, growing and mature poultry.
- c.4. Identify Egyptian and standard breeds of poultry in a slideshow.
- c.5. Operate flock requirements in relation to a specified production system.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Efficiently make use of library facilities and IT tools.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements



4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1- Introduction, Origin, domestication, and classification of poultry	8	8	16
2- Poultry Housing	8	8	16
3- Hatching Egg Quality and Artificial Incubation	8	8	16
4- Brooder and Growing Management	8	8	16
5- Breeder Management	8	8	16
6- Management of Broilers	8	8	16
7- Laying management	8	8	16
8- Lighting management	8	8	16
9- Brooding, growing & rearing of Japanese quails	8	8	16
10- Brooding, growing and rearing of turkey	6	6	12
11- Brooding, growing and rearing of ostrich	6	6	12
12- Brooding, growing and rearing of water fowls	6	6	12
13- Brooding, growing and rearing of pigeons	6	6	12
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a7	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c5	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a7	b1 to b3	c1 to c5	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities



7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b3		d4
Practical exams			c1 to c5	d2, d3
Oral exams	a1 to a7	b1 to b3		d1
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Leeson, S., Summers, J. 2018. Commercial Poultry Nutrition, 3rd Edition. Nottingham University Press, England.
- Muir, W.M. and S.E. Aggrey . 2013. Poultry genetics, breeding and biotechnology. Library of Congress Cataloguing - in- Publication Data.
- Donald D. Bell & William D. Weaver, Jr. 2012. Commercial Chicken Meat and Egg Production. Springer publishing, New York, USA.
- Lesson, S & Summer J. D. 2010. Broiler breeder production. Nottingham University Press, England.
- Paul Peacock. 2009. The urban Hen. A practical guide to keeping poultry in a town or city.

8-2: Recommended books:

- Avian (Poultry) Production: 2nd Revised and Enlarged Edition, by D. Sapkota, D. Narahari, J.D. Mahanta, 2017.
- Poultry Health: A Guide for Professionals, by Paul Barrow, Venugopal Nair, Susan Baigent, Robert Atterbury, Michael Clark, 2021.
- Poultry Science, 5th Edition, by Colin G. Scanes, Karen D. Christensen, 2019.
- Domestic Duck Production: Science and Practice, by Peter Cherry, Trevor R. Morris, 2011
- Turkey Management: A Comprehensive Guide to Raising Turkeys (7) (Norton Creek Classics) Paperback , by Stanley J Marsden (Author), J Holmes Martin (Author), Robert Plamondon, 2016.
- The Production of Duck Eggs - A Collection of Articles on Incubators, Hatching, Collection and Other Aspects of Egg Production Paperback by [Various](#) , 2011.

8-3: Egyptian Knowledge Bank:

- Beaver, BV and Höglund, DL. 2016. Efficient Livestock Handling. The Practical Application of Animal Welfare and Behavioral Science
- Blair, R. 2018. Nutrition and feeding of organic poultry. University of British Columbia, British Columbia, Canada. ISBN 9781786392985
- Burton, E., Gatcliffe, J., O'Neill, H. M., Scholey, D. 2016. Sustainable poultry production in Europe. School of Animal, Rural and Environmental Sciences, Nottingham Trent University, Brackenhurst Campus, Southwell, Nottinghamshire NG25 0AF, UK.

Scientific Journals

- Egyptian Poultry Science
- Poultry Science Association
- American journal of poultry science



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-
- British Poultry Science
 - International journal of Poultry Science.
 - Journal of Applied Poultry Research

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <http://www.thepoultrysite.com/>
- <http://www.worldpoultry.net/>
- www.elib4vet.com
- <http://www.dawagen.com>
- <http://www.thepoultry.net/html/About.htm>

Course Coordinator

Dr. Seham Mohammed Elkassas

Head of Department

Prof. Dr. Mohamed Atef Helal

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intellectual Skills			Practical & Professional Skills					General & Transferable Skills			
		1	2	3	4	5	6	7	1	2	3	1	2	3	4	5	1	2	3	4
1- Introduction, Origin, domestication, and classification of poultry	16	✓							✓	✓	✓				✓		✓	✓	✓	✓
2- Poultry Housing	16		✓						✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
3- Hatching Egg Quality and Artificial Incubation	16			✓					✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
4- Brooder and Growing Management	16				✓				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
5- Breeder Management	16					✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
6- Management of Broilers	16						✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
7- Laying management	16					✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
8- Lighting management	16					✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
9- Brooding, growing & rearing of Japanese quails	16							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
10- Brooding, growing and rearing of turkey	12							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
11- Brooding, growing and rearing of ostrich	12							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
12- Brooding, growing and rearing of water fowls	12							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
13- Brooding, growing and rearing of pigeons	12							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 300/2

Course title: Advanced Rabbit Production (انتاج أرانب متقدم)

Academic Year: **PhD of Veterinary Medicine Program**

Total teaching hours: 192 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, students should have gained the basic principles and the essential practical skills related to rabbit biology, breeds, housing, production principles as well as genetic principles.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.)

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Discuss rabbit industry, production cycle, origin and domestication of rabbits.
- a.2. Summarize breeds and production systems rabbits
- a.3. Express basics and types of rabbit housing and ventilation.
- a.4. Define nutritional and environmental requirements for rabbits.
- a.5. Outline management operations and reproduction in rabbits
- a.6. Describe behavioral and health problems in rabbit
- a.7. Recall record keeping, economics and financial management of rabbit projects.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Formulate a program for production of rabbit.
- b.2. Innovate the appropriate method of rabbit production systems with economic production
- b.3. Interpret unexpected problems in rabbit houses as soon as possible, depending on the case history and performance data.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Assess farm efficiency indices from current and retrospective performance data.
- c.2. Diagnose environmental problems and reasons of low production,
- c.3. Apply sound management practices to young and mature rabbits.
- c.4. Identify Egyptian and standard breeds of rabbit in a slideshow.
- c.5. Operate rabbit requirements in relation to a specified production system.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and colleagues.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently



4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1- Rabbit industry structure in Egypt and Production cycle	2	2	4
2- Origin and domestication of rabbits	8	8	16
3- Rabbit breeds and production systems	8	8	16
4- Rabbit housing and equipments	8	8	16
5- Nutrient requirements and feeding systems for rabbits	8	8	16
6- Environmental requirements for rabbits	8	8	16
7- Managemnet operations for rabbits	8	8	16
8- Reproduction in rabbits	8	8	16
9- Rabbit Diseases and Health Problems	8	8	16
10- records and record keeping	8	8	16
11. Economics and Financial Management	6	6	12
12. Principles of Rabbit Genetics	8	8	16
13. Rabbit Behavior	8	8	16
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a7	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c5	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a7	b1 to b3	c1 to c5	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.



7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year
7.c grads	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
7.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b4		d4
Practical exams			c1 to c5	d2, d3
Oral exams	a1 to a7	b1 to b4		d1
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- McNitt J.I., S. D. Lukefahr, P.R. Cheeke and N. M. Patton, 2013. Rabbit Production. 9th Edition. ISBN-13: 9781 78064 011 2 (Pbk) - 9781 78064 012 9 (Hbk)
- DeBlas, CWiseman, J. 2010. Nutrition of the Rabbit, 2nd Edition. ISBN978-1-84593-669-3(P)
- Smith, T. W. 2018. Commercial Rabbit Production. Extension Service of Mississippi State University
- James, R. Gillespie and Frank, B. Flanders. 2015. Modern livestock and poultry production. 9th edition. Delmar, Cengage Learning. USA.

8-2: Recommended books:

- Kinghorn, B., J. van der Werf, and M. Ryan. 2001. Animal Breeding. Use of New Technologies; Twynam Press.
- Ebenezer U. 2004. A guide to Raising Rabbit. ISBN 978425090. Royal Pace Publications.
- Nova Scotia Department Of Agriculture. Rabbit Production Manual. A Guide for 4-H Leaders and Beginning Farmers

8-3: Egyptian Knowledge Bank:

- Beaver, BV and Höglund, DL. 2016. Efficient Livestock Handling. The Practical Application of Animal Welfare and Behavioral Science
- DeBlas, CWiseman, J. 2010. Nutrition of the Rabbit, 2nd Edition. ISBN978-1-84593-669-3(P)
- Burton, E., Gatcliffe, J., O'Neill, H. M., Scholey, D. 2016. Sustainable poultry production in Europe. School of Animal, Rural and Environmental Sciences, Nottingham Trent University, Brackenhurst Campus, Southwell, Nottinghamshire NG25 0AF, UK.

Scientific Journals

- Egyptian Poultry Science
- Poultry Science Association
- American journal of poultry science
- British Poultry Science
- International journal of Poultry Science.
- Journal of Applied Poultry Research

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>



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- <http://www.thepoultrysite.com/>
 - <http://www.worldpoultry.net/>

Course Coordinator

Dr. Seham Mohammed Elkassas

Head of Department

Prof. Dr. Mohamed Atef Helal

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intellectual Skills			Practical & Professional Skills					General & Transferable Skills			
		1	2	3	4	5	6	7	1	2	3	1	2	3	4	5	1	2	3	4
1- Rabbit industry structure in Egypt and Production cycle	4	✓							✓	✓	✓				✓		✓	✓	✓	✓
2- Origin and domestication of rabbits	16		✓						✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
3- Rabbit breeds and production systems	16			✓					✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
4- Rabbit housing and equipments	16				✓				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
5- Nutrient requirements and feeding systems for rabbits	16					✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
6- Environmental requirements for rabbits	16						✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
7- Managemnet operations for rabbits	16					✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
8- Reproduction in rabbits	16					✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
9- Rabbit Diseases and Health Problems	16							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
10- records and record keeping	16							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
11. Economics and Financial Management	12							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
12. Principles of Rabbit Genetics	16							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
13. Rabbit Behavior	16							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 301/2

Course title: Improvement by Artificial Insemination in Poultry and Rabbits

(التحسين بواسطة التلقيح الاصطناعي في الدواجن والأرانب)

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 144 hrs

Lectures: 48 hrs (48 weeks- 1hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, students should have gained the basic principles and the essential practical skills related to improvement of rabbit and poultry production by using artificial insemination technology.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.)

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Define the structure and reproduction physiology of poultry and rabbit for best management.
- a.2. Review the composition and metabolism of poultry and rabbit semen.
- a.3. Recognize ideal methods for handling, diluting and preservation of poultry and rabbit semen samples.
- a.4. List advanced methods of evaluation of poultry and rabbit semen.
- a.5. State recent methods for processing of poultry and rabbit semen.
- a.6. Identify the different techniques of insemination in poultry and rabbits.
- a.7. Describe the different procedures to improve the fertility status of poultry and rabbit

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Select the suitable method for collecting a complete and clean ejaculate from birds and rabbits
- b.2. Evaluate bird and rabbit semen efficiently on scientific basis.
- b.3. Judge the processing of bird and rabbit semen.
- b.4. Design a plan for optimum application and benefit of AI in birds and rabbits.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Carry out semen collection, labeling and preservation efficiently under standard hygienic conditions.
- c.2. Perform gross and laboratory advanced evaluation of bird and rabbit reproductive system and semen sample.
- c.3. Apply sound management practices to young and mature rabbits.
- c.4. Perform ideal insemination in birds and rabbits.
- c.5. Attain essential laboratory skills that underpin techniques associated with semen biology and AI.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:



- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1- Structure of rabbit and poultry reproductive systems	6	12	18
2- Reproduction management for rabbit and poultry	6	12	18
3- Recent advances in rabbit artificial insemination.	6	12	18
4- Structure and functions of different components of the semen.	6	12	18
5- Different methods for semen collection from birds and rabbits	6	12	18
6- Different methods used for semen evaluation	6	12	18
7- Different methods and techniques used for semen processing	6	12	18
8- Techniques used for insemination of female birds and rabbits	6	12	18
Total	48	96	144

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming
- * **Practical sessions:**
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about dairy operations
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures *	a1 to a7	b1 to b4		d1, d4
Practical sessions		b1 to b4	c1 to c5	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a7	b1 to b4	c1 to c5	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.



7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b4		d4
Practical exams			c1 to c5	d2, d3
Oral exams	a1 to a7	b1 to b4		d1
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Mohan J., S.K. Sharma, G. Kolluri And K. Dhama. 2018. History of artificial insemination in poultry, its components and significance. World's Poultry Science Association 2018.
- Applied animal reproduction (6th edition). Joe Bearden, H.; John w. Fuquay and Scott. T. (2004) Willard Upper saddle River, New Jersey 0745.

8-2: Recommended books:

- Bourdon, A. (1999): Understanding Animal Breeding. 1st Ed. Printce Hall, New Jersey
- AISHA, K. and ZAIN, U.A. (2010) Artificial Insemination in Poultry. Department of Pathology, University of Agriculture Faisalabad, Pakistan.
- BEULAH, P.V. (2017) Effect of different semen extenders on fertility of chicken spermatozoa during short term preservation. M.V.Sc Thesis, ICAR-Indian Veterinary Research Institute, India

8-3: Egyptian Knowledge Bank:

- Beaver, BV and Höglund, DL. 2016. Efficient Livestock Handling. The Practical Application of Animal Welfare and Behavioral Science
- Burton, E., Gatcliffe, J., O'Neill, H. M., Scholey, D. 2016. Sustainable poultry production in Europe. School of Animal, Rural and Environmental Sciences, Nottingham Trent University, Brackenhurst Campus, Southwell, Nottinghamshire NG25 0AF, UK.

Scientific Journals

- Reproduction in Domestic Animals - Wiley Online
- Animal Reproduction Science - Journal – Elsevier
- Journal of Animal Science and Biotechnology
- Japanese Journal of Animal Reproduction
- Biology of Reproduction.
- J. Animal reproduction & Fertility
- Journal of Reproduction and development.

Scientific websites



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- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <http://www.thepoultrysite.com/>
- <http://www.worldpoultry.net/>

Course Coordinator

Dr. Seham Mohammed Elkassas

Head of Department

Prof. Dr. Mohamed Atef Helal



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intellectual Skills				Practical & Professional Skills					General & Transferable Skills			
		1	2	3	4	5	6	7	1	2	3	4	1	2	3	4	5	1	2	3	4
1- Structure of rabbit and poultry reproductive systems	18	✓							✓				✓					✓	✓	✓	✓
2- Reproduction management for rabbit and poultry	18		✓						✓				✓					✓	✓	✓	✓
3- Recent advances in rabbit artificial insemination.	18			✓						✓			✓					✓	✓	✓	✓
4- Structure and functions of different components of the semen.	18			✓						✓				✓				✓	✓	✓	✓
5- Different methods for semen collection from birds and rabbits	18				✓					✓				✓				✓	✓	✓	✓
6- Different methods used for semen evaluation	18				✓						✓			✓	✓			✓	✓	✓	✓
7- Different methods and techniques used for semen processing	18					✓					✓	✓				✓	✓	✓	✓	✓	✓
8- Techniques used for insemination of female birds and rabbits	18						✓	✓				✓				✓	✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 295/2

Course title: Advanced Animal Breeding and Improvement (تربية و تحسين حيوان متقدم)

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 96 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: -----

2 - OVERALL AIMS OF THE COURSE:

At the end of this course, the student must be acquire knowledge and skills related to quantitative genetics as related to improvement of animal populations, as well as genetic conservation.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.8. Outline the aims, advantages and disadvantages of genetic improvement.
- a.9. Contrast farm animal traits from genetic improvement point of view.
- a.10. Discuss the causes of variation in economic traits.
- a.11. Classify mating systems.
- a.12. Identify the genetic parameters, different correlation, and selection response.
- a.13. Explain the types of selection.
- a.14. Discuss biotechnologies from animal breeding perspective.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.3. Manage breeding problems.
- b.4. Deduce proper biotechnological approaches for genetic improvement

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

.....

3- D: GENERAL SKILLS:

By the end of this course, the student should be able to:

- d.8. Communicate effectively with his professors, and collages.
- d.9. Efficiently make use of library facilities and IT tools.
- d.10. Teach others and evaluate their performance.
- d.11. Self-evaluate and identify personal learning requirements



4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Traits, Phenotypes, Genotypes and Genes in Populations	4	---	4
2. The Basic Model for Quantitative Traits	8	---	8
3. Gene and genotype frequencies	8	---	8
4. Mating Systems	8	---	8
5. Genetic Parameters	8	---	8
6. Correlations	8	---	8
7. Principles of Selection	8	---	8
8. Selection methods	8	---	8
9. Biotechnology and animal breeding	12	---	12
10. Markers for genetic improvement	12	---	12
11. Conservation of genetic materials	12	---	12
Total	96	---	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Self-Learning activities:** Mini reviews from the web and the library Making individual reports about animal breeding

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a7	b1 to b2	---	d1, d4
Self-Learning activities		b1 to b2	---	d2, d3, d4
Distance Teaching and Learning	a1 to a7	b1 to b2	---	d1 to d4

*Lectures may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during lectures.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written	Oral examination	Practical examination	Activities
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	examination			
7.b time	At the end of the academic year	At the end of the academic year		Allover the academic year
7.c grads	25	20	-----	5

7. Student Assessment				
Intended Learning Outcomes Covered				
6.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b2		d4
Practical exams	-----	-----	-----	-----
Oral exams	a1 to a7	b1 to b2		d1
Student activities	a1, a5,			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Bourdon, R.M. 2000. Understanding Animal Breeding, 2nd Ed., Prentice Hall, Upper Saddle River, NJ 07458.
- Falconer, D. and Mackay, T., 1996. Introduction to Quantitative Genetics. 4th Edition. Longman.
- Phillips, C.J.C., 2010. Principles of Cattle Production. 2nd Ed., CAB International Wallingford, Oxon Ox10 8De, UK.
- Muir, W.M. and S.E. Aggrey . 2013. Poultry genetics, breeding and biotechnology. Library of Congress Cataloguing - in- Publication Data

8-2: Recmended books:

- Kinghorn, B., J. van der Werf, and M. Ryan. 2011. Animal Breeding. Use of New Technologies; Twynam Press.

8-3: Egyptian Knowledge Bank:

- Dahl GE, 2020. Animal Agriculture. Sustainability, Challenges and Innovations. Academic Press, Elsevier Inc.

Ignacy Miszta 2012. Animal Breeding and Genetics, Introduction. Department of Animal and Dairy Science Breeding and Genetics University of Georgia Athens USA.

DOI: https://doi.org/10.1007/978-1-4614-5797-8_908

Scientific Journals

- Journal of Animal Science.
- British Journal of Animal Science.
- American journal of poultry science
- International journal of Poultry Science.
- Journal of Applied Poultry Research

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- DeLaval Dairy Supply. <http://www.delaval.com/en/-/Dairy-knowledge-and-advice/>
- National Dairy Database: <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>
- The Babcock Institute: <http://babcock.cals.wisc.edu>



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- The International Dairy Federation (IDF): <http://www.fil-idf.org/>

Course Coordinator

Dr. Seham Mohammed Elkassas

Head of Department

Prof. Dr. Mohamed Atef Helal



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intellectual Skills		General & Transferable Skills			
		1	2	3	4	5	6	7	1	2	1	2	3	4
1. Traits, Phenotypes, Genotypes and Genes in Populations	4	✓							✓	✓	✓	✓	✓	✓
2. The Basic Model for Quantitative Traits	8	✓		✓					✓	✓	✓	✓	✓	✓
3. Gene and genotype frequencies	8		✓	✓					✓	✓	✓	✓	✓	✓
4. Mating Systems	8				✓				✓	✓	✓	✓	✓	✓
5. Genetic Parameters	8					✓			✓	✓	✓	✓	✓	✓
6. Correlations	8					✓			✓	✓	✓	✓	✓	✓
7. Principles of Selection	8						✓		✓	✓	✓	✓	✓	✓
8. Selection methods	8						✓		✓	✓	✓	✓	✓	✓
9. Biotechnology and animal breeding	12							✓	✓	✓	✓	✓	✓	✓
10. Markers for genetic improvement	12							✓	✓	✓	✓	✓	✓	✓
11. Conservation of genetic materials	12							✓	✓	✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 296/2

Course title: Advanced Poultry Breeding and Improvement (تربية و تحسين دواجن متقدم)

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 96 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: -----

2 - OVERALL AIMS OF THE COURSE:

At the end of this course, the student must be acquire knowledge and skills related to quantitative genetics as related to improvement of animal populations, as well as genetic conservation.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.8. Outline the aims, advantages and disadvantages of genetic improvement.
- a.9. Contrast farm animal traits from genetic improvement point of view.
- a.10. Discuss the causes of variation in economic traits.
- a.11. Classify mating systems.
- a.12. Identify the genetic parameters, different correlation, and selection response.
- a.13. Explain the types of selection.
- a.14. Discuss biotechnologies from animal breeding perspective.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.3. Manage breeding problems.
- b.4. Deduce proper biotechnological approaches for genetic improvement

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

.....

3- D: GENERAL SKILLS:

By the end of this course, the student should be able to:

- d.5. Communicate effectively with his professors, and collages.
- d.6. Efficiently make use of library facilities and IT tools.
- d.7. Teach others and evaluate their performance.
- d.8. Self-evaluate and identify personal learning requirements



4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Traits, Phenotypes, Genotypes and Genes in Populations	4	---	4
2. The Basic Model for Quantitative Traits	8	---	8
3. Gene and genotype frequencies	8	---	8
4. Mating Systems	8	---	8
5. Genetic Parameters	8	---	8
6. Correlations	8	---	8
7. Principles of Selection in poultry	8	---	8
8. Selection methods	8	---	8
9. Biotechnology and poultry breeding	12	---	12
10. Markers for genetic improvement in poultry	12	---	12
11. Conservation of genetic materials in poultry	12	---	12
Total	96	---	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Self-Learning activities:** Mini reviews from the web and the library Making individual reports about animal breeding

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a7	b1 to b2	---	d1, d4
Self-Learning activities		b1 to b2	---	d2, d3, d4
Distance Teaching and Learning	a1 to a7	b1 to b2	---	d1 to d4

*Lectures may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during lectures.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written	Oral examination	Practical examination	Activities
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	examination			
7.b time	At the end of the academic year	At the end of the academic year		Allover the academic year
7.c grads	25	20	-----	5

7. Student Assessment				
Intended Learning Outcomes Covered				
6.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b2		d4
Practical exams	-----	-----	-----	-----
Oral exams	a1 to a7	b1 to b2		d1
Student activities	a1, a5,			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Bourdon, R.M. 2000. Understanding Animal Breeding, 2nd Ed., Prentice Hall, Upper Saddle River, NJ 07458.
- Falconer, D. and Mackay, T., 1996. Introduction to Quantitative Genetics. 4th Edition. Longman.
- Phillips, C.J.C., 2010. Principles of Cattle Production. 2nd Ed., CAB International Wallingford, Oxon Ox10 8De, UK.
- Muir, W.M. and S.E. Aggrey . 2013. Poultry genetics, breeding and biotechnology. Library of Congress Cataloguing - in- Publication Data

8-2: Recmended books:

- Kinghorn, B., J. van der Werf, and M. Ryan. 2011. Animal Breeding. Use of New Technologies; Twynam Press.

8-3: Egyptian Knowledge Bank:

- Dahl GE, 2020. Animal Agriculture. Sustainability, Challenges and Innovations. Academic Press, Elsevier Inc.

Ignacy Miszta 2012. Animal Breeding and Genetics, Introduction. Department of Animal and Dairy Science Breeding and Genetics University of Georgia Athens USA.

DOI: https://doi.org/10.1007/978-1-4614-5797-8_908

Scientific Journals

- Journal of Animal Science.
- British Journal of Animal Science.
- American journal of poultry science
- International journal of Poultry Science.
- Journal of Applied Poultry Research

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- DeLaval Dairy Supply. <http://www.delaval.com/en/-/Dairy-knowledge-and-advice/>
- National Dairy Database: <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>
- The Babcock Institute: <http://babcock.cals.wisc.edu>



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- The International Dairy Federation (IDF): <http://www.fil-idf.org/>

Course Coordinator

Head of Department

Dr. Seham Mohammed Elkassas

Prof. Dr. Mohamed Atef Helal



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intelle ctual Skills		General & Transferable Skills			
		1	2	3	4	5	6	7	1	2	1	2	3	4
1. Traits, Phenotypes, Genotypes and Genes in Populations	4	✓							✓	✓	✓	✓	✓	✓
2. The Basic Model for Quantitative Traits	8	✓		✓					✓	✓	✓	✓	✓	✓
3. Gene and genotype frequencies	8		✓	✓					✓	✓	✓	✓	✓	✓
4. Mating Systems	8				✓				✓	✓	✓	✓	✓	✓
5. Genetic Parameters	8					✓			✓	✓	✓	✓	✓	✓
6. Correlations	8					✓			✓	✓	✓	✓	✓	✓
7. Principles of Selection in poultry	8						✓		✓	✓	✓	✓	✓	✓
8. Selection methods	8						✓		✓	✓	✓	✓	✓	✓
9. Biotechnology and poultry breeding	12							✓	✓	✓	✓	✓	✓	✓
10. Markers for genetic improvement in poultry	12							✓	✓	✓	✓	✓	✓	✓
11. Conservation of genetic materials in poultry	12							✓	✓	✓	✓	✓	✓	✓



Kafrelsheikh University
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COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 297/2

Course title: Advanced Cattle and Buffalo Production (انتاج أبقار/جاموس متقدم)

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 192 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, students should have gained the basic principles and the essential practical skills in the field of cattle and buffalo production. The major topics covered are industry structure, evaluation of animal performance and principles of management, and production systems.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.)

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Outline the industry structure and production cycle of cattle and buffalo.
- a.2. Identify reproductive performance and breeds of cattle and buffalo.
- a.3. Explain lactation physiology, factors affecting milk yield and dry cow management.
- a.4. State the principles of judging and selection of dairy cattle and buffalo.
- a.5. Describe dairy records and correction of milk records for nongenetic factors.
- a.6. Define milking methods and milking routine.
- a.7. Summarize factors affecting beef cattle production and beef production systems

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Distinguish reasons and sources of production inefficiency in milk animals
- b.2. Modify management and breeding schedules in response to emerging technologies, and unexpected problems depending on available data.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Assess farm efficiency indices from current and retrospective performance data.
- c.2. Diagnose environmental problems and reasons of low production,
- c.3. Apply sound management practices to newborn, growing and mature animals.
- c.4. Predict Egyptian and standard breeds of cattle and buffaloes in a slideshow.
- c.5. Operate herd requirements in relation to a specified production system.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and colleagues.
- d.2. Efficiently make use of library facilities and IT tools.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements



4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Cattle and buffalo industry structure in Egypt Reproduction-Production cycle	8	8	16
2. Reproductive performance of cattle and buffaloes	8	8	16
3. Breeds of cattle and buffaloes	8	8	16
4. Lactation and lactation curve	8	8	16
5. Factors affecting milk yield and composition	8	8	16
6. Managing the dry cow	8	8	16
7. Judging dairy cattle and buffalos	8	8	16
8. Record keeping	8	8	16
9. Correction of milk records for non-genetic factors	8	8	16
10. Milking methods and milking routine	8	8	16
11. Beef cattle production	16	16	32
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a6	b1 to b2		d1, d4
Practical sessions		b1 to b2	c1 to c5	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b2	c1 to c5	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.



*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year
7.c grads	50	20	20	10

7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b2		d4
Practical exams			c1 to c5	d2, d3
Oral exams	a1 to a6	b1 to b2		d1
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Phillips, C.J.C., 2016. Principles of Cattle Production. 2nd Ed., CAB International Wallingford, Oxon Ox10 8De, UK.
- Nelson, M.G. 2015. The Complete Guide to Small-Scale Farming: everything you need to know about raising beef and dairy cattle, rabbits, ducks, and other small animals. Atlantic Publishing Group, Ocala, Florida, USA

8-2: Recommended books:

- Nelson, M.G. 2015. The Complete Guide to Small-Scale Farming: everything you need to know about raising beef and dairy cattle, rabbits, ducks, and other small animals. Atlantic Publishing Group, Ocala, Florida, USA.
- Payne et al. (2010): Dairy Cattle Principles, Problems, Practices and Profit. 2nd Edition.

8-3: Egyptian Knowledge Bank:

- Beaver, BV and Höglund, DL. 2016. Efficient Livestock Handling. The Practical Application of Animal Welfare and Behavioral Science
- Das, DN. Paul, D. and Mondal, S. 2022. Emerging Issues in Climate Smart Livestock Production. Biological Tools and Techniques. Academic Press, Elsevier Inc.

Scientific Journals

- Tropical Animal Health and Production.



- Journal of Animal Science.
- Livestock Production Science.
- British Journal of Animal Science.

Scientific websites

- **The Egyptian Knowledge Bank:** <https://www.ekb.eg/web/guest/home>
- DeLaval Dairy Supply. <http://www.delaval.com/en/-/Dairy-knowledge-and-advice/>
- Lactation Biology: <http://classes.aces.uiuc.edu/ansci308/index.html>
- Heat Detection and Timing of Insemination for Cattle. Penn State, College of Agricultural Sciences, Cooperative Extension. <https://extension.psu.edu/heat-detection-and-timing-of-insemination-for-cattle> accessed 08/09/2017.
- National Dairy Database: <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>
- WWW Virtual Library for Dairy Production* (Oklahoma). <http://www.ansi.okstate.edu/library/dairy/>
- US Dairy Export Council: <http://www.usdec.org/about/whoweare.htm>
- The International Dairy Federation (IDF): <http://www.fil-idf.org/>
- Managing of dairy heifers: <http://www3.das.psu.edu/dcn/calfmgt/385/index.html>
- Management Practices Associated with High-Producing U.S. Dairy Herds (USDA): http://www.aphis.usda.gov/vs/ceah/cahm/Dairy_Cattle/drymgmt.htm

Course Coordinator

Dr. Seham Mohammed Elkassas

Head of Department

Prof. Dr. Mohamed Atef Helal



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intelle-ctual Skills		Practical & Professional Skills					General & Transferable Skills			
		1	2	3	4	5	6	7	1	2	1	2	3	4	5	1	2	3	4
1. Cattle and buffalo industry structure in Egypt Reproduction-Production cycle	16	✓							✓	✓	✓					✓	✓	✓	✓
2. Reproductive performance of cattle and buffaloes	16		✓						✓	✓	✓					✓	✓	✓	✓
3. Breeds of cattle and buffaloes	16		✓						✓	✓				✓		✓	✓	✓	✓
4. Lactation physiology	16			✓					✓	✓		✓				✓	✓	✓	✓
5. Factors affecting milk yield and composition	16			✓					✓	✓				✓		✓	✓	✓	✓
6. Managing the dry cow	16			✓					✓	✓	✓	✓				✓	✓	✓	✓
7. Judging dairy cattle	16				✓				✓	✓					✓	✓	✓	✓	✓
8. Record keeping	16					✓			✓	✓			✓			✓	✓	✓	✓
9. Correction of milk records for non-genetic factors	16					✓			✓	✓		✓				✓	✓	✓	✓
10. Milking methods and milking routine	16						✓		✓	✓		✓			✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 298/2

Course title: Advanced Sheep and Goat Production (انتاج أغنام و ماعز متقدم)

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 192 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, students should have gained the basic principles and the essential practical skills in the field of sheep and goat production. The major topics covered are industry structure, evaluation of animal performance and principles of management, and production systems.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.)

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Express industry structure, production cycle and economic significance of sheep and goat.
- a.2. Summarize breeds and production systems of sheep and goat
- a.3. Discuss different management techniques for sheep and goat
- a.4. Highlight reproduction process and genetic improvement of sheep and goat
- a.5. Memorize flock health program for sheep and goat.
- a.6. Identify products, by-products and economics of production and marketing of sheep and goat
- a.7. Describe records and record keeping in sheep and goat

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Distinguish reasons and sources of production inefficiency in sheep and goat
- b.2. Modify management and breeding schedules in response to emerging technologies, and unexpected problems depending on available data.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Assess farm efficiency indices from current and retrospective performance data.
- c.2. Diagnose environmental problems and reasons of low production,
- c.3. Apply sound management practices to newborn, growing and mature animals.
- c.4. Identify Egyptian and standard breeds of sheep and goat in a slideshow.
- c.5. Operate flock requirements in relation to a specified production system.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and colleagues.
- d.2. Efficiently make use of library facilities and IT tools.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements



4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1- Sheep and goat industry structure in Egypt Production cycle	4	4	8
2- Economic significance of sheep and goats	8	8	16
3- Breeds of sheep and goats	12	12	24
4- Sheep and goat production systems	8	8	16
5- Sheep and goat management	8	8	16
6- Reproduction in sheep and goats	8	8	16
7- Genetic improvement of sheep and goats	8	8	16
8- Sheep and goat flock health	8	8	16
9- Sheep and goat products and by-products	8	8	16
10- Sheep and goat economics of production and marketing	12	12	24
11- Records and record keeping	12	12	24
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a7	b1 to b2		d1, d4
Practical sessions		b1 to b2	c1 to c5	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a7	b1 to b2	c1 to c5	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities



7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b2		d4
Practical exams			c1 to c5	d2, d3
Oral exams	a1 to a7	b1 to b2		d1
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Alemu Yami and R.C. Merkel 2008. Sheep and Goat Production Handbook. Ethiopia Sheep and Goat Productivity Improvement Program. USAID
- Nelson, M.G. 2015. The Complete Guide to Small-Scale Farming: everything you need to know about raising beef and dairy cattle, rabbits, ducks, and other small animals. Atlantic Publishing Group, Ocala, Florida, USA

8-2: Recmended books:

- Nelson, M.G. 2015. The Complete Guide to Small-Scale Farming: everything you need to know about raising beef and dairy cattle, rabbits, ducks, and other small animals. Atlantic Publishing Group, Ocala, Florida, USA.
- Normet, K. 2017. Raising and Keeping Dairy Goats: A Practical Guide. Firefly Books Publishers.
- Simm, G., 1998. Genetic Improvement of cattle and sheep. Farming Press, Miller Freeman, UK, Ltd.

8-3: Egyptian Knowledge Bank:

- Beaver, BV and Höglund, DL. 2016. Efficient Livestock Handling. The Practical Application of Animal Welfare and Behavioral Science
- Das, DN. Paul, D. and Mondal, S. 2022. Emerging Issues in Climate Smart Livestock Production. Biological Tools and Techniques. Academic Press, Elsevier Inc.
- Morris, ST. 2017. Overview of sheep production systems. In: Advances in Sheep Welfare, Ferguson, DM, Lee, C and Fisher, A. (editors). Academic Press, Elsevier Inc.
- Simõesa, J. Abeciab, A. Cannasc, A. Delgadillod, JA Lacastae, D. Voigt, K. and Chemineaug, P. 2021. Review: Managing sheep and goats for sustainable high yield production.
<https://doi.org/10.1016/j.animal.2021.100293>

Scientific Journals

- Tropical Animal Health and Production.
- Journal of Animal Science.
- Livestock Production Science.

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- DeLaval Dairy Supply. <http://www.delaval.com/en/-/Dairy-knowledge-and-advice/>



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- National Dairy Database: <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>
- The Babcock Institute: <http://babcock.cals.wisc.edu>

Course Coordinator

Dr. Seham Mohammed Elkassas

Head of Department

Prof. Dr. Mohamed Atef Helal

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intelle-ctual Skills		Practical & Professional Skills					General & Transferable Skills			
		1	2	3	4	5	6	7	1	2	1	2	3	4	5	1	2	3	4
1- Sheep and goat industry structure in Egypt Production cycle	8	✓							✓	✓	✓					✓	✓	✓	✓
2- Economic significance of sheep and goats	16	✓							✓	✓	✓					✓	✓	✓	✓
3- Breeds of sheep and goats	24		✓						✓	✓				✓		✓	✓	✓	✓
4- Sheep and goat production systems	16		✓						✓	✓		✓				✓	✓	✓	✓
5- Sheep and goat management	16			✓					✓	✓				✓		✓	✓	✓	✓
6- Reproduction in sheep and goats	16				✓				✓	✓	✓	✓				✓	✓	✓	✓
7- Genetic improvement of sheep and goats	16				✓				✓	✓					✓	✓	✓	✓	✓
8- Sheep and goat flock health	16					✓			✓	✓			✓			✓	✓	✓	✓
9- Sheep and goat products and by-products	16						✓		✓	✓		✓				✓	✓	✓	✓
10- Sheep and goat economics of production and marketing	24							✓	✓	✓		✓			✓	✓	✓	✓	✓
11- Records and record keeping	24							✓	✓	✓		✓			✓	✓	✓	✓	✓



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COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 299/2

Course title: Advanced Poultry Production (انتاج دواجن متقدم)

Academic Year: PhD of Veterinary Medicine Program

Total teaching hours: 192 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, students should have gained the basic principles and the essential practical skills related to chicken biology, housing, production principles as well as quails, turkey, water fowl, ostrich and pigeon.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.)

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Discuss origin, domestication, and classification of poultry.
- a.2. Express basics and types of poultry housing and ventilation
- a.3. Explain how keep up hatching egg quality and artificial incubation
- a.4. Define requirements for chicken brooding and growing management
- a.5. Outline the rules of management and lighting systems of breeder and layer chicken
- a.6. Describe the management practices for broiler chicken.
- a.7. Recall the brooding, growing and rearing practices for Japanese quails, turkey, ostrich, water fowls and pigeons.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Formulate a program for fertile egg production of chicken, quails, turkey, ducks, geese and ostrich.
- b.2. Innovate the appropriate method of brooding, breeding rearing systems of poultry with economic production
- b.3. Interpret unexpected problems in poultry houses and hatcheries as soon as possible, depending on the case history and performance data.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Assess farm efficiency indices from current and retrospective performance data.
- c.2. Diagnose environmental problems and reasons of low production,
- c.3. Apply sound management practices to eggs, chicks, growing and mature poultry.
- c.4. Identify Egyptian and standard breeds of poultry in a slideshow.
- c.5. Operate flock requirements in relation to a specified production system.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Efficiently make use of library facilities and IT tools.



- d.3. Teach others and evaluate their performance.
d.4. Self-evaluate and identify personal learning requirements

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1- Introduction, Origin, domestication, and classification of poultry	8	8	16
2- Poultry Housing	8	8	16
3- Hatching Egg Quality and Artificial Incubation	8	8	16
4- Brooder and Growing Management	8	8	16
5- Breeder Management	8	8	16
6- Management of Broilers	8	8	16
7- Laying management	8	8	16
8- Lighting management	8	8	16
9- Brooding, growing & rearing of Japanese quails	8	8	16
10- Brooding, growing and rearing of turkey	6	6	12
11- Brooding, growing and rearing of ostrich	6	6	12
12- Brooding, growing and rearing of water fowls	6	6	12
13- Brooding, growing and rearing of pigeons	6	6	12
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a7	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c5	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a7	b1 to b3	c1 to c5	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.



*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b3		d4
Practical exams			c1 to c5	d2, d3
Oral exams	a1 to a7	b1 to b3		d1
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Leeson, S., Summers, J. 2018. Commercial Poultry Nutrition, 3rd Edition. Nottingham University Press. England.
- Muir, W.M. and S.E. Aggrey . 2013. Poultry genetics, breeding and biotechnology. Library of Congress Cataloguing - in- Publication Data.
- Donald D. Bell & William D. Weaver, Jr. 2012. Commercial Chicken Meat and Egg Production. Springer publishing, New York, USA.
- Lesson, S & Summer J. D. 2010. Broiler breeder production. Nottingham University Press, England.
- Paul Peacock. 2009. The urban Hen. A practical guide to keeping poultry in a town or city.

8-2: Recmended books:

- Avian (Poultry) Production: 2nd Revised and Enlarged Edition, by D. Sapkota, D. Narahari, J.D. Mahanta, 2017.
- Poultry Health: A Guide for Professionals, by Paul Barrow, Venugopal Nair, Susan Baigent, Robert Atterbury, Michael Clark, 2021.
- Poultry Science, 5th Edition, by Colin G. Scanes, Karen D. Christensen, 2019.
- Domestic Duck Production: Science and Practice, by Peter Cherry, Trevor R. Morris, 2011
- Turkey Management: A Comprehensive Guide to Raising Turkeys (7) (Norton Creek Classics) Paperback , by Stanley J Marsden (Author), J Holmes Martin (Author), Robert Plamondon, 2016.
- The Production of Duck Eggs - A Collection of Articles on Incubators, Hatching, Collection and Other Aspects of Egg Production Paperback by [Various](#) , 2011.

8-3: Egyptian Knowledge Bank:

- Beaver, BV and Höglund, DL. 2016. Efficient Livestock Handling. The Practical Application of Animal Welfare and Behavioral Science



- Blair, R. 2018. Nutrition and feeding of organic poultry. University of British Columbia, British Columbia, Canada. ISBN 9781786392985
- Burton, E., Gatcliffe, J., O'Neill, H. M., Scholey, D. 2016. Sustainable poultry production in Europe. School of Animal, Rural and Environmental Sciences, Nottingham Trent University, Brackenhurst Campus, Southwell, Nottinghamshire NG25 0AF, UK.

Scientific Journals

- Egyptian Poultry Science
- Poultry Science Association
- American journal of poultry science
- British Poultry Science
- International journal of Poultry Science.
- Journal of Applied Poultry Research

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <http://www.thepoultrysite.com/>
- <http://www.worldpoultry.net/>
- www.elib4vet.com
- <http://www.dawagen.com>
- <http://www.thepoultry.net/html/About.htm>

Course Coordinator

Dr. Seham Mohammed Elkassas

Head of Department

Prof. Dr. Mohamed Atef Helal



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intellectual Skills			Practical & Professional Skills					General & Transferable Skills			
		1	2	3	4	5	6	7	1	2	3	1	2	3	4	5	1	2	3	4
1- Introduction, Origin, domestication, and classification of poultry	16	✓							✓	✓	✓				✓		✓	✓	✓	✓
2- Poultry Housing	16		✓						✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
3- Hatching Egg Quality and Artificial Incubation	16			✓					✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
4- Brooder and Growing Management	16				✓				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
5- Breeder Management	16					✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
6- Management of Broilers	16						✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
7- Laying management	16					✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
8- Lighting management	16					✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
9- Brooding, growing & rearing of Japanese quails	16							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
10- Brooding, growing and rearing of turkey	12							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
11- Brooding, growing and rearing of ostrich	12							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
12- Brooding, growing and rearing of water fowls	12							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓



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13- Brooding, growing and rearing of pigeons	12							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
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COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 300/2

Course title: Advanced Rabbit Production (انتاج أرانب متقدم)

Academic Year: PhD of Veterinary Medicine Program

Total teaching hours: 192 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, students should have gained the basic principles and the essential practical skills related to rabbit biology, breeds, housing, production principles as well as genetic principles.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.)

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Discuss rabbit industry, production cycle, origin and domestication of rabbits.
- a.2. Summarize breeds and production systems rabbits
- a.3. Express basics and types of rabbit housing and ventilation.
- a.4. Define nutritional and environmental requirements for rabbits.
- a.5. Outline management operations and reproduction in rabbits
- a.6. Describe behavioral and health problems in rabbit
- a.7. Recall record keeping, economics and financial management of rabbit projects.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Formulate a program for production of rabbit.
- b.2. Innovate the appropriate method of rabbit production systems with economic production
- b.3. Interpret unexpected problems in rabbit houses as soon as possible, depending on the case history and performance data.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Assess farm efficiency indices from current and retrospective performance data.
- c.2. Diagnose environmental problems and reasons of low production,
- c.3. Apply sound management practices to young and mature rabbits.
- c.4. Identify Egyptian and standard breeds of rabbit in a slideshow.
- c.5. Operate rabbit requirements in relation to a specified production system.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and colleagues.
- d.2. Utilize different sources of knowledge and information



- d.3. Use information technology to serve the professional practice.
d.4. Manage time efficiently

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1- Rabbit industry structure in Egypt and Production cycle	2	2	4
2- Origin and domestication of rabbits	8	8	16
3- Rabbit breeds and production systems	8	8	16
4- Rabbit housing and equipments	8	8	16
5- Nutrient requirements and feeding systems for rabbits	8	8	16
6- Environmental requirements for rabbits	8	8	16
7- Managemnet operations for rabbits	8	8	16
8- Reproduction in rabbits	8	8	16
9- Rabbit Diseases and Health Problems	8	8	16
10- records and record keeping	8	8	16
11. Economics and Financial Management	6	6	12
12. Principles of Rabbit Genetics	8	8	16
13. Rabbit Behavior	8	8	16
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a7	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c5	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a7	b1 to b3	c1 to c5	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.



7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
7.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b4		d4
Practical exams			c1 to c5	d2, d3
Oral exams	a1 to a7	b1 to b4		d1
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- McNitt J.I., S. D. Lukefahr, P.R. Cheeke and N. M. Patton, 2013. Rabbit Production. 9th Edition. ISBN-13: 9781 78064 011 2 (Pbk) - 9781 78064 012 9 (Hbk)
- DeBlas, CWiseman, J. 2010. Nutrition of the Rabbit, 2nd Edition. ISBN978-1-84593-669-3(P)
- Smith, T. W. 2018. Commercial Rabbit Production. Extension Service of Mississippi State University
- James,.R. Gillespie and Frank,B.Flanders. 2015.Modern livestock and poultry production.9th edition. Delmar, Cengage Learning.USA.

8-2: Recmonded books:

- Kinghorn, B., J. van der Werf, and M. Ryan. 2001. Animal Breeding. Use of New Technologies; Twynam Press.
- Ebenezer U. 2004. Aguide to Raising Rabbit. ISBN 978425090. Royal Pace Publications.
- Nova Scotia Department Of Agriculture. Rabbit Production Manual. A Guide for 4-H Leaders and Beginning Farmers

8-3: Egyptian Knowledge Bank:

- Beaver, BV and Höglund, DL. 2016. Efficient Livestock Handling. The Practical Application of Animal Welfare and Behavioral Science
- DeBlas, CWiseman, J. 2010. Nutrition of the Rabbit, 2nd Edition. ISBN978-1-84593-669-3(P)
- Burton, E., Gatcliffe, J., O'Neill, H. M., Scholey, D. 2016. Sustainable poultry production in Europe. School of Animal, Rural and Environmental Sciences, Nottingham Trent University, Brackenhurst Campus, Southwell, Nottinghamshire NG25 0AF, UK.

Scientific Journals

- Egyptian Poultry Science
- Poultry Science Association



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- American journal of poultry science
- British Poultry Science
- International journal of Poultry Science.
- Journal of Applied Poultry Research

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <http://www.thepoultrysite.com/>
- <http://www.worldpoultry.net/>

Course Coordinator

Dr. Seham Mohammed Elkassas

Head of Department

Prof. Dr. Mohamed Atef Helal

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intellectual Skills			Practical & Professional Skills					General & Transferable Skills			
		1	2	3	4	5	6	7	1	2	3	1	2	3	4	5	1	2	3	4
1- Rabbit industry structure in Egypt and Production cycle	4	✓							✓	✓	✓				✓		✓	✓	✓	✓
2- Origin and domestication of rabbits	16		✓						✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
3- Rabbit breeds and production systems	16			✓					✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
4- Rabbit housing and equipments	16				✓				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
5- Nutrient requirements and feeding systems for rabbits	16					✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
6- Environmental requirements for rabbits	16						✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
7- Managemnet operations for rabbits	16					✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
8- Reproduction in rabbits	16					✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
9- Rabbit Diseases and Health Problems	16							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
10- records and record keeping	16							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
11. Economics and Financial Management	12							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
12. Principles of Rabbit Genetics	16							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
13. Rabbit Behavior	16							✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓



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COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 301/2

Course title: Improvement by Artificial Insemination in Poultry and Rabbits

(التحسين بواسطة التلقيح الاصطناعي في الدواجن والأرانب)

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 144 hrs

Lectures: 48 hrs (48 weeks- 1hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, students should have gained the basic principles and the essential practical skills related to improvement of rabbit and poultry production by using artificial insemination technology.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.)

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Define the structure and reproduction physiology of poultry and rabbit for best management.
- a.2. Review the composition and metabolism of poultry and rabbit semen.
- a.3. Recognize ideal methods for handling, diluting and preservation of poultry and rabbit semen samples.
- a.4. List advanced methods of evaluation of poultry and rabbit semen.
- a.5. State recent methods for processing of poultry and rabbit semen.
- a.6. Identify the different techniques of insemination in poultry and rabbits.
- a.7. Describe the different procedures to improve the fertility status of poultry and rabbit

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Select the suitable method for collecting a complete and clean ejaculate from birds and rabbits
- b.2. Evaluate bird and rabbit semen efficiently on scientific basis.
- b.3. Judge the processing of bird and rabbit semen.
- b.4. Design a plan for optimum application and benefit of AI in birds and rabbits.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Carry out semen collection, labeling and preservation efficiently under standard hygienic conditions.
- c.2. Perform gross and laboratory advanced evaluation of bird and rabbit reproductive system and semen sample.
- c.3. Apply sound management practices to young and mature rabbits.
- c.4. Perform ideal insemination in birds and rabbits.
- c.5. Attain essential laboratory skills that underpin techniques associated with semen biology and AI.



3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1- Structure of rabbit and poultry reproductive systems	6	12	18
2- Reproduction management for rabbit and poultry	6	12	18
3- Recent advances in rabbit artificial insemination.	6	12	18
4- Structure and functions of different components of the semen.	6	12	18
5- Different methods for semen collection from birds and rabbits	6	12	18
6- Different methods used for semen evaluation	6	12	18
7- Different methods and techniques used for semen processing	6	12	18
8- Techniques used for insemination of female birds and rabbits	6	12	18
Total	48	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a7	b1 to b4		d1, d4
Practical sessions		b1 to b4	c1 to c5	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a7	b1 to b4	c1 to c5	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.



7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b4		d4
Practical exams			c1 to c5	d2, d3
Oral exams	a1 to a7	b1 to b4		d1
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Mohan J., S.K. Sharma, G. Kolluri And K. Dhama. 2018. History of artificial insemination in poultry, its components and significance. World's Poultry Science Association 2018.
- Applied animal reproduction (6th edition). Joe Bearden, H.; John w. Fuquay and Scott. T. (2004) Willard Upper saddle River, New Jersey 0745.

8-2: Recmonded books:

- Bourdon, A. (1999): Understanding Animal Breeding. 1st Ed. Printce Hall, New Jersey
- AISHA, K. and ZAIN, U.A. (2010) Artificial Insemination in Poultry. Department of Pathology, University of Agriculture Faisalabad, Pakistan.
- BEULAH, P.V. (2017) Effect of different semen extenders on fertility of chicken spermatozoa during short term preservation. M.V.Sc Thesis, ICAR-Indian Veterinary Research Institute, India

8-3: Egyptian Knowledge Bank:

- Beaver, BV and Höglund, DL. 2016. Efficient Livestock Handling. The Practical Application of Animal Welfare and Behavioral Science
- Burton, E., Gatcliffe, J., O'Neill, H. M., Scholey, D. 2016. Sustainable poultry production in Europe. School of Animal, Rural and Environmental Sciences, Nottingham Trent University, Brackenhurst Campus, Southwell, Nottinghamshire NG25 0AF, UK.

Scientific Journals

- Reproduction in Domestic Animals - Wiley Online
- Animal Reproduction Science - Journal – Elsevier



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- Journal of Animal Science and Biotechnology
- Japanese Journal of Animal Reproduction
- Biology of Reproduction.
- J. Animal reproduction & Fertility
- Journal of Reproduction and development.

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <http://www.thepoultrysite.com/>
- <http://www.worldpoultry.net/>

Course Coordinator

Dr. Seham Mohammed Elkassas

Head of Department

Prof. Dr. Mohamed Atef Helal



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intellectual Skills				Practical & Professional Skills					General & Transferable Skills			
		1	2	3	4	5	6	7	1	2	3	4	1	2	3	4	5	1	2	3	4
1- Structure of rabbit and poultry reproductive systems	18	✓							✓				✓					✓	✓	✓	✓
2- Reproduction management for rabbit and poultry	18		✓						✓				✓					✓	✓	✓	✓
3- Recent advances in rabbit artificial insemination.	18			✓					✓				✓					✓	✓	✓	✓
4- Structure and functions of different components of the semen.	18			✓					✓				✓					✓	✓	✓	✓
5- Different methods for semen collection from birds and rabbits	18				✓				✓				✓					✓	✓	✓	✓
6- Different methods used for semen evaluation	18				✓				✓				✓	✓				✓	✓	✓	✓
7- Different methods and techniques used for semen processing	18					✓			✓		✓					✓	✓	✓	✓	✓	✓
8- Techniques used for insemination of female birds and rabbits	18						✓	✓			✓					✓	✓	✓	✓	✓	✓



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Bacteriology, Mycology and Immunology

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy
(Bacteriology, Mycology and
Immunology)

Kafrelsheikh University

Faculty of Veterinary Medicine

Department of Bacteriology, Mycology and Immunology

Program Specification for PhD Degree

(2016-2017)

A- Administrative information:

- 1- Awarding Body:** Kafrelsheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Bacteriology, Mycology and Immunology
- 4- Program Title:** PhD Degree in Veterinary Medicine (Bacteriology, Mycology and Immunology)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years

B- Professional information:

1- Aim of the Program:

- Allow graduate to create new knowledge and understanding Bacteriology, Mycology and Immunology through the process of research and inquiry.
- Enable graduate to achieve competency in modern technology
- Provide the graduate with the opportunity to develop communication skills, recent techniques and tools in the field of Bacteriology, Mycology and Immunology and experience of scientific research skills.
- Giving the graduate the ability to be creative to advance in the field of Bacteriology, Mycology and Immunology through new scientific research.
- Achievement of capability in modern laboratory technology to develop practical research project.
- Demonstrating an awareness of the connections between disciplines and

develop the ability to engage critically with scientific literature and to critically review and present their own research data for the protection and promotion of the animal health.

- Giving the student the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibiting awareness about current field Bacteriology, Mycology and Immunology problems and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of Bacteriology, Mycology and Immunology.

2- Academic standards:

Academic reference standards (ARS) adopted by the faculty committee No (1) 14/9/2014

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Mastering the basics and methodologies of scientific research in advanced bacteriology, mycology, and immunology branches for better dealing with bacterial and mycological problems professionally and hence the better understanding of the specific immune response for each case.
- 2) Performing continuous effort to add knowledge about detection of causes of most common bacterial and mycological causes of animal diseases and validating of new methods of isolation and identification including introducing new molecular techniques.
- 3) Analysis and characterization of information in fields related to Bacteriology, Mycology and Immunology including Animal Infectious diseases, Poultry and Fish medicine, Pathology, pharmacology, biochemistry, physiology, clinical pathology, etc.
- 4) Showing deep awareness with the ongoing microbiological problems and modern theories in isolation and identification and controlling cases of microbiological diseases.
- 5) Mastering of a wide range of professional skills in bacteriological

- laboratory investigation.
- 6) Acquiring trends towards developing modern methods and tools in isolation and identification of various causative agents of diseases among farm animals such as bacterial and fungal causes in addition the immune response of infected animals.
 - 7) Using appropriate technological means including molecular biology to serve professional practice.
 - 8) Communicating effectively with bacteriologists, students and colleagues and leading work team through professional scale.
 - 9) Making decision in different professional situations especially under field conditions to deal with the bacteriological cause of animal death or less productivity.
 - 10) Using of the available resources efficiently in the development of new techniques and work to find new resources.
 - 11) Being aware with his role in society development and community preservation from the bacteriological, fungal contamination of the environment.
 - 12) Acting with integrity, credibility and according to the rules of profession.
 - 13) Realizing the importance of self and life-long learning and progress.

4-Programme Intended Learning outcomes (ILOs)]

a. Knowledge and understanding:

By the end of this program the graduate should be able to:

- a.1. Recognize theories, principles, and the recent data in the field of Bacteriology, Mycology and Immunology
- a.2. Realize principles, methodologies and ethics of scientific research and its tools including using laboratory animals in Bacteriology, Mycology and Immunology.
- a.3. Realize Applying the basics and ethics of veterinary practice concerning Bacteriology, Mycology and Immunology.
- a.4. Recognize Principles and the basics of quality assurance in laboratory examination of samples from infected animals.
- a.5. Recognize the effect of Microorganisms on the environment and methods

of prevention of spreading of such diseases.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1.** Evaluate data about important bacterial and fungal causative agents and about immune responses and their antibiotic resistance.
- b.2.** Solve problems in Bacteriology, Mycology and Immunology using available data under field or laboratory conditions.
- b.3.** Perform scientific researches that can give significant impact on the control of pathogens and their response to antibiotics.
- b.4.** Publish scientific papers in Bacteriology, Mycology and Immunology
- b.5.** Assess virulence of bacterial and fungal agents in environment.
- b.6.** Increase sensitivity and accuracy of diagnostic techniques and avoid cases of antibiotic resistance.
- b.7.** Write the right decision in Bacteriology, Mycology and Immunology
- b.8.** Trying new molecular means of isolation and identification.
- b.9.** Lead a discussion based microbiologic evidences.

c. Practical and professional skills:

By the end of this program the graduate should be able to:

- c.1.** Mastering basic and modern professional skills about most important bacterial and fungal causative agent that affecting farm animals and how to isolate and identify them. Moreover, the immune response (humoral and cellular) of the animal was investigated.
- c.2.** Write and evaluate professional bacteriological reports and matching the values with normal reference values.
- c.3.** Creation of new tests in vitro and in vivo for determining the immune response under various conditions of bacterial and fungal challenge.
- c.4.** Use modern technological means to serve professional practice.
- c.5.** Planning for the improvement of veterinary medicine by applying recent molecular techniques in Bacteriology, Mycology and Immunology, and

developing performance of veterinarians in the field.

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1.** Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology in the improvement of professional practice.
- d.2.** Utilize information technology to serve professional practice.
- d.3.** Teach others and evaluate their performance.
- d.4.** Self-evaluate and identify personal learning requirements
- d.5.** Lead team under different professional circumstances.
- d.6.** Use of different sources for obtaining information and knowledge.
- d.7.** Manage scientific meetings with the ability to manage time efficiently.

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, and seminars.

6-Assessments:

The program depends on different assessment ways:

a. Course assessment:

1. Final written exam
 - To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
2. Practical exam
 - To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
3. Oral exam
 - To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.

b. Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work

c. PhD Thesis assessment

- Annual reports adopted by the Faculty.
- Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
- Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1-2; b1-2
Oral	a1-2; b1-2
Practical	c1-2
Qualifying Exam	a3-5; b1-9
Thesis	a3-5; b1-9; c1-5; d1-7

7. Program structure

a. Program duration (years):

PhD degree duration at least 3 years and it should not exceed a period of 5 years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law (article 18).

b. Program courses:

Predocor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council should include at least 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. These courses must not be previously studied in the Mater program. The student will

entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c- Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d- Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 3years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met.

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Bacteriology, Mycology and Immunology include:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and	2	2

		histochemistry of urogenital system		
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2

	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2

	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Pathology				
	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology				
	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Virology				
	180/2	82- General virology	1	2

	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
			81- Advanced immunology	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2

	207/2	108-Biological evolution of drug	1	1
Hygiene and control of milk and dairy products	208/2	108- Hygienic control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal	225/2	125- advanced general medicine	2	2

medicine	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/2	134- Stress diseases during animals transport.		
Infectious diseases	235/2	135- Infectious diseases of cattle	2	2
	236/2	136- Infectious diseases of sheep and goat	2	2
	237/2	137- Infectious diseases camel	2	2
	238/2	138 Infectious diseases of equine	2	2
	239/2	139- Infectious diseases of pet animals	2	2
	240/2	140- Infectious diseases lab animals	1	2
	241/2	141- Infectious diseases of udder and newly born animals	2	2
	242/2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2

	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology				
	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery				
	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1

	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in polutry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures- specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses	285/2	185- advanced zoonoses (specific	2	2

		courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)		
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2

	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (Bacteriology, Mycology and Immunology) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medicine lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.

3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.
5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.
7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.
8. The applicant should submit a seminar (Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).
9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met: Pass

all supplementary curriculums and acceptance of the seminar presented by the applicant.

10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and in case of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.

11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards it to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.

12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).

2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade		Percentage
Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
I	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

Program Co-coordinator:

Prof. Dr.

Head of Department:

Prof. Dr.

Matching program ILOs with ARS - Matrix

Program ILOs	ARS																											
	K&U (a)					I.S. (b)									P.P. (c)					G.T. (d)								
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7		
K&U	1	2	3	4	5																							
I.S.						1	2	3	4	5	6	7	8	9														
P.P.															1	2	3	4	5									
G.T.																				1	2	3	4	5	6	7		



Program Specification Matrix

PhD in Veterinary Medicine (Bacteriology, Mycology and Immunology)

Courses		Total Contact hours/ course	No. of hours / week			K.U (a)					I.S (b)									P.P (c)					G.T (d)								
Code	Name		Lect.	Lab.	Total	1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7		
Predoctoral courses (10-12 theoretical and practical hours weekly for 12 months)						x	x				x	x	x									x	x	x			x	x	x	x	x	x	x
Qualification exam								x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Thesis								x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Program Specification Matrix



ARS for PhD in Veterinary Medicine (Bacteriology, Mycology and Immunology)

1) Graduate attributes

The graduate should have the ability for:

- 1) Mastering the basics and methodologies of scientific research in Bacteriology, Mycology or Immunology.
- 2) Making continuous effort to add knowledge in the field of Bacteriology, Mycology or Immunology.
- 3) Application of analytical and criticizing method in Bacteriology, Mycology or Immunology and related areas.
- 4) Interpreting the laboratory investigations according to his specialty (Bacteriology, Mycology or Immunology).
- 5) Showing deep awareness with the ongoing problems and modern theories in Bacteriology, Mycology or Immunology.
- 6) Understand and interpret different growth requirements of bacteria and fungi.
- 7) Mastering a wide range of professional skills in Bacteriology, Mycology or Immunology.
- 8) Acquiring trends towards developing modern methods and tools in professional practice.
- 9) Develop new assays to identify the pathogenic bacteria and fungi
- 10) Effective communication and leading work team through professional scale.
- 11) Decision making in different professional situations.
- 12) Employment and development of available resources efficiently and working on finding new ones.
- 13) Awareness with his role in society development and community preservation.
- 14) Acting with integrity, credibility and according to the rules of profession.
- 15) Commitment with continuous self and life-long development and transferring of his knowledge and experience to others.

A) Knowledge and understanding

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Modern knowledge and principles in bacteriology, mycology and immunology	Recent theories, principles and knowledge in the field of specialization and related areas
2)	Principles and ethics of scientific research methods in the field of Bacteriology, Mycology and Immunology	Basics, methodologies and ethics of scientific research and its different tools
3)	Ethical principles of vaccination against bacterial and fungal diseases in addition to control, prevention and eradication of such diseases.	Legal and ethical principles of professional practice in the area of specialization
4)	Outline the standardization and principles of laboratory safety and regulations microbiology lab	Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Awareness with the biological hazard on environment	Awareness with the effect of professional practice on the environment and methods of its maintenance and development

B) Intellectual skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Data analysis in the field of Bacteriology, Mycology and Immunology and the eliciting from them	Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Dealing with field problems in diagnosis and control of bacterial and fungal diseases	Solving professional problems using available data
3)	planning scientific studies to add knowledge in Bacteriology, Mycology and Immunology	Conducting scientific research studies that add to knowledge
4)	Writing scientific papers and publishing them in international journals	Formulating scientific papers
5)	Evaluations of virulence of bacterial and fungal agents	Risk-assessment in the field of specialization
6)	Enhancing performance of diagnostic techniques	Planning to enhance the performance

		in field of specialization
7)	Taking appropriate decisions in the field of Bacteriology, Mycology and Immunology	Making professional decisions under different professional contexts
8)	Development of novel identification and characterization skills	Creation and innovation in the area of specialization
9)	Develop a trial and error method to encourage learning and practice.	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Practicing essential skills in isolation and identification of bacteria, and fungi and serological tests	Mastering basic and modern professional skills in the area of specialization
2)	Presenting data in a conclusive report in Bacteriology, Mycology and Immunology	Writing and evaluating professional reports
3)	Amelioration of methods and tools in immunology and vaccine preparation	Evaluating and modernizing methods and tools in the area of specialization
4)	Using PCR and ELISA to serve sensitive diagnosis	Using modern technological means to serve professional practice
5)	Development of methods for diagnosis of immunological disorders	Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Effective communication with microbiologists, students and veterinarians.	Effective communication

2)	Utilizing information technology to serve development of immunology practice	Utilizing information technology to serve development of professional practice
3)	Teaching others and evaluating their performance	Teaching others and evaluating their performance
4)	Self-assessment and continuous learning	Self-assessment and continuous learning
5)	Using different resources to obtain knowledge and information	Using different resources to obtain knowledge and information
6)	Team working and leading a team in familiar professional contexts	Team working and leading a team in familiar professional contexts
7)	Management of scientific meetings with the ability to manage time efficiently	Management of scientific meetings with the ability to manage time efficiently

ثالثاً: برامج الدكتوراه

١- مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادراً على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطاً و مطوراً للعلاقات البيئية بينها
٥. إظهار وعيا عميقاً بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حلولاً مبتكرة لحلها
٧. إتقان نطاقاً واسعاً من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تنميتها والعمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للأخريين

٢- المعايير القياسية العامة

المعرفة و الفهم:

بإنتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً علي الفهم و الدراية بكل من:

أ- النظريات و الأساسيات و الحديث من المعارف في مجال التخصص و المجالات ذات العلاقة

ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة

ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص

ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص

ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و وطرق تنمية البيئة و صيانتها

المهارات الذهنية

- بانتهاؤ دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
 - ب- حل المشاكل المتخصصة استنادا علي المعطيات المتاحة
 - ج- إجراء دراسات بحثية تضيف إلى المعارف
 - د- صياغة أوراق علمية
 - هـ- تقييم المخاطر في الممارسات المهنية
 - و- التخطيط لتطوير الأداء في مجال التخصص
 - ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة
 - ح- الابتكار/ الإبداع
 - ط- الحوار و النقاش المبني علي البراهين والأدلة

المهارات المهنية

- بانتهاؤ دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
 - ب- كتابة و تقييم التقارير المهنية
 - ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
 - د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
 - هـ- التخطيط لتطوير الممارسة المهنية و تنمية أداء الآخرين

المهارات العامة و المنتقلة

- بانتهاؤ دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- التواصل الفعال بأنواعه المختلفة
 - ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية
 - ت- تعليم الآخرين و تقييم أداءهم
 - ث- التقييم الذاتي و التعلم المستمر
 - ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
 - ح- العمل في فريق و قيادة فرق العمل
 - خ- إدارة اللقاءات العلمية و القدرة علي إدارة الوقت

COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Course title: Advanced General Bacteriology (بكتيريا عام منقدم)

Code: 178 /2

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 144hrs

Lectures: 48hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to general bacteriology and basic laboratory technology.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.6. Recognize the general morphology of bacteria.
- a.7. Describe the virulence factors responsible for pathogenicity.
- a.8. Realize the culture, antigenic structure of microorganisms of detrimental role in hypersensitivity.
- a.9. Explain the genetic basis for bacterial pathogenicity and virulence.
- a.10. Recognize the most important bacterial products (enzymes, toxins, and pigments) and their potential role in bacterial virulence.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Interpret the results of microbiological, serological and molecular tests.
- b.2. Identify a microorganism as bacteria according to their general morphological characters.
- b.3. Compare according evidence the causal relationship of microbes and diseases.

3-C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.6. Diagnose medically important bacteria based on microscopic examination of stained preparations.
- c.7. Write a scientific identification scheme for pathogens.
- c.8. Apply culture media and biochemical tests commonly used for bacterial identification.
- c.9. Use the different serological and technological tests for identification of different microorganisms as bacteria and fungi.

3-D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1- Structure of Bacterial Cell	8	16	24
2- Growth and Reproduction	8	24	32
3- Bacterial Virulence	8	-	8
4- Bacterial Genetics	10	20	30
5- PCR	6	20	26

6- Antimicrobial Resistance	8	16	24
Total	48	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about general bacteriology

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b3	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination	Activities
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year
<u>7.c grads</u>	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b3		d4
Practical exams			c1 to c4	d2, d3
Oral exams	a1 to a5	b1 to b3		d1
Student activities	a1, a5,			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: ESSENTIAL BOOKS:

- Sastry, Apurba Sankar, and Sandhya Bhat. Essentials of medical microbiology. JP Medical Ltd, 2018.
- Mahon, C.R., Lehman, D.C. and Manuselis, G., 2018. Textbook of diagnostic microbiology-e-book. Elsevier Health Sciences, 2018.
- Presterl, Elisabeth, Magda Diab-El Schahawi, and Jacqui S. Reilly, eds. Basic microbiology and infection control for midwives. Springer International Publishing, 2019.

8-2: RECOMMENDED BOOKS:

- Goering, Richard, et al. Mims' Medical Microbiology E-Book. Elsevier Health Sciences, 2018.
- Barer, Michael R., and William L. Irving. Medical Microbiology E-Book: A Guide to Microbial Infections. Elsevier Health Sciences, 2018.
- Murray, Patrick R., Ken S. Rosenthal, and Michael A. Pfaller. Medical microbiology E-book. Elsevier Health Sciences, 2020.

Scientific Journals

- Journal of Applied Microbiology
- Applied and Environmental Microbiology.
- Infection and Immunity.
- Journal of Bacteriology.
- Journal of Clinical Microbiology.

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <https://www.wikipedia.org/>
- <https://www.fao.org/home/en/>
- <https://www.who.com>

Course Coordinator:

Prof. Amgad Ahmed Moawad

Head of Department:

Prof. Ashraf Mohamed Ahmed

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding					Intellectual Skills			Practical & Professional Skills				General & Transferable Skills			
		1	2	3	4	5	1	2	3	1	2	3	4	1	2	3	4
1- Structure of Bacterial Cell	24	✓					✓			✓				✓	✓	✓	✓
2- Growth and Reproduction	32	✓					✓			✓	✓			✓	✓	✓	✓
3- Bacterial Virulence	8		✓					✓	✓		✓			✓	✓	✓	✓
4- Bacterial Genetics	30			✓	✓			✓	✓			✓	✓	✓	✓	✓	✓
5- PCR	26			✓	✓			✓	✓			✓	✓	✓	✓	✓	✓
6- Antimicrobial Resistance	24					✓		✓	✓			✓	✓	✓	✓	✓	✓

COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Course title: Advanced Specific Bacteriology (بكتيريا خاص منقدم)

Code: 179 /2

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 240 hrs.

Lectures: 96 hrs.

Practical: 144 hrs.

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to the basic, applied and molecular character of each bacteria with relevant to the susceptibility and response of the host to microorganisms, with special emphasis on the host-pathogen relationship at the cellular and molecular level.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Realize the basics of morphology and the antigenic structure of every bacterial species.
- a.2. Be aware with the growth characteristics for different bacteria.
- a.3. List the different bacterial products.
- a.4. Describe the pathogenesis and host immune response of different bacteria.
- a.5. Recognize methods of isolation and identification of bacterial infections including modern techniques and PCR.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1- achieve results of Bacteriological, serological and molecular tests.
- b2- Interpret Bacteriological, immunological and molecular reports.
- b3- Evaluate according to evidence the causal relationship of Bacteria and diseases.
- b4- Categorize a Bacteria according to standard taxonomy.

3-C: Practical and professional skills:

By the end of the course, students should be able to:

- c1- Detect medically important bacteria based on microscopical examination of stained preparation.
- c2- Perform culture media and biochemical tests commonly used for Bacterial identification.
- c3- Apply Serotyping of bacteria using different serological tests.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	No. of hours
-------	--------------

	Lectures	Practical	Total
1- Bacterial Taxonomy	4	-	4
2- Gram-positive Cocci	16	26	42
3- Gram-positive Bacilli	30	42	72
4- Gram-negative bacilli	30	42	72
5- Gram-negative coccobacilli	12	26	38
6- <i>Mycoplasma</i>	4	8	12
Total	96	144	240

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about general bacteriology

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b4		d1, d4
Practical sessions		b1 to b4	c1 to c3	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b4	c1 to c3	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination	Activities
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year
<u>7.c grads</u>	50	20	20	10

6.1. Methods	7. Student Assessment
	Intended Learning Outcomes Covered

	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b4		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a5	b1 to b4		d1
Student activities	a1, a5,			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: ESSENTIAL BOOKS:

- Sastry, Apurba Sankar, and Sandhya Bhat. Essentials of medical microbiology. JP Medical Ltd, 2018.
- Mahon, C.R., Lehman, D.C. and Manuselis, G., 2018. Textbook of diagnostic microbiology-e-book. Elsevier Health Sciences, 2018.
- Presterl, Elisabeth, Magda Diab-El Schahawi, and Jacqui S. Reilly, eds. Basic microbiology and infection control for midwives. Springer International Publishing, 2019.

8-2: RECOMMENDED BOOKS:

- Goering, Richard, et al. Mims' Medical Microbiology E-Book. Elsevier Health Sciences, 2018.
- Barer, Michael R., and William L. Irving. Medical Microbiology E-Book: A Guide to Microbial Infections. Elsevier Health Sciences, 2018.
- Murray, Patrick R., Ken S. Rosenthal, and Michael A. Pfaller. Medical microbiology E-book. Elsevier Health Sciences, 2020.

Scientific Journals

- Journal of Applied Microbiology
- Applied and Environmental Microbiology.
- Infection and Immunity.
- Journal of Bacteriology.
- Journal of Clinical Microbiology.

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <https://www.wikipedia.org/>
- <https://www.fao.org/home/en/>
- <https://www.who.com>

Course Coordinator:

Prof. Amgad Ahmed Moawad

Head of Department:

Prof. Ashraf Mohamed Ahmed

COURSE SPECIFICATION **(2021 / 2022)**

1 - Basic Information:

Code: 182 /2

Course title: Advanced Immunolog

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 192 hrs.

Lectures: 96 hrs.

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to the basic, applied and molecular immunology, relevant to the susceptibility and response of the host to microorganisms, with special emphasis on the host-pathogen relationship at the cellular and molecular level.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1-** Illustrate general structure of the immune system as well as host parasite immunological interaction.
- a2-** Recognize the basic features of basic, applied and molecular immunology.
- a3-** Describe the structure and functions of the immune system, its beneficial role as well as its detrimental role in hypersensitivity and autoimmunity.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1-** Interpret results of serological and molecular tests.
- b2-** Construct a systematic approach for laboratory diagnosis.
- b3-** Discover according to evidence the causal relationship of microbes and diseases.

3-C: Practical and professional skills:

By the end of the course, students should be able to:

- c1-** Detect medically important bacteria based on serological examination of serum.
- c2-** Perform serological Tests: slide agglutination, tube agglutination, precipitation test, complement fixation test, toxin-antitoxin neutralization.
- c3-** Apply Serological identification (serotyping) of bacteria using different serological tests.

3-D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1.** Communicate effectively with his professors, and collages.
- d.2.** Utilize different sources of knowledge and information
- d.3.** Use information technology to serve the professional practice.
- d.4.** Manage time efficiently.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Innate Immunity	20	-	20
2. Immune System	20	-	20
3. Antigens	16	48	64
4. Antibodies	20	48	68
5. Cell-mediated Immunity	20	-	20
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about general bacteriology

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a3	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c3	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a3	b1 to b3	c1 to c3	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a3	b1 to b3		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a3	b1 to b3		d1
Student activities	a1, a3,			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: ESSENTIAL BOOKS:

- Sastry, Apurba Sankar, and Sandhya Bhat. Essentials of medical microbiology. JP Medical Ltd, 2018.
- Mahon, C.R., Lehman, D.C. and Manuselis, G., 2018. Textbook of diagnostic microbiology-e-book. Elsevier Health Sciences, 2018.
- Presterl, Elisabeth, Magda Diab-El Schahawi, and Jacqui S. Reilly, eds. Basic microbiology and infection control for midwives. Springer International Publishing, 2019.

8-2: RECOMMENDED BOOKS:

- Goering, Richard, et al. Mims' Medical Microbiology E-Book. Elsevier Health Sciences, 2018.
- Barer, Michael R., and William L. Irving. Medical Microbiology E-Book: A Guide to Microbial Infections. Elsevier Health Sciences, 2018.
- Murray, Patrick R., Ken S. Rosenthal, and Michael A. Pfaller. Medical microbiology E-book. Elsevier Health Sciences, 2020.

Scientific Journals

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- Infection and Immunity.
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- Journal of Clinical Microbiology.

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
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- <https://www.who.com>

Course Coordinator:

Prof. Amgad Ahmed Moawad

Head of Department:

Prof. Ashraf Mohamed Ahmed

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding			Intellectual Skills			Practical & Professional Skills			General & Transferable Skills			
		1	2	3	1	2	3	1	2	3	1	2	3	4
1. Innate Immunity	20	✓	✓	✓		✓	✓						✓	✓
2. Immune System	20	✓	✓	✓		✓	✓						✓	✓
3. Antigens	64	✓	✓	✓		✓	✓						✓	✓
4. Antibodies	68				✓			✓	✓	✓	✓	✓		
5. Cell-mediated Immunity	20				✓			✓	✓	✓	✓	✓		

**DEPARTMENT OF BACTERIOLOGY, MYCOLOGY AND
IMMUNOLOGY**
Course specification
(2021/2022)

1 - Basic Information:

Course title: Advanced Mycology

Code: 183 /2

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 144 hrs

Lectures: 48 hrs.

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

To educate students about the basic feature of general and systematic mycology, with basic principles of serological diagnosis of fungal infections. To familiarize the students with basic principles of molecular biology and biotechnology

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1-Illustrate general fungal morphology, physiology and genetics.

A2-Describe the host parasite relation and microbial pathogenesis.

A3-Refine the basic feature of general and systematic mycology.

A4-know the culture, antigenic structure and virulence factor of microorganisms of detrimental role in hypersensitivity.

A5-Recognize the most important infectious clinical conditions and outline the diagnosis of fungi that cause such diseases.

A6 - detect basic principles of serological diagnosis of fungal infections.

A7 -categorize the most important methods of decontamination and principles of infection control.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1- Create the ability to interpret results of microbiological, serological and molecular tests.

B2- Discover a microorganism as a fungus according to standard taxonomy.

B3-classify evidence the causal relationship of microbes and diseases.

B4-Construct a concise scientific activity according to standard scientific thinking and integrity.

3-C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

C1- Detect medically important fungi based on microscopic examination of stained preparations.

C2- Perform culture media and biochemical tests commonly used for fungal identification.

C3- Apply Serological identifications (serotyping) of fungi using different serological tests.

3-D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Coach and work in groups.

D2- Classify different duties.

D3- Utilize computer and internet skills.

D4- Develop the ethical behavior between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. General Mycology	14	16	30
2. Mould	14	32	46
3. Yeasts	10	32	42
4. Dimorphic Fungi	10	16	26
Total	48	96	144

TOPIC	Total hours	Hours for lecture	Hours for practical
General Mycology, Classification of fungi, Yeasts, Dermatophytes Aspergillus, Penicillium, Fusarium, Zygomycetes	28	28	-
Mycotoxins ,Dimorphic fungi, Fungi of fish, Dematiaceous fungi	20	20	-
laboratory diagnosis of mycotic infections, Direct microscopic of moulds ,Staining of moulds, Staining of yeast	50	-	50
Culture characters of yeast, moulds, Biochemical identification of fungi	46	-	46
Total	192	48	96

5- TEACHING & LEARNING METHODS:

*** Advanced Lectures**

(using data show, white board, overhead projector and brain storming)

***Practical sessions:**

Practical demonstrations, practice of skills, and discussions, (practical training)

*** Self learning activities:**

- (Computer researches and faculty library visits to prepare essays, reports, review articles, and presentations)
- Library researches.
- Internet researches.
- Discussion in the researches.

*** Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a7	B3		D4, d3
Practical sessions		b1 to b2	c1 to c3	d2, d1
Self-Learning activities				d2, d3, d4,d1
Distance Teaching and Learning	a1 to a7	b1 to b4	c1 to c7	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- Discussion with them during practical session.
- Theoretical and practical teaching suitable for people with limited capacity.
- Simplify and re-explain the information theoretically and practically wherever needed .
- Using of illustrated cases.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

TOOLS	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectual	Practical	General	
Written examination	A1-A7	B2-B3-B1		-D3	50
Oral examination	A1-A7	B3,b4-B1-		D4	20

		-B2			
practical exam		B3	C1-C2-C3-C4	D2, d1	20
Activities				D1 to d4	10

8. LEARNING AND REFERENCE MATERIALS:

8-1: ESSENTIAL BOOKS:

- Sastry, Apurba Sankar, and Sandhya Bhat. Essentials of medical microbiology. JP Medical Ltd, 2018.
- Mahon, C.R., Lehman, D.C. and Manuselis, G., 2018. Textbook of diagnostic microbiology-e-book. Elsevier Health Sciences, 2018.
- Presterl, Elisabeth, Magda Diab-El Schahawi, and Jacqui S. Reilly, eds. Basic microbiology and infection control for midwives. Springer International Publishing, 2019.

8-2: RECOMMENDED BOOKS:

- Goering, Richard, et al. Mims' Medical Microbiology E-Book. Elsevier Health Sciences, 2018.
- Barer, Michael R., and William L. Irving. *Medical Microbiology E-Book: A Guide to Microbial Infections*. Elsevier Health Sciences, 2018.
- Murray, Patrick R., Ken S. Rosenthal, and Michael A. Pfaller. Medical microbiology E-book. Elsevier Health Sciences, 2020.

8.4: web sites and jouranlsand so on

- Egyptian knowledge bank (<https://www.ekb.eg/>)
- <https://www.wikipedia.org/>

- <https://www.fao.org/home/en/>
- <https://www.who.com/>
- Journal of Applied Microbiology
- Applied and Environmental Microbiology.
- Infection and Immunity.
- Journal of Bacteriology.
- Journal of Clinical Microbiology.

Course Coordinator:
Prof. Amgad Ahmed Moawad

Head of Department:
Prof. Ashraf Mohamed Ahmed

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intellectual Skills				Practical & Professional Skills					General & Transferable Skills				
		1	2	3	4	5	6	7	1	2	3	4	1	2	3	4	5	1	2	3	4	
1. General Mycology	30	✓	✓	✓	✓	✓					✓	✓									✓	✓
2. Mould	46	✓				✓		✓			✓	✓									✓	✓
3. Yeasts	42								✓	✓			✓	✓	✓					✓	✓	
4. Dimorphic Fungi	26								✓	✓			✓	✓	✓					✓	✓	

**DEPARTMENT OF BACTERIOLOGY, MYCOLOGY AND
IMMUNOLOGY**
Course specification
(2021/2022)

1 - Basic Information:

Course title: Microbiology of Poultry and Rabbits

Code: 184 /2

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 192 hrs.

Lectures: 96 hrs.

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

- 1-Educate students about the basic features of general and systematic bacteriology and mycology, Immunology of poultry and rabbits.
- 2-To familiarize students with the structure of bacterial cell.
- 3-To enable the students to be aware with bacterial growth and factors affecting on it.
- 4-Provide students with an understanding of bacterial pathogenicity.
- 5-To familiarize the students with basic principles of bacterial genetics.
- 6-To familiarize the students with basic principles of bacterial resistance to the antimicrobial agents.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1-Illustrate general bacterial morphology, physiology and genetics.

A2-Describe the host parasite relation and microbial pathogenesis.

A3-Recognizes the basic feature of general bacteriology.

A4-Define the culture, antigenic structure and virulence factor of microorganisms of detrimental role in hypersensitivity.

A5-know the most important infectious clinical conditions and outline the diagnosis of bacteria that cause such diseases.

3- B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1- Create the ability to interpret results of microbiological, serological and molecular tests.

B2- Discover a microorganism as a fungus according to standard taxonomy.

B3- Detect according evidence the causal relationship of microbes and diseases.

B4- Construct a concise scientific activity according to standard scientific thinking and integrity.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

C1- Detect medically important micro-organism based on microscopic examination of stained preparations.

C2- Perform culture media and biochemical tests commonly used for bacteriological identification.

C3- Apply Serological identifications (serotyping) of bacteria using different serological tests.

3- D: GENERAL SKILLS:

By the end of the course, students should be able to:

D1- Coach and work in groups.

D2- Classify different duties.

D3- Utilize computer and internet skills.

D4- Develop the ethical behavior between students and staff members as well as among the students themselves

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Bacteria causing diseases in poultry and rabbits	64	64	128
2. Fungi causing diseases in poultry and rabbits	32	32	66
Total	96	96	192

5- TEACHING & LEARNING METHODS:

*** Advanced Lectures**

(using data show, white board, overhead projector and brain storming)

***Practical sessions:**

Practical demonstrations, practice of skills, and discussions, (practical training)

*** Self learning activities:**

- (Computer researches and faculty library visits to prepare essays, reports, review articles, and presentations)
- Library researches.
- Internet researches.
- Discussion in the researches.

*** Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS

Advanced lectures*	a1 to a5	B3		D4, d3
Practical sessions		b1 to b2	c1 to c3	d2, d1
Self-Learning activities				d2, d3, d4,d1
Distance Teaching and Learning	a1 to a5	b1 to b4	c1 to c5	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- Discussion with them during practical session.
- Theoretical and practical teaching suitable for people with limited capacity.
- Simplify and re-explain the information theoretically and practically wherever needed .
- Using of illustrated cases.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

TOOLS	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectual	Practical	General	
Written examination	A1-A5	B2-B3		-D3	50
Oral examination	A1-A5	-B3,b4		D4	20
practical exam		B1-b2	C1-C2-C3	D2, d1	20
Activities				D1 to d4	10

8. LEARNING AND REFERENCE MATERIALS:

8-1: ESSENTIAL BOOKS:

- Sastry, Apurba Sankar, and Sandhya Bhat. Essentials of medical microbiology. JP Medical Ltd, 2018.

- Mahon, C.R., Lehman, D.C. and Manuselis, G., 2018. Textbook of diagnostic microbiology-e-book. Elsevier Health Sciences, 2018.
- Presterl, Elisabeth, Magda Diab-El Schahawi, and Jacqui S. Reilly, eds. Basic microbiology and infection control for midwives. Springer International Publishing, 2019.

8-2: RECOMMENDED BOOKS:

- Goering, Richard, et al. Mims' Medical Microbiology E-Book. Elsevier Health Sciences, 2018.
- Barer, Michael R., and William L. Irving. *Medical Microbiology E-Book: A Guide to Microbial Infections*. Elsevier Health Sciences, 2018.
- Murray, Patrick R., Ken S. Rosenthal, and Michael A. Pfaller. Medical microbiology E-book. Elsevier Health Sciences, 2020.

8.4: web sites and jouranlsand so on

- Egyptian knowledge bank (<https://www.ekb.eg/>)
- <https://www.wikipedia.org/>
- <https://www.fao.org/home/en/>
- <https://www.who.com/>
- Journal of Applied Microbiology
- Applied and Environmental Microbiology.
- Infection and Immunity.
- Journal of Bacteriology.
- Journal of Clinical Microbiology.

Course Coordinator:
Prof. Amgad Ahmed Moawad

Head of Department:
Prof. Ashraf Mohamed Ahmed



Kafr El-Sheikh University
Faculty of Veterinary Medicine
Department of Clinical Pathology

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy

(Clinical Pathology)



Kafrelsheikh University
Faculty of Veterinary Medicine



Kafrelsheikh University

Faculty of Veterinary Medicine

Department of Animal Wealth Development

Program Specification for PhD Degree

(2021-2022)

A- Administrative information:

- 1- Awarding Body: Kafrelsheikh University**
- 2- Teaching Body: Faculty of Veterinary Medicine**
- 3- Department responsible: Clinical Pathology**
- 4- Program Title: PhD Degree in Veterinary Medicine (Clinical Pathology)**
- 5- Final award: PhD Degree**
- 6- Registration period: 3-5 years**
- 7- Program Coordinator: Prof. Dr.**
- 8- External evaluator: Prof. Dr.**
- 9- Date of revision:**
- 10- Date of approval:**

B- Professional information:

1- Aims of the Program:

This PhD program aim is to render the postgraduate able to:

- Creation of new knowledge and understanding in Internal medicine through the process of research and inquiry.



- Development of communication skills, recent techniques and diagnostic tools in the field of Clinical Pathology and experience of scientific research skills.
- Giving the graduate the ability to be creative in the field of advance Clinical Pathology through new scientific research.
- Achievement of capability in modern laboratory technology to develop practical research project.
- Demonstrating an awareness of the connections between disciplines and develop the ability to be covenant with scientific literature and to critically review and present their own research data for the protection and promotion of the animal health.
- Enhancing the ability of graduate to analyze statistical data, results and stimulate the interpretation and dissertation, presentation skills.
- Exhibiting awareness about current Clinical Pathology problems and their identification with finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of Clinical Pathology.

2- Academic standards:

**Academic reference standards (ARS) adopted by the faculty committee No (1)
14/9/2014**

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Describe and interpret the laboratory investigations according to his specialty (Clinical Chemistry, Clinical Hematology, Clinical investigations in Microbiology, cytology or Immunology).
- 2) Select appropriate investigations for diagnosis, assessment of prognosis and monitoring of spontaneous animal disease and animal models of disease.
- 3) Utilize scientific knowledge and skills essential for the practice of Clinical Pathology according to the international standards.
- 4) Apply skills necessary for proper applications of laboratory tests for detecting different problems and diseases.
- 5) Understand and interpret different laboratory reports in health and disease, both in diagnosis and in following up treatment.
- 6) Understand the limitations of diagnostic investigations.
- 7) Develop and introduce new assays into veterinary diagnostics with their application, validation and evaluation of their diagnostic significance for each species.
- 8) Use ethical principles related to the practice in his specialty.
- 9) Participate in the community needs assessment and problems solving.
- 10) Maintain learning abilities necessary for continuous education.
- 11) Maintain research interest and abilities for scientific paper writing.



4-Programme outcomes [intended learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

- a.1. Recognize recent theories, principles and knowledge of clinical pathology and its relation to other fields.
- a.2. Identify the different techniques used in clinical pathology with regards to principle, components, types, advantages and disadvantages.
- a.3. Describe the principles, methodologies and ethics of scientific research in Clinical Pathology.
- a.4. Realize the legal ways for extrapolation of research findings of other researchers.
- a.5. List legal and ethical principles of laboratory diagnosis dealing with hazardous instruments or samples of infectious and zoonotic diseases.
- a.6. Understand the Principles and the basics of quality assurance in the clinical pathology laboratory such as instrumentation, automation and calibration.
- a.7. Recognize the effect of good and accurate laboratory analysis in enhancing animal health and production through accurate diagnosis of animal diseases.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1. Analyze and evaluate laboratory data on the basis of pathological mechanisms and the response of different animal species to pathological insults.
- b.2. Solve professional problems in laboratory medicine using available data under field or laboratory conditions.
- b.3. Perform scientific research studies in clinical pathology that can give significant impact on the management and treatment of clinical field problems through laboratory diagnosis.



- b.4.** Formulating scientific papers with the ability to acquire, organize, analyze, interpret and present data and other information in relating to other fields.
- b.5.** Assess risks in the laboratory work regarding improper use of some instruments or handling samples of zoonotic diseases.
- b.6.** Planning to enhance the performance in the laboratory diagnosis using modern approaches, methods and techniques.
- b.7.** Demonstrate responsibility in taking safe clinical decisions pertaining to clinical Pathology services.
- b.8.** Trying new methods, approaches and applications to aid in the early detection of various diseases in the laboratory.
- b.9.** Lead scientific open discussion in the field of Clinical pathology based on evidences, proofs, pathological mechanisms and the different responses of animals to pathological insults

c. Practical and professional skills:

At the end of the program, postgraduate will inquire the ability of:

- c.1.** Conduct basic and modern professional missions including examination of animal, collection of samples, and performing advanced diagnostic laboratory techniques.
- c.2.** Write and assess the professional reports in field of Clinical Pathology.
- c.3.** Creation of new tests for rapid diagnosis and can apply best control measures.
- c.4.** Use modern technological means to serve professional practice.
- c.5.** Planning for the improvement of veterinary medicine by applying recent molecular techniques in Clinical Pathology, and developing performance of veterinarians in the field.

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1.** Communicate effectively in different ways, including participation in workshops and seminars.
- d.2.** Utilize information technology to serve professional practice.
- d.3.** Teach others and evaluate their performance.
- d.4.** Assess himself and life-long learning.



- d.5. Use of different sources for obtaining information and knowledge.
- d.6. Lead team under different professional circumstances.
- d.7. Manage scientific meetings with the ability to manage time efficiently.

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, seminars.

6-Assessments:

The program depends on different assessment ways:

- a. Course assessment:
 - 1. Final written exam
 - To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
 - 2. Practical exam
 - To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
 - 3. Oral exam
 - To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.
- b. Qualifying examination
The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work
- c. PhD Thesis assessment
 - Annual reports adopted by the Faculty.
 - Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
 - Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with



previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1,2; b1,2
Oral	a1-2; b1,2
Practical	c1-5
Qualifying Exam	a1-7; b1-9, d1-7
Thesis	a3-7; b1-9; C1-5; d1-7

7. Program structure

a. Program duration (years):

PhD degree from 3-5 years and it should not exceed a period of six years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law.

b. Program structure:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council so that include 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c- Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d- Scientific thesis

The applicant should conduct an innovative research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met.

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in **Clinical Pathology** include:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab



Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2



	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2



	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2



	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses	184/2	85- Microbiology of poultry	2	2



between Bacteriology and Virology	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
81- Advanced immunology			2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
198/2	99- Fish parasitology	1	2	
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
207/2	108-Biological evolution of drug	1	1	
Hygiene and	208/2	108- Hygienic control of milk and	2	2



control of milk and dairy products		dairy products		
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3



	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/ 2	134- Stress diseases during animals transport.		
Infectious diseases	235/ 2	135- Infectious diseases of cattle	2	2
	236/ 2	136- Infectious diseases of sheep and goat	2	2
	237/ 2	137- Infectious diseases camel	2	2
	238/ 2	138 Infectious diseases of equine	2	2
	239/ 2	139- Infectious diseases of pet animals	2	2
	240/ 2	140- Infectious diseases lab animals	1	2
	241/ 2	141- Infectious diseases of udder and newly born animals	2	2
	242/ 2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2



	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1



	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in polutry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-



Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases	302/2	202- Biology of fish.	2	2



and management	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medicine (**Clinical Pathology**) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medical science lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate



& research committee taking into account the provisions of the universities regulation law.

3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.

4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.

5. The applicant should pass written, practical and oral exams successfully in all courses.

6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.

7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.

8. The applicant should submit a seminar (Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).



9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met: Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.

10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and in case of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.

11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards it to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.

12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:



1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade	Percentage
Excellent	> 90
Very good	>80



Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
1	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

program coordinator:

Prof. Dr.

Head of Department:

Prof. Dr.



Matching program ILOs with ARS - Matrix

Program ILOs	ARS																																					
	K&U (a)							I.S. (b)									P.P. (c)					G.T. (d)																
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7										
K&U	1	2	3	4	5	6	7																															
I.S.								1	2	3	4	5	6	7	8	9																						
P.P.																	1	2	3	4	5																	
G.T.																																1	2	3	4	5	6	7



Program Specification Matrix

PhD in Veterinary Medical Sciences (Clinical Pathology)

Courses		Total Contact hours/ course	No. of hours / week			K.U (a)							I.S (b)							P.P (c)					G.T (d)										
Code	Name		Lect.	Lab.	Total	1	2	3	4	5	6	7		1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7	
Predocutorial courses (10-12 theoretical and practical hours weekly for 12 months)						x	x							x	x	x								x	x	x			x	x	x	x	x	x	x
Qualification exam								x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Thesis								x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	



COURSE SPECIFICATION (2021/2022)

1 - Basic Information:

Course code: 175 /2

Course title: Advanced Clinical Pathology

Academic year or level : **PhD of Veterinary Medicine Program**

Total teaching hours: 192 hours

Lecture: 96 hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the basic knowledge and skills concerning pathophysiological mechanisms of the diseases or other conditions that should be considered when results of clinical laboratory assays are abnormal.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Explain the basic laboratory techniques used in diagnosis of different animal diseases
- a.2. Identify normal and abnormal blood platelets function.
- a.3. Describe the cases of autoimmune diseases of blood.
- a.4. Contrast acid-base balance and imbalance.
- a.5. Give original examples of hormonal disorders.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Evaluate homeostasis disorders.
- b.2. Discover cases of autoimmune diseases of blood.
- b.3. Evaluate acid-base imbalance.
- b.4. Discover endocrine dysfunctions.
- b.5. Interpret exfoliative cells in different body fluids.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Obtaining proper sample from bone marrow, blood and different body fluid in different animals.
- c.2. Carry out immune assays.
- c.3. Perform blood gases analysis.
- c.4. Detect normal and abnormal hormonal levels in different animals.
- c.5. Examine stained smear or unstained smear from different body fluid.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Efficiently make use of library facilities and IT tools.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements



4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
Introduction	4	2	2
Laboratory evaluation of homeostasis	38	19	19
Advanced evaluation of water, electrolytes and acid-base balance	30	15	15
Laboratory assessment of hormonal disorders	30	15	15
Laboratory assessment of exfoliative cells	30	15	15
Cases Studies of autoimmune diseases of blood	30	15	15
Molecular biology aids in advance clinical pathology lab.	30	15	15
Total	192	96	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d4
Practical sessions		b1 to b5	c1 to c5	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c5	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10



7. Student Assessment				
Intended Learning Outcomes Covered				
7.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b5		d4
Practical exams			c1 to c5	d2, d3
Oral exams	a1 to a5	b1 to b5		d1
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Acid-base and electrolyte handbook for veterinary technicians / edited by Angela Randels-Thorp, David Liss.2017
- Kenneth S Latimer (2015) Duncan and Prasse's Veterinary Laboratory Medicine: Clinical Pathology, 6th Edition.
- Veterinary laboratory medicine, Duncan, Prasse and Mahaffey (5th edition 2015)
- Oxford Handbook of Endocrinology and Diabetes (2014):Turner; Helen; Wass; John, Oxford University Press UK
- Atlas of Canine and Feline Peripheral Blood Smears, 1e (Small Animal Laboratory Essentials), (2013):Amy C. Valenciano, Rick Cowell, Theresa Rizzi and Ronald D. Tyler, Elsevier Health US.
- Veterinary Hematology and Clinical Chemistry (2012):Mary, John Wiley & Sons Limited

8-2: Recommended books:

- Veterinary Hematology A Diagnostic Guide and Color Atlas (2011): Harvey, Elsevier Health US.
- Hematology. Schalm.6th Edition, (2010)
- Animal Clinical Chemistry. G.O.Evans. 2nd Edition, (2009).
- Fundamentals of Veterinary Clinical Pathology (2008):Steven L. Stockham, Michael A. Scott , 2nded., Blackwell publishing
- Veterinary laboratory medicine, clinical pathology Duncan and Prasse's 2003)
- Veterinary clinical pathology, Coles (1989):

8.3: Web sites and journals

- WWW.PubMed.com
- American journal of clinical pathology
- Journal of comparative pathology and clinical pathology
- www.Vet.net.com
- <http://www.Clinicalpathology.net/>
- <http://www.ncbi.nlm.nih.gov/ICTVdb/>
- <http://www.healthsystem.virginia.edu/internet/labtests/clinical/cpath.cfm>.

Course coordinator:

Head of department of Clinical Pathology

Prof. Dr. Emad Wadeed

Dr. Mohamed Fahmy



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills					General & Transferable Skills			
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4
Introduction	4	✓						✓									✓	✓	✓	✓
Laboratory evaluation of homeostasis	38		✓				✓								✓	✓	✓	✓	✓	✓
Advanced evaluation of water, electrolytes and acid-base balance	30				✓				✓	✓	✓	✓			✓		✓	✓	✓	✓
Laboratory assessment of hormonal disorders	30					✓				✓		✓			✓		✓	✓	✓	✓
Laboratory assessment of exfoliative cells	30	✓								✓					✓		✓	✓	✓	✓
Cases Studies of autoimmune diseases of blood	30			✓		✓		✓				✓	✓				✓	✓	✓	✓
Molecular biology aids in advance clinical pathology lab.	30	✓					✓					✓	✓				✓	✓	✓	✓



COURSE SPECIFICATION (2021/2022)

1 - Basic Information:

Course code: 176 /2

Course title: Advanced Clinical Pathology

Academic year or level : **PhD of Veterinary Medicine Program**

Total teaching hours: 192 hours

Lecture: 96 hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the basic knowledge and skills concerning function tests of different organs including; liver, kidney, pancreas, digestive system,.....

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Discuss theories, concepts and principles relating to biochemical pathology underlying health and disease.
- a.2. Describe the bio-safety practices required in a biochemical Pathology laboratory.
- a.3. Realize different aspects of enzymology. Diseases and biochemical investigations in clinical diagnosis.
- a.4. Recognize disorders involving the major classes of biomolecules: carbohydrates, lipids, proteins and amino acids and their laboratory findings.
- a.5. Outline the disorders of clinically significant elements in body including minerals, electrolytes, trace elements and acid-base balance.
- a.6. Identify organ clinical pathology as liver, kidney, muscle and pancreas dysfunctions.
- a.7. Explain the principals of endocrinology. Diseases and biochemical investigations

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Select the appropriate tests used for screening, diagnosis, and follow up of various disease states taking into consideration the concept of cost effectiveness.
- b.2. Integrate clinical and laboratory findings for proper interpretation of different laboratory results for correct medical decision- making.
- b.3. Interpret the laboratory results using the understanding of clinical biochemical pathology taken in this course.
- b.4. Evaluate collected data to draw reasoned conclusions or sustainable judgment

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Use the different equipments encountered in the clinical biochemical pathology laboratory.
- c.2. Apply all steps involved in performing tests of biochemical Pathology and apply safety measures in the Lab.



- c.3. Perform diagnostic techniques to become technically competent in practical work and master the underlying analytical and clinical principles.
- c.4. Collect samples for chemical pathology tests and master the techniques of specimen collection, handling and processing.
- c.5. Lable instructions on specimen transport and processing and on the preparation of animals for tests in biochemical pathology.
- c.6. Recognize routine biochemical tests used for diagnosing disorders involving enzymes, body macromolecules, minerals, electrolytes and internal organs
- c.7. Practice some special tests related to specialized areas such as clinical endocrinology and toxicology.
- c.8. Carry out urine examination, including physical, chemical, and microscopic aspects of urine analysis.
- c.9. Demonstrate confidence and competency in understanding, analyzing and interpreting biomedical data.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Efficiently make use of library facilities and IT tools.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
Introduction and different laboratory techniques used for organ function tests	4	2	2
Laboratory evaluation of liver disorders	40	20	20
Laboratory evaluation of kidney disorders	40	20	20
Laboratory evaluation of pancreas and GIT disorders	40	20	20
Laboratory tests for evaluation of minerals , electrolytes and acid base balance	28	14	14
Urine analysis	24	12	12
Case studies	16	8	8
Total	192	96	96

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming
- * **Practical sessions:**
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports



* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a7	b1 to b4		d1, d4
Practical sessions		b1 to b4	c1 to c9	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a7	b1 to b4	c1 to c9	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b4		d4
Practical exams			c1 to c9	d2, d3
Oral exams	a1 to a7	b1 to b4		d1
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Acid-base and electrolyte handbook for veterinary technicians / edited by Angela Randels-Thorp, David Liss.2017
- Kenneth S Latimer (2015) Duncan and Prasse's Veterinary Laboratory Medicine: Clinical Pathology, 6th Edition.
- Veterinary laboratory medicine, Duncan, Prasse and Mahaffey (5th edition 2015)
- Oxford Handbook of Endocrinology and Diabetes (2014):Turner; Helen; Wass; John, Oxford University Press UK
- Atlas of Canine and Feline Peripheral Blood Smears, 1e (Small Animal Laboratory Essentials), (2013):Amy C. Valenciano, Rick Cowell, Theresa Rizzi and Ronald D. Tyler, Elsevier Health US.



- Veterinary Hematology and Clinical Chemistry (2012): Mary, John Wiley & Sons Limited

8-2: Recommended books:

- Veterinary Hematology A Diagnostic Guide and Color Atlas (2011): Harvey, Elsevier Health US.
- Hematology. Schalm. 6th Edition, (2010)
- Animal Clinical Chemistry. G.O. Evans. 2nd Edition, (2009).
- Fundamentals of Veterinary Clinical Pathology (2008): Steven L. Stockham, Michael A. Scott, 2nd ed., Blackwell publishing
- Veterinary laboratory medicine, clinical pathology Duncan and Prasse's 2003)

8-2.11) Veterinary clinical pathology, Coles (1989):

8.3: Web sites and journals

- WWW.PubMed.com
- American journal of clinical pathology
- Journal of comparative pathology and clinical pathology
- www.Vet.net.com
- <http://www.Clinicalpathology.net/>
- <http://www.ncbi.nlm.nih.gov/ICTVdb/>
- <http://www.healthsystem.virginia.edu/internet/labtests/clinical/cpath.cfm>.

Course coordinator:

Head of department of Clinical Pathology

Prof. Dr. Emad Wadeed

Dr. Mohamed Fahmy



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intellectual Skills				Practical & Professional Skills									General & Transferable Skills				
		1	2	3	4	5	6	7	1	2	3	4	1	2	3	4	5	6	7	8	9	1	2	3	4	
Introduction and different laboratory techniques used for organ function tests	4	✓	✓					✓	✓				✓	✓	✓							✓				✓
Laboratory evaluation of liver disorders	40			✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Laboratory evaluation of kidney disorders	40			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Laboratory evaluation of pancreas and GIT disorders	40			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Laboratory tests for evaluation of minerals , electrolytes and acid base balance	28			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓
Urine analysis	24				✓	✓	✓			✓	✓	✓		✓					✓	✓	✓		✓	✓	✓	✓
Case studies	16				✓	✓	✓	✓		✓	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Course code: 177 /2

Course title: Hematology and bone marrow examination (تشخيص أمراض الدم و فحص النخاع)

Academic Year: PhD of Veterinary Medicine Program

Total teaching hours: 144 hours

Lecture: 48 hrs.

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

To provide students with basic knowledge and skills concerning abnormal hematopoiesis in addition to RBCs, WBCs, and thrombocytes disorders in different animals, birds and fish.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Describe the different hematological techniques used in diagnosis of blood and bone marrow disorders.
- a.2. Identify RBCs disorders.
- a.3. Define WBCs disorders.
- a.4. Recognize blood platelets disorders
- a.5. List the abnormalities of bone marrow.
- a.6. Discuss the immune-histochemistry of bone marrow.
- a.7. Outline the diagnostic properties and predictive values of laboratory assays.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to

- b.1. Evaluate RBCs disorders.
- b.2. Judge the WBCs disorders.
- b.3. Investigate the blood platelets disorders.
- b.4. Select the abnormal bone marrow picture.
- b.5. Interpret the abnormal blood picture.
- b.6. Integrate correlation between abnormal blood picture and bone marrow disorders

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Obtaining proper blood and bone marrow samples from different animals.
- c.2. Perform complete blood count.
- c.3. Examine stained blood smears under light microscope.
- c.4. Apply stained bone marrow smears under light microscope.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently.



4 - COURSE CONTENTS:

TOPIC	Total	lecture	practical
Introduction	6	2	4
Evaluation of erythron	42	14	28
Evaluation of leucogram	36	12	24
Evaluation of thrombon	9	3	6
Hematopoietic neoplasia	15	5	10
Bone marrow examination	24	8	16
Cases Studies	6	2	4
Laboratory aids for differential diagnosis of some animal diseases	6	2	4
Total	144	48	96

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming
- * **Practical sessions:**
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about Hematology and bone marrow examination
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures	a1 – a7	b1- b6		d1- d4
Practical sessions			c1 -c4	d1- d4
Self-Learning activities				d1- d4
Distance Teaching and Learning	a1 – a7	b1 – b6	c1 -c4	d1 – d4

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	The Examinations were held at the end of the academic year.	The Examinations were held at the end of the academic year.	The Examinations were held at the end of the academic year.	Allover the academic year



7.c grads	<u>50</u>	<u>20</u>	<u>20</u>	<u>10</u>
7. Student Assessment				
Intended Learning Outcomes Covered				
6.1. Methods	KU	IS	PPS	GTS
Written exams	a1 – a7	b1-b7		d3
Practical exams			c1 - c4	d1- d4
Oral exams	a1 – a7	b1- b7		d3,d4
Student activities				d1 – d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Acid-base and electrolyte handbook for veterinary technicians / edited by Angela Randels-Thorp, David Liss.2017
- Kenneth S Latimer (2015) Duncan and Prasse's Veterinary Laboratory Medicine: Clinical Pathology, 6th Edition.
- Veterinary laboratory medicine, Duncan, Prasse and Mahaffey (5th edition 2015)
- Oxford Handbook of Endocrinology and Diabetes (2014):Turner; Helen; Wass; John, Oxford University Press UK
- Atlas of Canine and Feline Peripheral Blood Smears, 1e (Small Animal Laboratory Essentials), (2013):Amy C. Valenciano, Rick Cowell, Theresa Rizzi and Ronald D. Tyler, Elsevier Health US.
- Veterinary Hematology and Clinical Chemistry (2012):Mary, John Wiley & Sons Limited

8-2: Recommended books:

- Veterinary Hematology A Diagnostic Guide and Color Atlas (2011): Harvey, Elsevier Health US.
- Hematology. Schalm.6th Edition, (2010)
- Animal Clinical Chemistry. G.O.Evans. 2nd Edition, (2009).
- Fundamentals of Veterinary Clinical Pathology (2008):Steven L. Stockham, Michael A. Scott, 2nded., Blackwell publishing
- Veterinary laboratory medicine, clinical pathology Duncan and Prasse's (2003)

8.3: Web sites and journals

- American journal of clinical pathology
- Journal of comparative pathology and clinical pathology
- <http://www.Clinicalpathology.net/>
- <http://www.ncbi.nlm.nih.gov/ICTVdb/>
- <http://www.healthsystem.virginia.edu/internet/labtests/clinical/cpath.cfm>.

Course coordinator:

Head of department of Clinical Pathology

Prof. Dr. Emad Wadeed

Dr. Mohamed Fahmy



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Nutrition and Clinical Nutrition

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy
(Animal and Poultry Nutrition and
Malnutrition diseases)



Kafrelsheikh University

Faculty of Veterinary Medicine

Department of Nutrition and Clinical Nutrition

**Program Specification for PhD Degree
(2021-2022)**

A- Administrative information:

- 1- Awarding Body:** Kafr El-Sheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Nutrition and Clinical Nutrition
- 4- Program Title:** PhD Degree in Veterinary Science (Animal and Poultry Nutrition and Malnutrition diseases)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years
- 7- Program Coordinator:** Prof. Dr.

B- Professional information:

1- Aim of the Program:

- Allow graduate to create new knowledge and understanding in Animal and Poultry Nutrition and Malnutrition diseases through the process of research and inquiry.
- Enable graduate to achieve competency in modern technology
- Provide the graduate with the opportunity to develop communication skills, recent techniques and tools in the field of Animal and Poultry Nutrition and Malnutrition diseases and experience of scientific research skills.

- Giving the graduate the ability to be creative to advance Animal and Poultry Nutrition and Malnutrition diseases through new scientific research.
- Enable graduate to achieve capability in modern technology to develop practical research project.
- Demonstrate an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and present their own research data for the improvement of the Animal and Poultry Nutrition.
- Have the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibit awareness about current Animal and Poultry Nutrition and Malnutrition diseases problems and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of Animal and Poultry Nutrition and Malnutrition diseases.

2- Academic standards:

**Academic reference standards (ARS) adopted by the faculty committee No(1)
14/9/2014**

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Mastering the basics and methodologies of scientific research Animal and Poultry Nutrition for better dealing with Malnutrition problems

- professionally.
- 2) Performing continuous effort to add knowledge about improvement of nutritional efficiency of animals and poultry.
 - 3) Analysis and craterization of information in Animal and Poultry Nutrition and Malnutrition diseases and related fields.
 - 4) Integrating data collected from the animal and poultry farms with related experimental findings to reach the correct system for improvement of animal and poultry nutrition
 - 5) Showing deep awareness with the ongoing animal and poultry nutritional problems and modern theories in solving Malnutrition diseases problems.
 - 6) Identifying the main causes of low nutritional efficiency in animals and poultry and suggesting the appropriate solutions.
 - 7) Mastering of a wide range of professional skills in experimental design, data collection, analysis, and interpretation of nutritional data.
 - 8) Acquiring trends towards developing modern methods and tools in Animal and Poultry Nutrition and Malnutrition.
 - 9) Using appropriate technological means to serve professional practice.
 - 10) Communicating effectively with animal breeders, students and colleagues and leading work team through professional scale.
 - 11) Making decision in different professional situations especially under field conditions to deal with nutritional status of animals and poultry.
 - 12) Using of the available resources efficiently in the development of new techniques and work to find new resources.
 - 13) Being aware with his role in society development and community preservation.
 - 14) Acting with integrity, credibility and according to the rules of profession.
 - 15) Realizing the importance of self and life-long learning and progress.

4-Programme Intended Learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

- a.1. Recognize recent theories, principles and knowledge Animal and Poultry Nutrition and Malnutrition diseases.
- a.2. Realize Basics methodologies and ethics of scientific research and its tools including feed analysis and ration formulation.
- a.3. List legal and ethical principles of dealing with malnutrition and metabolic diseased animals.
- a.4. Realize legal and ethical principles of feed evaluation and presenting animal products fit for human consumption.
- a.5. Recognize basics of quality assurance and feed mill hygiene in feed industries.
- a.6. Apply their knowledge and understanding in Animal and Poultry Nutrition and Malnutrition diseases for enhancing animal wealth and production
- a.7. Recognize the effect of professional practice on the environment and methods of environmental development and maintenance.
- a.8. Describe the principles, methodologies and ethics of scientific research in Animal and Poultry Nutrition and Malnutrition diseases.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1. Analyze and evaluate laboratory findings and integrate results with other clinical information to elicit proper interpretation.
- b.2. Plan scientific research studies in the field of Animal and Poultry Nutrition and Malnutrition diseases including new approaches, methods and applications that can manage problems through laboratory diagnosis
- b.3. Solve diagnostic problems based on available laboratory data
- b.4. Formulate scientific papers efficiently through collecting, analyzing and interpreting data and developing evidence based learning and practice
- b.5. Plan to improve performance in Animal and Poultry Nutrition and Malnutrition diseases.
- b.6. Discuss the laboratory results and lead scientific open discussion in relation to Animal and Poultry Nutrition and Malnutrition diseases based on evidences and proofs.

- b.7.** Assess risks in the laboratory work regarding improper use of some instruments or handling samples.
- b.8.** Share and lead scientific open discussion in the field of c Animal and Poultry Nutrition and Malnutrition diseases based on evidences and proofs.
- b.9.** Show innovative and creative skills in clinical laboratory practice, professional learning and scientific endeavor.

c. Practical and professional skills:

By the end of this program the graduate should be able to:

- c.1.** Conduct basic and modern professional missions including diagnosis of nutritional deficiency disease, and detection of mycotoxins.
- c.2.** Master advanced techniques for diagnosis of deficiency disease depending upon the history of feeding program and chemical analysis and the perfect selection of appropriate supplement for each case.
- c.3.** Write and evaluate professional nutritional reports involving feeding systems and requirements for each animal, comparing with feeding standards
- c.4.** Write a conclusive report indicating the cause of lowering growth performance and production on scientific bases.
- c.5.** Evaluate and modernize methods depending upon using modern apparatuses in feed analysis in nutrition.
- c.6.** Creation of new means in ration formulation and feed processing to increase animal production.
- c.7.** Use modern technological means to serve professional practice.
- c.8.** Planning for the improvement of veterinary medicine by applying recent molecular techniques in animal and poultry nutrition, and developing performance of veterinarians in the field.

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1.** Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology in the improvement of Nutrition and Clinical nutrition professional practice.

- d.2. Utilize information technology to serve professional practice.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements
- d.5. Lead team under different professional circumstances.
- d.6. Use of different sources for obtaining information and knowledge.
- d.7. Manage scientific meetings with the ability to manage time efficiently.
- d.8. Asses himself and life-long learning

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, and seminars.

6-Assessments:

The program depends on different assessment ways:

a. Course assessment:

1. Final written exam
 - To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
2. Practical exam
 - To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
3. Oral exam
 - To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.

b. Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work

c. PhD Thesis assessment

- Annual reports adopted by the Faculty.
- Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
- Final evaluation and approval by a judging committee of at least three

professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1-3; b2,3,7,9
Oral	a1-3; b2,7,8,9
Practical	c1-8
Qualifying Exam	a1-8; b1-9
Thesis	a4-8; b1-9; c1-8; d1-7

7. Program structure

a. Program duration (years):

PhD degree duration at least 3 years and it should not exceed a period of 5 years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law (article 18).

b. Program structure:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council should include at least 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. These courses must not be previously studied in the Mater program. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c- Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d- Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met.

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Animal and Poultry Nutrition and Malnutrition diseases include:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Animal and Poultry Nutrition and Malnutrition diseases	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2

157/2	57- laboratory animal nutrition	1	2
158/2	58- feed additives	1	2
159/2	59- feedstuff analysis	2	2
160/2	60- Quality control of feed and feed factories	2	2
161/2	61- Clinical nutrition and malnutrition	2	2
162/2	62- Fish nutrition	1	2

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1

	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and	2	2

		biological uses		
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental	1	2

animals				
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2

Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
81- Advanced immunology			2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1

Hygiene and control of milk and dairy products	208/2	108- Hygienic control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
224/2	124- Sanitation affairs of meat and fish plants.	2	2	
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle,	3	3

		buffalo, camels, sheep and goats)		
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/2	134- Stress diseases during animals transport.		
Infectious diseases	235/2	135- Infectious diseases of cattle	2	2
	236/2	136- Infectious diseases of sheep and goat	2	2
	237/2	137- Infectious diseases camel	2	2
	238/2	138 Infectious diseases of equine	2	2
	239/2	139- Infectious diseases of pet animals	2	2
	240/2	140- Infectious diseases lab animals	1	2
	241/2	141- Infectious diseases of udder and newly born animals	2	2
	242/2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2

	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2

	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in polutry	2	2
275/2	175- Laboratory diagnosis of poultry diseases.			
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures- specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-

Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2

Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (Animal and Poultry Nutrition and Malnutrition diseases) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medical science lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate

& research committee taking into account the provisions of the universities regulation law.

3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.

4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.

5. The applicant should pass written, practical and oral exams successfully in all courses.

6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.

7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.

8. The applicant should submit a seminar (Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).

9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met: Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.

10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and in case of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.

11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards it to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.

12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article **14 and 18.**

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade	Percentage
Excellent	> 90
Very good	>80

Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
1	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

Program Co-ordinator:

Prof. Dr. Elsayed Hegazy

Head of Department:

Prof. Dr. Abdelnaser baker

Matching program ILOs with ARS - Matrix

Program ILOs	ARS																											
	K&U (a)					I.S. (b)									P.P. (c)					G.T. (d)								
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7		
K&U	1	2	4	3,5	6,7																							
I.S.						1	2	3	4	5	6	7	8	9														
P.P.															1	2	3	4	5	6								



G.T.																	1	2	3	4	5	6	7
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ARS for PhD in Veterinary Medical Sciences (Animal and Poultry Nutrition and Malnutrition diseases)

1) Graduate attributes

The graduate should have the ability for:

- 1) Mastering the basics and methodologies of scientific research in ration formulation and feed analysis for better dealing with nutritional deficiency diseases
- 2) Performing continuous effort to add knowledge about improvement ration formulation for different species to increase growth performance.
- 3) Analysis of information in field of nutrition including animal production, biochemistry, physiology, clinical pathology, etc.
- 4) Integrating data collected from farm animals to reach the correct diagnosis of cause of malnutrition diseases.
- 5) Showing deep awareness with the ongoing nutritional problems in feed factories and mill hygiene.
- 6) Identifying the main causes of metabolic diseases and suggesting the appropriate methods of animal treatment.
- 7) Mastering of a wide range of professional skills in using feed additives for animal nutrition.
- 8) Acquiring trends towards developing modern methods and tools in diagnostic and mechanistic feed analysis.
- 9) Using appropriate technological means including molecular biology, chromatography to serve professional practice.
- 10) Communicating effectively with nutritionist, students and colleagues and leading work team through professional scale.
- 11) Making decision in different professional situations especially under field conditions to deal with feeding the animal under special condition..
- 12) Using of the available resources efficiently in the development of new techniques and work to find new resources.
- 13) Being aware with his role in society development through increasing animal wealth.
- 14) Acting with integrity, credibility and according to the rules of profession.
- 15) Realizing the importance of self and life-long learning and progress.



A) Knowledge and understanding

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Recent theories, principles and knowledge in ration formulation for animals and recent feed additives	Recent theories, principles and knowledge in the field of specialization and related areas
2)	Basics methodologies and ethics of scientific research and its tools including feed analysis and ration formulation.	Basics, methodologies and ethics of scientific research and its different tools
3)	Principles of feed evaluation and presenting animal products fit for human consumption.	Legal and ethical principles of professional practice in the area of specialization
4)	basics of quality assurance and feed mill hygiene in feed industries	Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Awareness with the role of nutrition on the animal wealth and methods for enhancing animal health	Awareness with the effect of professional practice on the environment and methods of its maintain and development
6)	the effect of professional practice on the environment and methods of environmental development and maintenance	

B) Intellectual skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analysis of data about ration formulation and requirements for each animal, comparing with feeding standards	Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solving nutritional problems by identification of the cause of mal nutrition disease	Solving professional problems using available data
3)	Performing scientific research studies that can give significant impact on the treatment of metabolic diseased animals.	Conducting scientific research studies that add to knowledge
4)	Formulating scientific papers nutrition and clinical	Formulating scientific papers

5)	Risk assessment of metabolic and nutritional deficiency diseases.	Risk assessment in the field of specialization
6)	Planning to enhance growth performance and carcass quality of animal and poultry.	Planning to enhance the performance in field of specialization
7)	Making professional decisions for selecting the ideal method of ration formulation and feed analysis.	Making professional decisions under different professional contexts
8)	Trying new feed additives which enhance production.	Creation and innovative in the area of specialization
9)	Dialogue and discussion based on nutrition and clinical nutrition evidences and proofs	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills in diagnosis of nutritional deficiency disease, and detection of mycotoxins.		Mastering basic and modern professional skills in the area of specialization
2)	Writing and evaluating professional medicolegal and nutritional reports involving feeding systems and requirements for each animal, comparing with feeding standards		Writing and evaluating professional reports
3)	Evaluating and modernizing methods and tools in animal nutrition and clinical nutrition.		Evaluating and modernizing methods and tools in the area of specialization
4)	Using modern technological means in ration formulation to increase animal production.		Using modern technological means to serve professional practice
5)	Planning for the improvement of veterinary medicine by applying recent molecular techniques in nutrition , and developing performance of others		Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Effective communication with nutritionist, students and veterinarians.		Effective communication
2)	Utilizing information technology to serve development of Nutrition and Clinical nutrition		Utilizing information technology to serve development of professional



practice	Faculty of Veterinary Medicine	practice
3)	Teaching others and evaluating their performance	Teaching others and evaluating their performance
4)	Self-assessment and continuous learning	Self-assessment and continuous learning
5)	Using different resources to obtain knowledge and information	Using different resources to obtain knowledge and information
6)	Team working and leading a team in familiar professional contexts	Team working and leading a team in familiar professional contexts
7)	Management of scientific meetings with the ability to manage time efficiently	Management of scientific meetings with the ability to manage time efficiently

ثالثا: برامج الدكتوراه

١ - مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر على الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطا و مطورا للعلاقات البيئية بينها
٥. إظهار وعيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حلولاً مبتكرة لحلها
٧. إتقان نطاقا و اسعا من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تنميتها و العمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للأخرين

٢ - المعايير القياسية العامة

المعرفة و الفهم:

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على الفهم و الدراية بكل من:

أ- النظريات و الأساسيات و الحديث من المعارف في مجال التخصص و المجالات ذات العلاقة

- ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
- ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
- ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
- ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و طرق تنمية البيئة و صيانتها

المهارات الذهنية

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

- أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
- ب- حل المشاكل المتخصصة استنادا على المعطيات المتاحة
- ج- إجراء دراسات بحثية تضيف إلى المعارف
- د- صياغة أوراق علمية
- هـ- تقييم المخاطر في الممارسات المهنية
- و- التخطيط لتطوير الأداء في مجال التخصص
- ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة



المهارات المهنية

- بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
 - ب- كتابة و تقييم التقارير المهنية
 - ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
 - د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
 - هـ- التخطيط لتطوير الممارسة المهنية و تنمية أداء الآخرين

المهارات العامة و المنتقلة

- بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- التواصل الفعال بأنواعه المختلفة
 - ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية
 - ت- تعليم الآخرين و تقييم أداءهم
 - ث- التقييم الذاتي و التعلم المستمر
 - ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
 - ح- العمل في فريق و قيادة فرق العمل
 - خ- إدارة اللقاءات العلمية و القدرة علي إدارة الوقت



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: ... 156/2

Course title: : Wild animal nutrition.

Academic Year: : **PhD Veterinary Medicine Program**

Total teaching hours: 144 h

Lectures: 48 hrs

Practical: 96hrs

2 - OVERALL AIMS OF THE COURSE:

The course aimed to provide the postgraduate students with the proper nutrition of wild animals. Also the feedstuffs that are important for these animals.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-a: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Define the nutrient required for wild animals
- a2. Recognize the metabolism of nutrients in wild animals
- a3. Describe the proper use of feeds for wild animals

3-b: INTELLECTUAL SKILLS:

By the end of the course, students should be able to

- b1 Compose the nutritive value of feeds used for wild animals
- b2. Interpret the fitness of feeds for wild animals
- b3. Plan to prevent the nutritional problems

3-c: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Analyze and evaluate different feeds used for wild animals
- c2. Formulate a balanced ration for wild animals
- c3. Determine the nutritional problems associated with animal feeding

3-d: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1. Be a successful member in animal nutrition team. . Work in a team
- d2 . Use computers, software and CDs for educational purposes
- d3. Communicate with others
- d4. Conduct a search in digital library
- d5. Presentation skills: capacity to make oral presentations

**4 COURSE CONTENTS:**

Topic	No. of hours		
	Lectures	Practical	Total
Water nutrition for wild animals	3	6	9
Carbohydrates nutrition for wild animals	10	15	25
Protein nutrition for wild animals	10	15	25
Lipids nutrition for wild animals	5	15	20
Nutritional problems of wild animals	10	15	25
Vitamins nutrition for wild animals	5	15	20
Minerals nutrition for wild animals	5	15	20
Total	48	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a3	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c3	d2, d5
Self-Learning activities				d2, d3, d5
Distance Teaching and Learning	a1 to a3	b1 to b3	c1 to c3	d1 to d5

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session

7. STUDENT ASSESSMENT:-



7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a3	b1 to b3		d5
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a3	b1 to b3		d1
Student activities	a1, a3			d1 to d5

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential Books:

- Animal nutrition, 7th edition, 2014, (**P. McDonald R. A. Edwards J. F. D. Greenhalgh**)
- Fundamentals of Animal Nutrition 1st ed. 2021 Edition (**Subodh Kumar Saha , Nitya Nand Pathak**)
- *Wildlife Feeding and Nutrition*, 1992, (**Charles T. Robbins**)
- *Recent Advances in Animal Nutrition and Metabolism*
Book, 2021 (**Guoyao Wu**)

8.2: Recmended books:

Basic animal nutrition and feeding, 5th edition, 2004, (**Wilson G. Pond, David B. Church, Kevin R. Pond, Patricia A. Schoknecht**)

8.3. Periodicals, Web sites,..... etc

Scientific journals

- Animal feed science journal
- Journal of American Veterinary Medical Association.
- Nutritional Abstract and Review
- Veterinary Bulletin.
- Archives of Animal Nutrition.



Kafrelsheikh University
Faculty of Veterinary Medicine



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- Animal feed - Nutrition, additives supplements, processing
(feednavigator.com)
 - Animal Nutrition (keaipublishing.com)

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Course Coordinator

Dr. Eldoky Elsaid Nassef

Head of Department

**Prof. Dr Abdelnasser Abdellatif
baker**



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding			Intellectual Skills			Practical & Professional Skills			General & Transferable Skills				
		1	2	3	1	2	3	1	2	3	1	2	3	4	5
Water nutrition for wild animals	9	✓				✓		✓			✓	✓	✓	✓	✓
Carbohydrates nutrition for wild animals	25		✓	✓	✓			✓			✓	✓	✓	✓	✓
Protein nutrition for wild animal	25	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
Lipids nutrition for wild animals	20	✓	✓	✓	✓			✓			✓	✓	✓	✓	✓
Nutritional problems of wild animals	25			✓			✓			✓	✓	✓	✓	✓	✓
Vitamins nutrition for wild animals	20	✓	✓		✓	✓		✓	✓		✓	✓	✓	✓	✓
Minerals nutrition for wild animals	20	✓	✓		✓			✓			✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number:... 153/2

Course title: : Feedstuffs.

Academic Year: : **PhD Veterinary Medicine Program**

Total teaching hours:192 h

Lectures: 96 hrs

Practical: 96hrs

2 - OVERALL AIMS OF THE COURSE:

The course aimed to provide the postgraduate students with the animal feed science which include its evaluation, nutritional value, inclusion level and deleterious substances.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-a: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Classify feedstuffs
- a2. Determine the chemical composition of different feedstuff
- a3. Illustrate the proper inclusion level in the diets

3-b: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1. Combine the fitness of feedstuffs for animal feeding
- b2. Compose the nutritive value of feeds
- b3. Interpret the fitness of feeds chemical composition

3- c: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Perform and practices the inclusion of feedstuffs
- c2. Show the problems of deleterious substances
- c3. Evaluate the nutritional value of the feed

3- d: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1. Work in a teamd
- d2 . Use computers, software and CDs for educational purposes
- d3. Communicate with others
- d4. Conduct a search in digital library
- d5. Presentation skills: capacity to make oral presentations



4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
Feedstuffs classification	6	-	6
Feedstuffs evaluation	-	35	35
Forages	25	20	45
Roughages	5	6	11
Protein supplements	20	-	20
Lipids supplements	10	-	10
Deleterious substances	-	35	35
Vitamins supplement	10	-	10
Minerals supplements	20	-	20
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a3	b1 to b3		d1, d5
Practical sessions		b1 to b3	c1 to c3	d2, d8
Self-Learning activities				d2, d3, d5
Distance Teaching and Learning	a1 to a3	b1 to b3	c1 to c3	d1 to d5

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-



- *Activation of office hours.
- *Discussion with them during practical session

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a3	b1 to b3		D5
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a3	b1 to b3		d1
Student activities	a1, a3			d1 to d5

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1.Essential Books:

- Animal nutrition, 7th edition, 2014, (**P. McDonald R. A. Edwards J. F. D. Greenhalgh**)
- Fundamentals of Animal Nutrition 1st ed. 2021 Edition (**Subodh Kumar Saha , Nitya Nand Pathak**)
- *Animal Nutrition Strategies and Options to Reduce the Use of Antimicrobials in Animal Production, 2021* (**J. F. Patience, D. Li**)
- *Recent Advances in Animal Nutrition and Metabolism*
Book, 2021 (**Guoyao Wu**)

8.2: Recmonded books:

Basic animal nutrition and feeding, 5th edition,2004, (**Wilson G. Pond, David B. Church, Kevin R. Pond, Patricia A. Schoknecht**)

8.3.Periodicals, Web sites,..... etc

Scientific journals

- Animal feed science journal



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- Journal of American Veterinary Medical Association.
 - Nutritional Abstract and Review
 - Veterinary Bulletin.
 - Archives of Animal Nutrition.

Web sites

- [Animal feed - Nutrition, additives supplements, processing \(feednavigator.com\)](#)
- [Animal Nutrition \(keaipublishing.com\)](#)
- [Cargill Animal Nutrition | Livestock Feed & Fish Feed | Cargill](#)

Course Coordinator

Dr. Eldoky Elsaid Nassef

Head of Department

**Prof. Dr Abdelnasser Abdellatif
baker**



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding			Intellectual Skills			Practical & Professional Skills			General & Transferable Skills				
		1	2	3	1	2	3	1	2	3	1	2	3	4	5
Feedstuff classification	6	✓					✓				✓	✓	✓	✓	✓
Feedstuff evaluation	35		✓			✓			✓		✓	✓	✓	✓	✓
Forages	45		✓	✓	✓		✓	✓			✓	✓	✓	✓	✓
Roughages	11		✓	✓	✓		✓	✓			✓	✓	✓	✓	✓
Protein supplement	20	✓	✓	✓	✓		✓				✓	✓	✓	✓	✓
Lipid supplement	10		✓		✓		✓				✓	✓	✓	✓	✓
Deleterious substances	35								✓		✓	✓	✓	✓	✓
Vitamin supplement	10			✓	✓						✓	✓	✓	✓	✓
Mineral supplement	20			✓	✓						✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number:... 154/2

Course title: Farm animal nutrition

Academic Year: : **PhD Veterinary Medicine Program**

Total teaching hours:192 h

Lectures: 96 hrs

Practical: 96hrs

2 - OVERALL AIMS OF THE COURSE:

The course aimed to provide the postgraduate students with the proper nutrition of farm animals (cow, buffalo, sheep, goats, equines and camels)

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Illustrate the proper nutrition of cows
- a2. Demonstrate the proper nutrition of buffaloe
- a3. Define the proper nutrition of sheep and goats
- a4. Identify the proper nutrition of equines and camels

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to

- b1. Combine the fitness of feeds for small and large ruminants
- b2. Compose the nutritive value of feedstuff for equines and camels
- b3. Plan to prevent the nutritional problems associated with each animal species

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Choose the suitable feeds for small and large ruminants
- c2. Determine the suitable feeds for equines and camels
- c3. Formulate a balanced ration for each animal species

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1. Work in a team
- d2 . Use computers, software and CDs for educational purposes
- d3. Communicate with others
- d4. Conduct a search in digital library
- d5. Presentation skills: capacity to make oral presentations



4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
Dairy cow nutrition	30	15	45
buffaloe nutrition	21	10	31
Sheep and goat nutrition	10	5	15
Equine nutrition	8	3	11
Camel nutrition	7	2	9
Nutritional deficiency diseases	20	10	30
Feed stuffs	-	51	51
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c3	d2, d5
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b3	c1 to c3	d1 to d5

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year



7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b3		
Practical exams			c1 to c3	d1 to d5
Oral exams	a1 to a4	b1 to b3		
Student activities	a4		d1,d2,d4	d1 to d5

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1.Essential Books:

- Fundamentals of Animal Nutrition 1st ed. 2021 Edition (Subodh Kumar Saha , Nitya Nand Pathak)
- *Animal Nutrition Strategies and Options to Reduce the Use of Antimicrobials in Animal Production, 2021* (J. F. Patience, D. Li)
- *Recent Advances in Animal Nutrition and Metabolism*Book, 2021 (Guoyao Wu)
- Principles of Animal Nutrition 1st ed. 2018 Edition (Guoyao Wu)
- Basic Animal Nutrition and Feeding, 5th Edition 2004, (Wilson G. Pond, David B. Church, Kevin R. Pond, Patricia A. Schoknecht)
- Nutrient Requirements of Domestic Animals published by *National Research Council (NRC)*.

8-2: Recmended books:

- Basic animal nutrition and feeding, 5th edition,2004, (Wilson G. Pond, David B. Church, Kevin R. Pond, Patricia A. Schoknecht)

8.4.Periodicals, Web sites,..... etc

- Animal feed science journal
- Small ruminant research journal
- Dairy science journal



- Nutritional Abstract and Review
- Veterinary Bulletin.

Web sites:

- [Animal feed - Nutrition, additives supplements, processing \(feednavigator.com\)](http://feednavigator.com)
- [Animal Nutrition \(keaipublishing.com\)](http://keaipublishing.com)
- [Cargill Animal Nutrition | Livestock Feed & Fish Feed | Cargill](http://Cargill Animal Nutrition)

Course Coordinator

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Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding				Intellectual Skills			Practical & Professional Skills			General & Transferable Skills				
		1	2	3	4	1	2	3	1	2	3	1	2	3	4	5
Dairy cow nutrition	45	✓				✓					✓	✓	✓	✓	✓	✓
Buffaloe nutrition	31		✓			✓					✓	✓	✓	✓	✓	✓
Sheep and goat nutrition	15			✓		✓					✓	✓	✓	✓	✓	✓
Equine nutrition	11				✓		✓				✓	✓	✓	✓	✓	✓
Camel nutrition	9				✓		✓				✓	✓	✓	✓	✓	✓
Nutritional problems	30	✓	✓	✓	✓			✓			✓	✓	✓	✓	✓	✓
Feedstuffs	51					✓	✓		✓	✓		✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number:... 155/2

Course title: poultry and rabbit nutrition

Academic Year: : **PhD Veterinary Medicine Program**

Total teaching hours:192 h

Lectures: 96 hrs

Practical: 96hrs

2 - OVERALL AIMS OF THE COURSE:

The course aimed to provide the postgraduate students with the proper nutrition of poultry and rabbit.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-a: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Define nutrients required for poultry
- a2. Recognize nutrients required for rabbit
- a3. Describe the proper use of feeds to achieve maximum animal production

3-b: INTELLECTUAL SKILLS:

By the end of the course, students should be able to

- b1. Compose the nutritive value of feeds for poultry
- b2. Interpret the fitness of feeds for rabbit
- b3. Plan to prevent the nutritional problems associated with poultry and rabbit

3-c: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Demonstrate the available feedstuff used for poultry and rabbit
- c2. Determine the appropriate method for ration formulation in poultry and rabbit
- c3. Outline the nutritional disorders in poultry and rabbit

3-d: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1. Work in a team
- d2 . Use computers, software and CDs for educational purposes
- d3. Communicate with others
- d4. Conduct a search in digital library
- d5. Presentation skills: capacity to make oral presentations

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
Broiler nutrition	20	20	40



Layer nutrition	10	10	20
Breeder nutrition	10	10	20
Duck nutrition	10	10	20
Turkey nutrition	10	10	20
Quails nutrition	10	10	20
Pigeon nutrition	10	10	20
Rabbit nutrition	10	10	20
Nutritional deficiency diseases	6	6	12
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about poultry

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures	a1 to a3	b1 to b3		d1,d2, d5
Practical sessions		b1 to b3	c1 to c3	d2, d3,d4
Self-Learning activities				d2, d4, d5
Distance Teaching and Learning	a1 to a3	b1 to b3	c1 to c3	d1 to d5

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10



7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a3	b1 to b3		d1,d2,d4
Practical exams		b1 to b3	c1 to c3	d2, d3,d5
Oral exams	a1 to a3	b1 to b3		d1
Student activities	a1 to a3			d1 to d5

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1:Essential Books

- **Future Challenges in Rabbit Nutrition,2021 (Francesco Gai, Laura Gasco, Angela Trocino)**
- **Applied Nutrition: Livestock, Poultry, Rabbits and Laboratory Animals,2019 (D.V.REDDY)**
- **Chicken Nutrition: A Guide for Nutritionists and Poultry professionals ,2013 (Rick Kleyn)**
- **Commercial Poultry Nutrition, third edition, 2009 (S. Leeson J. D. Summers)**
- **Poultry Nutrition and Feeding,2005 (E. H. Foster, A. Atencio, J. P. Driver, Gene M. Pesti, R. I. Bakalli)**

8.2: Recommended books

- **Nutrient Requirements of Poultry: 1994**

8.3.Periodicals, Web sites,..... etc

Scientific journals:

- **Poultry science journal**
- **Journal of applied poultry research.**
- **British poultry science**
- **World's poultry science**
- **Poultry science oxford.**

1. <https://www.thepoultrysite.com/articles/a-simple-guide-to-the-nutritional-requirements-of-poultry>
2. <https://www.cambridge.org/core/journals/world-s-poultry-science-journal>
3. <https://www.thepoultrysite.com/articles/a-simple-guide-to-the-nutritional-requirements-of-poultry>
4. [https://www.academia.edu/12404309/POULTRY NUTRITION AND FEEDING](https://www.academia.edu/12404309/POULTRY_NUTRITION_AND_FEEDING)
<https://naldc.nal.usda.gov/download/IND43893691/PDF>

Course Coordinator

Dr. Eldoky Elsaid Nassef

Head of Department

**Prof. Dr Abdelnasser Abdellatif
baker**



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding			Intellectual Skills			Practical & Professional Skills			General & Transferable Skills				
		1	2	3	1	2	3	1	2	3	1	2	3	4	5
1. Broiler nutrition	40	✓		✓	✓			✓	✓		✓	✓	✓	✓	✓
2. Layer nutrition	20	✓		✓	✓			✓	✓		✓	✓	✓	✓	✓
3. Breeder nutrition	20	✓		✓	✓			✓	✓		✓	✓	✓	✓	✓
4. Duck nutrition	20	✓		✓	✓			✓	✓		✓	✓	✓	✓	✓
5. Turkey nutrition	20	✓		✓	✓			✓	✓		✓	✓	✓	✓	✓
6. Quails nutrition	20	✓		✓	✓			✓	✓		✓	✓	✓	✓	✓
7. Pigeon nutrition	20	✓		✓	✓			✓	✓		✓	✓	✓	✓	✓
8. Rabbit nutrition	20	✓	✓	✓		✓		✓	✓		✓	✓	✓	✓	✓
9. Nutritional deficiency disease	15						✓			✓	✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: ... 157/2

Course title: lab and pet animal nutrition

Academic Year: : PhD Veterinary Medicine Program

Total teaching hours: 144 h

Lectures: 48 hrs

Practical: 96hrs

2 - OVERALL AIMS OF THE COURSE:

The course aimed to provide the postgraduate students with the proper nutrition of Lab and pet animals (dog and cat).

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-a: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Define the nutrient required for Lab animals
- a2. Recognize nutrients required for dog and cat
- a3. Customize the nutritional disorders in pet and lab animals

3-b: INTELLECTUAL SKILLS:

By the end of the course, students should be able to

- b1. Compose the nutritive value of feeds for Lab animals
- b2. Interpret the fitness of feeds for dog and cat
- b3. Plan to prevent the nutritional problems associated with Lab and pet animals

3-c: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Outline the available feeds used for pet and lab animals
- c2. Determine the appropriate method for feeding lab animal
- c3. Demonstrate the suitable method for feeding pet animal

3-d: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1. Work in a team
- d2. Use computers, software and CDs for educational purposes
- d3. Communicate with others
- d4. Conduct a search in digital library
- d5. Presentation skills: capacity to make oral presentations

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
Lab animal nutrition	10	20	30



Dog nutrition	10	20	30
Cat nutrition	10	20	30
Nutritional deficiency diseases	10	20	30
Feedstuff	8	16	24
Total	48	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures *	a1 to a3	b1 to b3		d1 to, d5
Practical sessions		b1 to b3	c1 to c3	D1 to d5
Self-Learning activities				D1to d5
Distance Teaching and Learning	a1 to a3	b1 to b3	c1 to c3	d1 to d5

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a3	b1 to b3		
Practical exams			c1 to c3	d1 to, d5
Oral exams	a1 to a3	b1 to b3		d1 to d5
Student activities	a1 to a3			d1 to d5

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills;



8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Fundamentals of Animal Nutrition 1st ed. 2021 Edition (**Subodh Kumar Saha , Nitya Nand Pathak**)
- *Pet Nutrition Guide: The Nature of Animal Feeding*,2021(**Gregory Lisa H.**)
- Nutrient Requirements of Domestic Animals published by ***National Research Council (NRC)***.
- Applied Nutrition (*Livestock, Poultry, Human, Pet, Rabbit and Laboratory Animal Nutrition*),2001,(***Reddy***)

8-2: Recmended books:

- Basic animal nutrition and feeding, 5th edition,2004, (Wilson G. Pond, David B. Church, Kevin R. Pond, Patricia A. Schoknecht)

8.4.Periodicals, Web sites,..... etc

- Animal feed science journal
- Journal of American Veterinary Medical Association.
- Nutritional Abstract and Review
- Veterinary Bulletin.
- Archives of Animal Nutrition.

Scientific websites

- -Animal feed - Nutrition, additives supplements, processing (feednavigator.com)
- Animal Nutrition (keaipublishing.com)
- -Cargill Animal Nutrition | Livestock Feed & Fish Feed | Cargill

Course Coordinator

Dr. Eldoky Elsaid Nassef

Head of Department

Prof. Dr Abdelnasser Abdellatif



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding			Intellectual Skills			Practical & Professional Skills			General & Transferable Skills				
		1	2	3	1	2	3	1	2	3	1	2	3	4	5
Lab animal nutrition	30	✓			✓					✓	✓	✓	✓	✓	✓
Dog nutrition	30		✓			✓				✓	✓	✓	✓	✓	✓
Cat nutrition	30		✓			✓				✓	✓	✓	✓	✓	✓
Nutritional deficiency diseases	30			✓			✓				✓	✓	✓	✓	✓
Feedstuffs	24				✓	✓		✓	✓		✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: ... 158/2

Course title: : Feed Additives

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 144 h

Lectures: 48 hrs

Practical: 96hrs

2 - OVERALL AIMS OF THE COURSE:

To provide graduate with basic knowledge concerning Feed Additives (definition, classification, functions, mode of action, economic importance, dose for safe use)

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-a: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1- Know the general functions of feed additives
- a2- Classify the feed additives
- a3- Determine the mode of action and dose of feed additives

3-b: INTELLECTUAL SKILLS:

By the end of the course, students should be able to

- b1. Compose the purpose of feed additives
- b2. Interpret the fitness of feed additives
- b3. Plan to maximize animal production

3-c: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Show the economic benefit of feed additives
- c2. Use feed additives with correct dose
- c3. Achieve the required purpose of feed additives

3-d: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1. Work in a team
- D2 . Use computers, software and CDs for educational purposes
- D3. Communicate with others
- D4. Conduct a search in digital library
- D5. Presentation skills: capacity to make oral presentations

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total

Feed additives classification	10	20	30
Feed efficiency	10	20	30
Economic benefits of feed additives	10	20	30
Mode of action and dose of feed additives	10	20	30
Uses of feed additives	8	16	24
Total	48	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a3	b1 to b3		d1, d5
Practical sessions		b1 to b3	c1 to c3	d2, d5
Self-Learning activities				d2, d3, d5
Distance Teaching and Learning	a1 to a3	b1 to b3	c1 to c3	d1 to d5

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a3	b1 to b3		d5
Practical exams			c1 to c3	d2, d5
Oral exams	a1 to a3	b1 to b3		d1
Student activities	a1 to a3			d1 to d5



8. LEARNING AND REFERENCE MATERIALS:

8.1: Essential books:

- Animal nutrition, 7th edition, 2014, (P. McDonald R. A. Edwards J. F. D. Greenhalgh)
- Animal feed additives, 2015, (Singh, Pankaj)
- Fundamentals of Animal Nutrition 1st ed. 2021 Edition (Subodh Kumar Saha , Nitya Nand Pathak)

8.2: Recommended books:

Basic animal nutrition and feeding, 5th edition, 2004, (Wilson G. Pond, David B. Church, Kevin R. Pond, Patricia A. Schoknecht)

8.3. Periodicals, Web sites,..... etc

Scientific journals

- Animal feed science journal
- Journal of American Veterinary Medical Association.
- Nutritional Abstract and Review
- Veterinary Bulletin.
- Archives of Animal Nutrition.

Web sites

- Animal feed - Nutrition, additives supplements, processing (feednavigator.com)
- Animal Nutrition (keaipublishing.com)

Cargill Animal Nutrition | Livestock Feed & Fish Feed | Cargill

Course Coordinator

Dr. Eldoky Elsaid Nassef

Head of Department

**Prof. Dr Abdelnasser Abdellatif
baker**



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding			Intellectual Skills			Practical & Professional Skills			General & Transferable Skills				
		1	2	3	1	2	3	1	2	3	1	2	3	4	5
Feed additives classification	30		✓								✓	✓	✓	✓	✓
Feed efficiency	30			✓		✓				✓	✓	✓	✓		✓
Economic benefits of feed additives	30	✓			✓			✓			✓	✓	✓	✓	✓
Mode of action and dose of feed additives	30			✓	✓			✓			✓	✓	✓	✓	✓
Uses of feed additives	24	✓					✓			✓	✓	✓	✓		✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: ... 159/2

Course title: : Feedstuffs analyses

Academic Year: : **PhD Veterinary Medicine Program**

Total teaching hours: 192 hr

Lectures: 96 hr

Practical: 96 hr

2 - OVERALL AIMS OF THE COURSE:

The course aimed to provide the postgraduate students with the chemical analysis of feedstuffs and their nutritive value.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-a: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Define principles of chemical analysis of feedstuff
- a2. Recognize the chemical composition of feedstuff
- a3. Illustrate the evaluation of feedstuffs after analysis

3-b: INTELLECTUAL SKILLS:

By the end of the course, students should be able to

- b1. Combine the fitness of feedstuffs for animal feeding
- b2. Compose the nutritive value of feeds
- b3. Interpret the chemical composition of feeds

3-c: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Manipulate sampling, preparation and preservation of samples
- c2. Show the problems of feed adulteration
- c3. Apply different methods of analysis of feedstuff

3-d: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1. Work in a team
- d2. Use computers, software and CDs for educational purposes
- d3. Communicate with others
- d4. Conduct a search in digital library
- d5. Presentation skills: capacity to make oral presentation

**4 COURSE CONTENTS:**

Topic	No. of hours		
	Lectures	Practical	Total
Principle of feed analysis	6	6	12
Determination of crude protein	15	15	30
Determination of crude fat	15	15	30
Determination of fiber	15	15	30
Determination of minerals	15	15	30
Calculation of NFC	15	15	30
Determination of mycotoxins	15	15	30
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a3	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c3	d2, d5
Self-Learning activities				d2, d3, d5
Distance Teaching and Learning	a1 to a3	b1 to b3	c1 to c3	d1 to d5

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities



7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a3	b1 to b3		d5
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a3	b1 to b3		d1
Student activities	a1, a3			d1 to d5

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential Books:

- Animal nutrition, 7th edition, 2014, (**P. McDonald R. A. Edwards J. F. D. Greenhalgh**)
- Fundamentals of Animal Nutrition 1st ed. 2021 Edition (**Subodh Kumar Saha , Nitya Nand Pathak**)
- *Animal Nutrition Strategies and Options to Reduce the Use of Antimicrobials in Animal Production, 2021* (**J. F. Patience, D. Li**)
- *Recent Advances in Animal Nutrition and Metabolism*

Book, 2021 (**Guoyao Wu**)

8.2: Recmended books:

Basic animal nutrition and feeding, 5th edition, 2004, (**Wilson G. Pond, David B. Church, Kevin R. Pond, Patricia A. Schoknecht**)

8.3. Periodicals, Web sites,..... etc

Scientific journals

- Animal feed science journal
- Journal of American Veterinary Medical Association.
- Nutritional Abstract and Review
- Veterinary Bulletin.



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Web sites

- Animal feed - Nutrition, additives supplements, processing (feednavigator.com)
- Animal Nutrition (keaipublishing.com)
- Cargill Animal Nutrition | Livestock Feed & Fish Feed | Cargill

Course Coordinator

Dr. Eldoky Elsaid Nassef

Head of Department

**Prof. Dr Abdelnasser Abdellatif
baker**



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding			Intellectual Skills			Practical & Professional Skills			General & Transferable Skills				
		1	2	3	1	2	3	1	2	3	1	2	3	4	5
Principle of feed analysis	12	✓	✓		✓						✓	✓	✓	✓	✓
Determination of crude protein	30			✓		✓	✓	✓			✓	✓	✓	✓	✓
Determination of crude fat	30			✓			✓	✓	✓		✓	✓	✓	✓	✓
Determination of fiber	30			✓			✓	✓			✓	✓	✓	✓	✓
Determination of minerals	30			✓		✓	✓			✓	✓	✓	✓	✓	✓
Calculation of NFC	30			✓					✓		✓	✓	✓	✓	✓
Determination of mycotoxins	30			✓	✓					✓	✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number:... 160/2

Course title: : Feeds wholesomeness and Feeds factories

Academic Year: : **PhD Veterinary Medicine Program**

Total teaching hours:192 h

Lectures: 96 hrs

Practical: 96hrs

2 - OVERALL AIMS OF THE COURSE:

To provide students with basic knowledge concerning the feedstuffs wholesomeness, feed factories hygiene evaluation

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-a: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Define feed quality
- a2. Recognize the processing of feedstuffs
- a3. Illustrate the proper manufacturing of the feed

3-b: INTELLECTUAL SKILLS:

By the end of the course, students should be able to

- b1.. Combine the quality of feedstuffs for animal feeding
- b2. Compose the various feeds processing
- b3. Interpret the fitness of feeds for manufacturing

3-c: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Perform and practices the feedstuffs investigation
- c2. Show the problems of deleterious substances
- c3. Evaluate the complete feed manufacturing

3-d: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1. Work in a team
- d2 . Use computers, software and CDs for educational purposes
- d3. Communicate with others
- d4. Conduct a search in digital library
- d5. Presentation skills: capacity to make oral presentations

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
Physical evaluation of feedstuffs	15	15	30



Processing of feedstuffs	15	15	30
Manufacturing of feeds	25	25	50
Rancidity	15	15	30
Mycotoxins	26	26	52
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a3	b1 to b3		d1, d5
Practical sessions		b1 to b3	c1 to c3	d2, d5
Self-Learning activities				d2, d3, d5
Distance Teaching and Learning	a1 to a3	b1 to b3	c1 to c3	d1 to d5

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a3	b1 to b3		d5
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a3	b1 to b3		d1
Student	a1, a3			d1 to d5



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activities KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential Books:

- Animal nutrition, 7th edition, 2014, (P. McDonald R. A. Edwards J. F. D. Greenhalgh)
- Fundamentals of Animal Nutrition 1st ed. 2021 Edition (Subodh Kumar Saha , Nitya Nand Pathak)
- *Animal Nutrition Strategies and Options to Reduce the Use of Antimicrobials in Animal Production, 2021* (J. F. Patience, D. Li)
- *Recent Advances in Animal Nutrition and Metabolism Book, 2021* (Guoyao Wu)

8.2: Recmended books:

Basic animal nutrition and feeding, 5th edition, 2004, (Wilson G. Pond, David B. Church, Kevin R. Pond, Patricia A. Schoknecht)

8.3. Periodicals, Web sites,..... etc

Scientific journals

- Animal feed science journal
- Journal of American Veterinary Medical Association.
- Nutritional Abstract and Review
- Veterinary Bulletin.
- Archives of Animal Nutrition.

Web sites

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Course Coordinator

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Head of Department

Prof. Dr Abdelnasser Abdellatif



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding			Intellectual Skills			Practical & Professional Skills			General & Transferable Skills				
		1	2	3	1	2	3	1	2	3	1	2	3	4	5
Physical evaluation of feedstuffs	30	✓			✓			✓			✓	✓	✓	✓	✓
Processing of feedstuffs	30		✓			✓					✓	✓	✓	✓	✓
Manufacturing of feeds	50			✓			✓			✓	✓	✓	✓	✓	✓
Rancidity	30	✓			✓				✓		✓	✓	✓	✓	✓
Mycotoxins	52	✓			✓				✓		✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number:... 161/2

Course title: Clinical nutrition and nutritional deficiency diseases

Academic Year: : **PhD Veterinary Medicine Program**

Total teaching hours:192 h

Lectures: 96 hrs

Practical: 96hrs

2 - OVERALL AIMS OF THE COURSE:

The course aimed to provide the postgraduate students with the clinical nutritional science of dairy cattle and nutritional deficiency diseases.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-a: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Illustrate the proper nutrition of early dry cows
- a2. Determine the proper nutrition of close up cow
- a3. Define the proper nutrition of lactating cow

3-b: INTELLECTUAL SKILLS:

By the end of the course, students should be able to

- b1. Combine the fitness of feeds for dairy cow.
- b2. Compose the nutritive value of feedstuff for close up cow
- b3. Plan to prevent the nutritional problems of dairy cow

3- c: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Demonstrate suitable feeds for dairy cow
- c2. Identify and evaluate the total mixed ration used in dairy cows
- c3. Perform the best and reliable method of ration formulation

3- d: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1. Work in a team
- d2 . Use computers, software and CDs for educational purposes
- d3. Communicate with others
- d4. Conduct a search in digital library
- d5. Presentation skills: capacity to make oral presentations

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
Early dry cow nutrition	30	10	40



Close up cow nutrition	21	15	36
Early lactating cow nutrition	15	5	20
Mid-late lactating cow nutrition	10	5	15
Nutritional deficiency diseases	20	10	30
Feedstuffs	-	51	51
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a3	b1 to b3		d1 to d5
Practical sessions		b1 to b3	c1 to c3	d1 to d5
Self-Learning activities				d1 to d5
Distance Teaching and Learning	a1 to a3	b1 to b3	c1 to c3	d1 to d5

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a3	b1 to b3		



Practical exams	Faculty of Veterinary Medicine		c1 to c3	d1 to d5
Oral exams	a1 to a3	b1 to b3		d1 to d5
Student activities	a1 to, a3			d1 to d5

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential Books:

- Animal nutrition, 7th edition, 2014, (**P. McDonald R. A. Edwards J. F. D. Greenhalgh**)
- Fundamentals of Animal Nutrition 1st ed. 2021 Edition (**Subodh Kumar Saha , Nitya Nand Pathak**)
- *Animal Nutrition Strategies and Options to Reduce the Use of Antimicrobials in Animal Production, 2021* (**J. F. Patience, D. Li**)
- *Recent Advances in Animal Nutrition and Metabolism Book, 2021* (**Guoyao Wu**)

8.2: Recmended books:

Basic animal nutrition and feeding, 5th edition, 2004, (**Wilson G. Pond, David B. Church, Kevin R. Pond, Patricia A. Schoknecht**)

8.3. Periodicals, Web sites,..... etc

Scientific journals

- Animal feed science journal
- Journal of American Veterinary Medical Association.
- Nutritional Abstract and Review
- Veterinary Bulletin.
- Archives of Animal Nutrition.

Web sites

- Animal feed - Nutrition, additives supplements, processing (feednavigator.com)
- Animal Nutrition (keaipublishing.com)
- Cargill Animal Nutrition | Livestock Feed & Fish Feed | Cargill

Course Coordinator

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baker**



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding			Intellectual Skills			Practical & Professional Skills			General & Transferable Skills				
		1	2	3	1	2	3	1	2	3	1	2	3	4	5
Early dry cow nutrition	40	✓						✓			✓	✓	✓	✓	✓
Close up cow nutrition	36		✓			✓		✓			✓	✓	✓	✓	✓
Early lactating cow nutrition	20			✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
Mid-late lactating cow nutrition	15			✓	✓			✓			✓	✓	✓	✓	✓
Nutritional problems	30	✓	✓	✓			✓			✓	✓	✓	✓	✓	✓
Feedstuffs	51				✓	✓			✓		✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number:... 162/2

Course title: Fish nutrition

Academic Year: PhD Veterinary Medicine Program

Total teaching hours:192 h

Lectures: 96 hrs

Practical: 96hrs

2 - OVERALL AIMS OF THE COURSE:

The course aimed to provide the postgraduate students with the proper nutrition of fish. Also the feedstuffs that are used in fish diets. The course provides students how to increase feed efficiency and profitability.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-a: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Define the nutrient required for fish
- a2. Recognize the metabolism of nutrients in fish
- a3. Describe the proper use of feeds for fish
- a4. Identify feed efficiency

3-b: INTELLECTUAL SKILLS:

By the end of the course, students should be able

- b1. Compose the nutritive value of feeds used for fish
- b2. Interpret the fitness of feeds for fish
- b3. Plan to prevent the nutritional problems of fish
- b4. Analyze feed cost and profitability

3- c: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Apply the appropriate method for ration formulation in fish
- c2. Demonstrate the available feedstuff used in fish
- c3. Organize the methods of feed manufacturing
- c4. Show the problems of feed preparation

3- d: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1. Work in a team
- d2 . Use computers, software and CDs for educational purposes
- d3. Communicate with others
- d4. Conduct a search in digital library
- d5. Presentation skills: capacity to make oral presentations

Topic	No. of hours		
	Lectures	Practical	Total
Energy requirements for fish	6	3	9
Carbohydrates nutrition for fish	15	5	20
Protein nutrition for fish	15	10	25
Lipids nutrition for fish	15	10	25
Vitamins nutrition for fish	10	5	15
Minerals nutrition for fish	15	5	20
Nutritional problems of fish	10	5	15
Feedstuffs and feed efficiency	10	5	15
Total	96	48	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about fish

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures	a1 to a4	b1 to b4		d1,d2, d5
Practical sessions		b1 to b4	c1 to c4	d2, d3,d4
Self-Learning activities				d2, d4, d5
Distance Teaching and Learning	a1 to a4	b1 to b4	c1 to c4	d1 to d5

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.



6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b4		d1,d2,d4
Practical exams		b1 to b4	c1 to c4	d2, d3,d5
Oral exams	a1 to a4	b1 to b4		d1
Student activities	a1 to a4			d1 to d5

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1:Essential Books

- Fish nutrition 4th edition 2021,(Ronald W. Hardy, Sadasivam J. Kaushik)
- Fish nutrition and feed technology,2018 (Neera Jain, Priti Mishra)
- Nutrition and feeding of fish and crustaceans, 2001(Jean Guillaume, Robert Metailler)
- Nutrition and feeding of fish, 1998 (Tom Lovell)
- Nutrient Requirements of fish: 2011

8.2.Periodicals, Web sites,..... etc

Scientific journals:

- Aquaculture
- Aquaculture Nutrition
- Fish nutrition.



Kafrelsheikh University

Faculty of Veterinary Medicine

Journal of aquaculture feed science and nutrition



- **Fish and fisheries journal**
- **Journal of fisheries and aquatic science.**

Web sites:

- **Animal feed - Nutrition, additives supplements, processing(feednavigator.com)**
- **Animal Nutrition (keaipublishing.com)**
- **Cargill Animal Nutrition | Livestock Feed & Fish Feed | Cargill**

Course Coordinator

Head of Department

Dr. Eldoky Elsaïd Nassef

**Prof. Dr Abdelnasser Abdellatif
baker**

Program Specification for PhD Degree (2021-2022)

**Program Title: Doctor of Philosophy
(Hygienic control of Meat and Meat
Products)**

Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Food Control

Program Specification for PhD Degree
(2021-2022)

A- Administrative information:

- 1- Awarding Body:** Kafrelsheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Food Control
- 4- Program Title:** PhD Degree in Veterinary Medicine (Hygienic control of Meat and meat products)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years
- 7- Program Coordinator:** Prof. Dr. Nder yehia moustafa
- 8- External evaluator:** Prof. Dr.
- 9- Date of revision:**
- 10- Date of approval:**

B- Professional information:

1- Aim of the Program:

- Allow graduate to create new knowledge and understanding in meat and meat products hygiene and control through the process of research and inquiry.



-
- Enable graduate to achieve competency in modern technology in meat and meat products hygiene and control
 - Provide the graduate with the opportunity to develop communication skills, recent techniques and tools in the field of in meat and meat products hygiene and control and experience of scientific research skills.
 - Giving the graduate the ability to be creative to advance in meat and meat products hygiene and control through new scientific research.
 - Enable graduate to achieve capability in modern technology to develop practical research project.
 - Demonstrate an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and present their own research data for the improvement of the in meat and meat products hygiene and control.
 - Have the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
 - Exhibit awareness about current in meat and meat products hygiene and control problems and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
 - Guarantee of veterinary professional practice regulations and ethics in the field of in meat and meat products hygiene and control.

2- Academic standards:

**Academic reference standards (ARS) adopted by the faculty committee No(1)
14/9/2014**

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Use the specialized basics and methodologies of scientific research, to get a wide range of professional skills in the meat hygiene field.
- 2) Make continuous work for the addition of advanced knowledge in microbiology and chemistry of meat, fish, and their products.
- 3) Apply advanced analytical methods for examination of meat, fish, and their products; with compare them with conventional methods.
- 4) Integrate the data collected from food poisoning outbreaks which may include the symptoms, the nature of food and the incubation period with related laboratory findings to reach the correct diagnosis of the causative agent of food poisoning.
- 5) Show deep awareness with the ongoing problems associated with meat products defects and modern theories to solve these problems whether the defect was due to manufacturing error or microbial agent.
- 6) Identify the different sources of contamination equipment and utensils used in meat technology and know different techniques for efficient cleaning and sanitation of these items to be professionally able to make efficient cleaning and sanitation program.
- 7) Master of a wide range of professional skills in examination of meat and meat products to determine their chemical constituent and detect their adulteration in relation to the national and international standards.
- 8) Acquire trends towards developing modern methods and tools serving meat industry such as HACCP and ISO.
- 9) Use appropriate technological means for microbiological and chemical analysis of meat, meat products, fish and its products as chromatography, spectroscopy, and PCR techniques.
- 10) Communicate effectively with persons sharing in food chain from the worker to the head of the department as everyone has an effective role in this cycle and lead work team.
- 11) Make decision in different professional situations especially under field conditions to deal with food poisoning outbreaks.
- 12) Use of the available resources efficiently in the development of new techniques and work to find new resources.
- 13) Be aware with his role in development of the society and community

preservation by conserving public health and providing high quality healthy meat and meat products.

- 14) Act with integrity, credibility and according to the rules of profession.
- 15) Realize the importance of self and life-long learning and progress with transferring of his knowledge and experience to others.

4-Programme Intended Learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

- a.1. Recognize and understand the modern food analysis techniques for the presence of chemical residues and microbial agents.
- a.2. Know and understand principles of food microbiology, sources of contamination, and forms of food poisoning.
- a.3. Realize the principles and ethics of scientific research methods in the field of meat hygiene and control.
- a.4. Study with the legal and professional ethics in examination of meat and its products and dealing with problems in meat plants.
- a.5. Identify principles and basics of quality assurance and hazard analysis in production of meat and its products.
- a.6. Describe the effect of meat wastes on environment and methods of environmental protection.
- a.7. Know and understand the different procedures and factors affect different cleaning and disinfecting agent efficiency in slaughter and meat processing plant.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1. Evaluate scientific information regarding microbiological and chemical examination of meat and its products.
- b.2. Solve problems in meat industry through application of HACCP system.
- b.3. Design a scientific research in the field of meat microbiology and hygiene.



- b.4.** Prepare scientific article in meat hygiene and control for publishing.
- b.5.** Evaluate risks arise unhygienic measures in meat and its products.
- b.6.** Plan for improvement of professional performance in detection bacterial defects and adulteration of meat and its products.
- b.7.** Decide how to control and prevent hazards in meat industry.
- b.8.** Select new methods in microbial, physical and chemical analysis of meat and its products.
- b.9.** Ensure open scientific discussion in the field of meat hygiene and control.

c. Practical and professional skills:

By the end of this program the graduate should be able to:

- c.1.** Apply recent professional skills in examination and processing of meat and its products.
- c.2.** Write and judge professional reports after each type of meat analysis.
- c.3.** Evaluate modern techniques of meat analysis (physical, chemical, and microbial) by comparing them with conventional methods.
- c.4.** Use different modern techniques and laboratory instruments to serve the professional practice.
- c.5.** Improve professional practice and develop performance of all hazard analysis and critical (HACCP) team members.
- c.6.** Conduct a professional sampling for all types of meat and meat products evaluation and analysis.

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1.** Communicate effectively with all dealing with meat chain.
- d.2.** Utilize information technology to serve professional practice.
- d.3.** Teach others and evaluate their performance.
- d.4.** Asses himself and life-long learning.

- d.5. Lead a team under different professional circumstances.
- d.6. Use different ways to obtain knowledge and information.
- d.7. Manage scientific meetings with the ability to manage time efficiently.

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, site visits and seminars.

6-Assessments:

The program depends on different assessment ways:

a. Course assessment:

1. Final written exam
 - To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
2. Practical exam
 - To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
3. Oral exam
 - To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.

b. Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work

c. PhD Thesis assessment

- Annual reports adopted by the Faculty.
- Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
- Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and



graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1,2; b1,2,7,8;
Oral	a1,2; b1,2,7,8;
Practical	c1-6
Qualifying Exam	a1-7; b1-9
Thesis	a4-7; b1-9; c1-6; d1-7

7. Program structure

a. Program duration (years):

PhD degree duration at least 3 years and it should not exceed a period of 5 years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law (article 18).

b. Program courses:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council should include at least 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. These courses must not be previously studied in the Mater program. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c- Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d- Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion .

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Hygienic control of Meat and meat product include:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Hygienic control of Meat and meat product	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2



	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles,	1	1



		heart and blood vessels		
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2



Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2



nutrition	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
174/2	74-- Fish pathology	2	2	



Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
		81- Advanced immunology	2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- Aeneral pharmacology (2	2



		advanced)		
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1
Hygiene and control of milk and dairy products	208/2	108- Hygienic control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2



	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/2	134- Stress diseases during animals transport.		
Infectious diseases	235/2	135- Infectious diseases of cattle	2	2
	236/2	136- Infectious diseases of sheep and goat	2	2
	237/2	137- Infectious diseases camel	2	2
	238/2	138 Infectious diseases of equine	2	2
	239/2	139- Infectious diseases of pet animals	2	2
	240/2	140- Infectious diseases lab animals	1	2
	241/2	141- Infectious diseases of udder and newly born animals	2	2
	242/2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special	2	2



		specific courses in ruminants- equine- pet animals)		
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2



	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in poultry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2



	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-



	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (Hygienic control of Meat and meat product) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medical science lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.
3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected

courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.

5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.
7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.
8. The applicant should submit a seminar (Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).
9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met: Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.
10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and incase of thesis approval by the department council, the applicant will submit 6 copies for the

faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.

11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards bit to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.

12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:



- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade		Percentage
Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes



Code	Evaluator	Tools	Sample
I	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

Program Co-ordinator:

Prof. Dr. Nader Yehia Moustafa

Head of Department:

Prof. Dr. Nader Yehia Moustafa

Matching program ILOs with ARS - Matrix

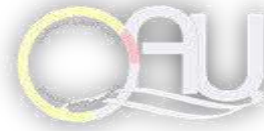
Program ILOs	ARS																																		
	K&U (a)							I.S. (b)									P.P. (c)					G.T. (d)													
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	1	2	3	4	5	6	7						
K&U	1	2	3	4	5	6	7																												
I.S.								1	2	3	4	5	6	7	8	9																			
P.P.																	1	2	3	4	5	6													
G.T.																													1	2	3	4	5	6	7



Program Specification Matrix

PhD in Veterinary Medicine (Hygienic Control of Meat and Meat products)

Courses		Total Contact hours/course	No. of hours / week			K.U (a)							I.S (b)							P.P (c)						G.T (d)									
Cod e	Nam e		Lect .	Lab .	Tota l	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	1	2	3	4	5	6	7	
Predocctoral courses (10-12 theoretical and practical hours weekly for 12 months)						x	x						x	x	x								x	x	x				x	x	x	x	x	x	x
Qualification exam								x	x	x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Thesis								x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Food Control



ARS for PhD in Veterinary Medical Sciences (Hygienic Control of Meat and Meat products)

1) Graduate attributes

The graduate should have the ability for:

- 1) Mastering the basics and methodologies in Meat Hygiene and Control for better dealing with food borne problems professionally.
- 2) Performing continuous effort to add knowledge about detection of causes and control meat spoilage.
- 3) Analysis of different growth requirements of microorganisms to prevent their growth and multiplication in food.
- 4) Integrating data collected from gross examination with microbiological findings to reach a perfect diagnosis.
- 5) Showing deep awareness with the ongoing food borne illness and modern theories in keeping the meat byproducts healthy and fit for consumption.
- 6) Identifying the main causes of microbial food poisoning and suggesting the appropriate methods of protection.
- 7) Mastering of a wide range of professional skills in microbiology lab.
- 8) Acquiring trends towards developing modern methods and tools in detection of meat adulteration.
- 9) Using appropriate technological means including molecular biology to serve professional practice.
- 10) Communicating effectively with colleagues and students and leading work team through professional scale.
- 11) Making decision about fitness of meat for consumption depending upon different lesions in the carcass.
- 12) Using of the available resources efficiently in the development of new techniques and work to find new resources.
- 13) Being aware with his role in society development and community preservation.
- 14) Acting with integrity, credibility and according to the rules of profession.



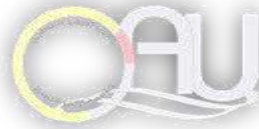
15) Realizing the importance of self and life-long learning and progress.

A) Knowledge and understanding

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Basics, theories and recent concepts in microbiology and chemistry of meat and its products	Recent theories, principles and knowledge in the field of specialization and related areas
2)	The ethics and basics and methodologies of scientific research in the field of meat hygiene and control.	Basics, methodologies and ethics of scientific research and its different tools
3)	The legal and professional ethics in examination of meat and its products and dealing with problems in meat plants.	Legal and ethical principles of professional practice in the area of specialization
4)	The principles and basics of quality assurance in production of meat and its products by application of HACCP	Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Awareness with the effect of meat wastes on environment and the professional practice impacts on the development and protection of society and environment.	Awareness with the effect of professional practice on the environment and methods of its maintain and development

B) Intellectual skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analysis and interpret scientific data concerning microbiological and chemical examination of meat and its products.	Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solving professional problems in meat industry through application of HACCP system.	Solving professional problems using available data
3)	Planning a scientific research that can give significant impact on the field of meat microbiology and hygiene.	Conducting scientific research studies that add to knowledge
4)	Writing scientific article in the field of meat hygiene and control.	Formulating scientific papers
5)	Assessment of risk arising from absence of	Risk-assessment in the field of



	hygienic measures in meat and its products.	specialization
6)	Planning for improvement of professional performance in detection bacterial defects and adulteration of meat and its products.	Planning to enhance the performance in field of specialization
7)	Making professional decisions for the ideal methods for controlling hazards in meat industry.	Making professional decisions under different professional contexts
8)	Creation of new techniques in microbiological and chemical analysis of meat and its products.	Creation and innovative in the area of specialization
9)	Leading open discussion based on scientific facts in the field of meat hygiene and control.	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills in examination and processing of meat and its products.	Mastering basic and modern professional skills in the area of specialization
2)	Writing and evaluating professional reports about meat and its products	Writing and evaluating professional reports
3)	Applying modern techniques for isolation and identification of different bacterial species in meat and its products.	Evaluating and modernizing methods and tools in the area of specialization
4)	Using different modern techniques and laboratory instruments to serve the professional practice.	Using modern technological means to serve professional practice
5)	Planning for the improvement of professional practice and developing performance of all hazard analysis and critical (HACCP) team members.	Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Communicating effectively with colleagues, other health professionals, and health related agencies.	Effective communication
2)	Using the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.	Utilizing information technology to serve development of professional practice



3)	Teach others and evaluate their progress clearly in written, electronic and oral forms	Teaching others and evaluating their performance
4)	Establishment of life-long self-learning required for continuous professional development.	Self-assessment and continuous learning
5)	Using available resources to accomplish a specific target	Using different resources to obtain knowledge and information
6)	Team working and leading a team in familiar professional contexts	Team working and leading a team in familiar professional contexts
7)	Management of time and open discussions in the professional field	Management of scientific meetings with the ability to manage time efficiently

ثالثا: برامج الدكتوراه

١ - مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستتبطا و مطورا للعلاقات البيئية بينها
٥. إظهار وعيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حولا مبتكرة لحلها
٧. إتقان نطاقا و اسعا من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تنميتها و العمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢ - المعايير القياسية العامة

المعرفة و الفهم:

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا علي الفهم و الدراية بكل من:
أ- النظريات و الأساسيات و الحديث من المعارف في مجال التخصص و المجالات ذات العلاقة

- ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
- ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
- ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
- ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و وطرق تنمية البيئة و صيانتها

المهارات الذهنية

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

- أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
- ب- حل المشاكل المتخصصة استنادا علي المعطيات المتاحة
- ج- إجراء دراسات بحثية تضيف إلى المعارف
- د- صياغة أوراق علمية



- ه- تقييم المخاطر في الممارسات المهنية
- و- التخطيط لتطوير الأداء في مجال التخصص
- ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة
- ح- الابتكار/ الإبداع
- ط- الحوار والنقاش المبني علي البراهين والأدلة

المهارات المهنية

- بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
- ب- كتابة و تقييم التقارير المهنية
- ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
- د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
- ه- التخطيط لتطوير الممارسة المهنية وتنمية أداء الآخرين

المهارات العامة و المنقلة

- بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- التواصل الفعال بأنواعه المختلفة
- ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية
- ت- تعليم الآخرين و تقييم أداءهم
- ث- التقييم الذاتي و التعلم المستمر
- ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
- ح- العمل في فريق و قيادة فرق العمل
- خ- إدارة اللقاءات العلمية و القدرة علي إدارة الوقت





Course specification (2021 / 2022)

1 - Basic Information:

Code number: 215 (2)

Course title: Slaughter animal hygiene.

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 144 hrs.

Lectures: 48 (48 weeks- 1hrs/week)

Practical/small group sessions: 96 (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

To provide student with basic knowledge and skills concerning of Slaughter animal hygiene and to gain the skills to improve animal health and control diseases

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1 Describe the main and accessory compartments of traditional and automatic abattoir.
- a2 Differentiate between the different methods for slaughter.
- a3 Explain the sanitary condition of meat and poultry carcass
- a4 Summarize the Sources of Slaughter animal diseases
- a5 Illustrate bacterial, viral, mycotic and parasitic diseases transmitted throughout meat.
- a6 Identify the harmful residues in meat.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1 judge on the quality of meat at abattoirs.
- b2 Summarize the role of Slaughter animal diseases
- b3 Design the appropriate quantitative and qualitative methodologies for diagnosis.
- b4 Weigh the important problem of Slaughter animal

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1 Solve, control and prevent Slaughter animal diseases
- c2 Show food implicated, prepare, preserve and transport samples to the laboratory for examination.
- c3 Examine and judge samples from slaughter animal diseases
- c4 Apply the HACCP system at the abattoirs, and methods to confirm its correct application

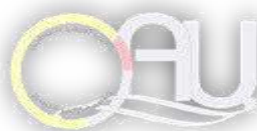
3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1 Show how to work effectively as a member of a team in the delivery of services to community.
- d2 Support effective communication with the public, colleagues and appropriate authorities.
- d3 Apply communicating skills, have access to the internet and retrieve information
- d4 Write reports in a form that is satisfactory and understandable.
- d5 Point out primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

TOPIC	Total hours (Semester)	Hours for lecture	Hours for practical
-------	---------------------------	-------------------	---------------------



Aim and introduction	2	2	-
Sources of Slaughter animal diseases	4	4	-
Bacterial diseases transmitted through meat	32	10	22
viral diseases transmitted through meat	22	6	16
Mycotic diseases transmitted through meat	20	6	14
Parasitic diseases transmitted through meat	32	12	20
Modern abattoirs	12	4	8
Enhancing the hygienic levels of Slaughter animal	10	2	8
Food safety and HACCP	10	2	8
Total	144	48	96

5- TEACHING & LEARNING METHODS:

5.1. Advanced lectures PowerPoint presentations including videos, and whiteboard Discussion and brain storming

5.2. Practical sessions:

5.3. Self-learning: Computer researches and faculty library visits to prepare essays.

5.4. Distance Teaching and Learning: Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1- advanced lectures*	a1 to a6	b1, b2		D4
2- Practical sessions	a5, a6	b1, b3, .b4	c1 to c4	d4, .d5
3- Self learning				d3
4- Distance Teaching and Learning	a1 to a6	b1 to b4	c1 to c4	d1 to d5

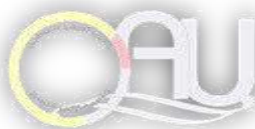
*Lectures and some practical topics may be offered face to face or via distance teaching and learning

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination	Activities
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year	At the end of the academic year



7.c grads	50	20	20	10
	7. Student Assessment			
	Intended Learning Outcomes Covered			
7.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b4		D5
Practical exams			c1 to c3	D1,d2, d4,d5
Oral exams	a1 to a6	b1 to b4		d2
Student activities		b3, b4		d1 to d5

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- 8.2.a- Brown, M. (2000). HACCP in the meat industry: Elsevier.
- 8.2.b - Hui, Y. H., Nip, W.-K. and Rogers, R. (2001). Meat science and applications: CRC Press.
- 8.2.c Handbook of Meat and Meat Processing, Second Edition: Editors: Y. H. Hui Year: 2012
- 8.2.d Meat biotechnology: Editors: Toldrá, F : Springer Science & Business Media Year: 2012
- 8.2.e- Meat science: Cabi., Editors: Warriss, P. D. Year: 2001
- 8.2.f- Handbook of Meat, Poultry and Seafood Quality: Editors: Leo M. L. Nollet Year: 2012
- 8.2.g- Lawrie's meat science, Seventh Edition (Woodhead Publishing in Food Science, Technology and Nutrition): Editors: R.A. Lawrie year: 2006

8-2: Recmended books:

- 8.2.a- Hui, Y., Astiasaran, I., Sebranek, J., Talon, R. and Toldrá, F. (2014). Handbook of fermented meat and poultry: John Wiley & Sons.
- 8.2.b- Nollet, L. M. and Toldra, F. (2015). Handbook of Food Analysis, -Two Volume Set: CRC Press.

8-3: Egyptian Knowledge Bank:

- 8.3.a - Meat Inspection and Control in the Slaughterhouse: Original publisher: Wiley, Editors: Thimjos Ninios JanneLundén HannuKorkeala Maria Fredriksson-Ahomaa, Year: 2015
- 8.3.b - The science of meat quality: Original publisher: Wiley, Editors: Chris R. Kerth, Year: 2013

Scientific Journals

- Journal of dairy science.
- Journal of Animal Science.
- Journal of food protection.
- Food and drug analysis journal.
- Journal of Meat science.

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- FAO: <https://www.fao.org/home/en>
- Codex- alimentarius: <https://www.fao.org/fao-who-codexalimentarius/en/>

Course Coordinator:

Head of Department:

Prof. Dr. Nader Yehia Moustafa

Prof. Dr.Nader Yehia Moustafa



Course specification (2021 / 2022)

1 - Basic Information:

Code number: 216 (2)

Course title: Hygiene and management of abattoirs

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 192 hrs.

Lectures: 96(48 weeks- 2hrs./week)

Practical: 96(48 weeks- 2hrs./week)

2 - OVERALL AIMS OF THE COURSE:

To provide student with basic knowledge and skills concerning about construction of abattoirs and gain the skills about the methods of enhancing its level microbiologically and to write a report about the suitability of each abattoir for meat production .

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1 List the general requirements for establishment of abattoirs
- a2 Explain the types of abattoirs
- a3 Discuss the main compartments of abattoirs
- a4 outline the methods of enhancing hygienic level of abattoirs
- a5 Describe the methods of hygienic slaughtering
- a6 Summarize the methods for meat inspection
- a7 Discuss slaughtering in non Islamic countries
- a8 Memorize the pre abattoir handling of animals
- a9 Explain pre slaughter handling of animals
- a10 application of HACCP system in abattoirs
- a11 List the uses of meat by products
- a12 Describe modern abattoirs
- a13 Describe the complete factory abattoirs

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1 Sort the important problem from case interaction, utilizing available.
- b2 Apply the appropriate quantitative and qualitative methodologies.
- b3 Apply the HACCP system at the meat and fish plants and methods to confirm its correct application
- b4 Summarize the important problem from case interaction, utilizing available.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1 Prepare, preserve and transport samples to the laboratory for examination.
- c2 Point out how to minimize the risks of contamination and cross infection.
- c3 Examine and judge meat and fish samples and their products microbiologically and apply the sensitivity test to the isolated organisms.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:



- d1 Show how to work effectively as a member of a team in the delivery of services to community.
- d2 Support effective communication with the public, colleagues and appropriate authorities.
- d3 Apply communicating skills, have access to the internet and retrieve information
- d4 Write reports in a form that is satisfactory and understandable.
- d5 point out primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

TOPIC	Total hours (Semester)	Hours for lecture	Hours for practical
General requirements for establishment of abattoirs	16	8	8
Types of abattoirs	16	8	8
Main compartments of abattoirs	20	10	10
Methods of enhancing hygienic level of abattoirs	20	10	10
Methods of hygienic slaughtering	12	6	6
Correct methods for meat inspection	12	6	6
slaughtering in non Islamic countries	12	6	6
pre abattoir handling of animals	12	6	6
pre slaughter handling of animals	12	6	6
application of HACCP system in abattoirs	12	6	6
uses of meat by products	16	8	8
Modern abattoirs	16	8	8
Complete factory abattoirs	16	8	8
Total	192	96	96

5- TEACHING & LEARNING METHODS:

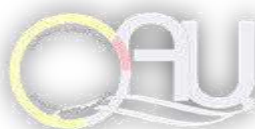
5.1. Advanced lectures PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

5.2. Practical sessions:

5.3. Self-learning Computer researches and faculty library visits to prepare essays

5.4. Distance Teaching and Learning: Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1- advanced lectures*	a1 to a13	b1, b2, b3		d4
2- Practical sessions		b1 –b2,b3	c1 to c3	d1,d2,d4, d5
3- Self learning				d3
4- Distance Teaching	a1 to a13	b1 to b4	c1 to c3	d1 to d5



and Learning				
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*Lectures and some practical topics may be offered face to face or via distance teaching and learning

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	At the end of the academic year
7.c grads	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
7.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a13	b1, b2		
Practical exams		b3	c1, c2, c3	
Oral exams	a1 to a13			D4
Student activities		b2		d1. d2.d3,d4, d5

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

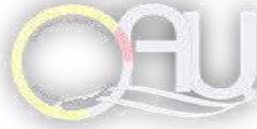
- 8.2.a- Brown, M. (2000). HACCP in the meat industry: Elsevier.
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- 8.2.c Handbook of Meat and Meat Processing, Second Edition: Editors: Y. H. Hui Year: 2012
- 8.2.d Meat biotechnology: Editors: Toldrá, F : Springer Science & Business Media Year: 2012
- 8.2.e- Meat science: Cabi., Editors: Warriss, P. D. Year: 2001
- 8.2.f- Handbook of Meat, Poultry and Seafood Quality: Editors: Leo M. L. Nollet Year: 2012
- 8.2.g- Lawrie's meat science, Seventh Edition (Woodhead Publishing in Food Science, Technology and Nutrition): Editors: R.A. Lawrie year: 2006

8-2: Recmended books:

- 8.2.a- Hui, Y., Astiasaran, I., Sebranek, J., Talon, R. and Toldrá, F. (2014). Handbook of fermented meat and poultry: John Wiley & Sons.
- 8.2.b- Nollet, L. M. and Toldra, F. (2015). Handbook of Food Analysis, -Two Volume Set: CRC Press.

8-3: Egyptian Knowledge Bank:

- 8.3.a - Meat Inspection and Control in the Slaughterhouse: Original publisher: Wiley, Editors: Thimjos Ninios JanneLundén HannuKorkeala Maria Fredriksson-Ahomaa, Year: 2015



- 8.3.b - The science of meat quality: Original publisher: Wiley, Editors: Chris R. Kerth, Year: 2013

Scientific Journals

- Journal of dairy science.
- Journal of Animal Science.
- Journal of food protection.
- Food and drug analysis journal.
- Journal of Meat science.

Scientific websites

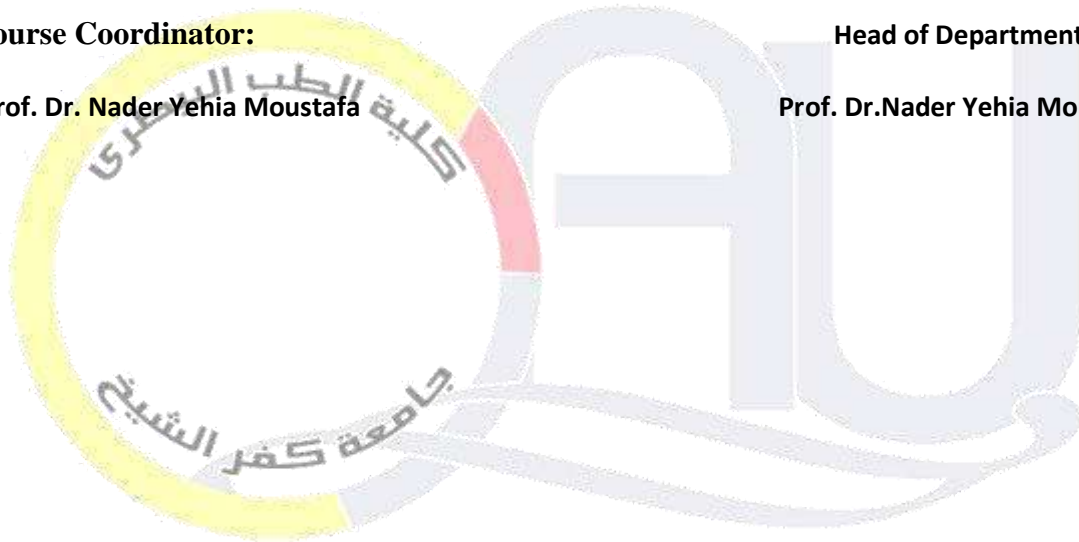
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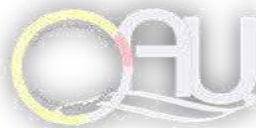
Course Coordinator:

Prof. Dr. Nader Yehia Moustafa

Head of Department:

Prof. Dr. Nader Yehia Moustafa





Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding													Intellectual Skills				Practical & Professional Skills			General & Transferable Skills								
			1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3	4	1	2	3	1	2	3	4	5				
1	General requirements for establishment of abattoirs	16	x																x				x			x	X		x		
2	Types of abattoirs	16	X	x															x	x	x	x	x	x	x	x	x	X	x	x	x
3	Main compartments of abattoirs	20		x	x														x	x	x	x	x	x	x	x	X	x	x	x	
4	Methods of enhancing hygienic level of abattoirs	20	X	x		x													x	x	x	x	x	x	x	x	X	x	x	x	
5	Methods of hygienic slaughtering	12		x		X	x												x	x	x	x	x	x	x	x	X	x	x	x	
6	Correct methods for meat inspection	12		x	x	X	x	x											x	x	x	x	x	x	x	x	X	x	x	x	
7	slaughtering in non Islamic countries	12		x	x			x	x											x	x	x	x			x	X	x	x	x	
8	pre abattoir handling of animals	12		x	x			x	x	x									x	x	x	x	x	x	x	x	X	x	x	x	
9	pre slaughter handling of animals	12	X	x	x	x	x	x	x	x	x								x	x	x	x	x	x	x	x	X	x	x	x	
10	application of HACCP system in abattoirs	12		x			x	x											x	x	x	x	x	x	x	x	X	x	x	x	
11	uses of meat by products	16	X	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	
12	Modern abattoirs	16	X	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x		
13	Complete factory abattoirs	16	X	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x		



Course specification (2021 / 2022)

1 - Basic Information:

Code number: 217 (2)

Course title: Hygienic control of meat and meat products (advanced)

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 192 hrs

Lectures: 96 (48 weeks- 2hrs/week)

Practical: 96(48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

To provide student with basic knowledge and skills concerning of of hygienic production of meat and meat products and to gain the skills to analyze meat samples and meat products and to write a report about the suitability of each sample for human consumption.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1 State about meat hygiene.
- a2 Recognize meat composition.
- a3 Define and discuss the keeping quality of meat
- a4 List the Factors affecting meat composition
- a5 Identify Nutritive values of meat
- a6 Illustrate Hygienic handling of meat (application of HACCP system from animal until reach to slaughter plant).
- a7 Explain meat spoilage
- a8 Describe and interpret the Abnormal meat
- a9 Memorize the Basis for hygienic production of meat
- a10 Show The international organizations dealing with food, and laws and ethical codes relevant to meat
- a11 Meat -borne pathogens (Epidemic, Zoonotic diseases and isolation of causative agents) and spoilage organisms.
- a12 List Sanitary condition of meat carcass
- a13 Summarize Hygienic measures during production of meat products
- a14 Show the Advanced technique for detection of meat composition.

3-B: INTELLECTUAL SKILLS:

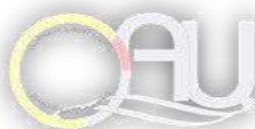
By the end of the course, students should be able to:

- b1 Weigh the important problem from case interaction, utilizing available.
- b2 Construct the appropriate quantitative and qualitative methodologies.
- b3 Develop the HACCP system at the meat plants and methods to confirm its correct application

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1 Prepare, preserve and transport samples to the laboratory for examination.
- c2 Show how to minimize the risks of contamination and cross infection.



c3 Examine and judge meat samples and meat products (physically, chemically, microbiologically and for residue).

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1 Show how to work effectively as a member of a team in the delivery of services to community.
- d2 Support effective communication with the public, colleagues and appropriate authorities.
- d3 Apply communicating skills, have access to the internet and retrieve information
- d4 Write reports in a form that is satisfactory and understandable.
- d5 point out primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

TOPIC	Total hours (Semester)	Hours for lecture	Hours for practical
Introduction of meat hygiene.	8	8	-
Meat composition.	6	6	-
Keeping quality of meat	24	8	16
Factors affecting meat composition	16	8	8
Nutritive values of meat	8	8	-
Hygienic handling of meat (application of HACCP system from animal until reach to slaughter plant).	24	8	16
meat spoilage	16	8	8
Abnormal meat	22	8	14
Basis for hygienic production of meat	16	8	8
knowledge about the international organizations dealing with food, and laws and ethical codes relevant to meat	10	8	2
Knowledge about meat -borne pathogens (Epidemic, Zoonotic diseases and isolation of causative agents) and spoilage organisms.	20	6	14
Sanitary condition of meat carcass	4	2	2
Hygienic measures during production of meat products	10	5	5
Advanced technique for detection of meat composition.	8	5	3
Total	192	96	96

5- TEACHING & LEARNING METHODS:

5.1. Advanced lectures PowerPoint presentations including videos, and whiteboard
Discussion and brain storming



5.2. Practical sessions:

5.3. Self-learning

Computer researches and faculty library visits to prepare essays

5.4. Distance Teaching and Learning: Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1- advanced lectures*	a1 to a14	b1, b2,b3		D4
2- Practical sessions		b1 –b2,b3	c1 to c3	d1,d2,d4, d5
3- Self learning				d3
4- Distance Teaching and Learning	a1 to a14	b1 to b3	c1 to c3	d1 to d5

*Lectures and some practical topics may be offered face to face or via distance teaching and learning

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	At the end of the academic year
7.c grads	50	20	20	10

7. Student Assessment				
7.1. Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a14	b1,b2		
Practical exams		b3	c1 to c3	
Oral exams	a1 to a14	b1,b2,b3		d4
Student activities		b2		d1. d2.d3,d4,d5

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

8.2.a- Brown, M. (2000). HACCP in the meat industry: Elsevier.

8.2.b - Hui, Y. H., Nip, W.-K. and Rogers, R. (2001). Meat science and applications: CRC Press.



- 8.2.c Handbook of Meat and Meat Processing, Second Edition: Editors: Y. H. Hui Year: 2012
8.2.d Meat biotechnology: Editors: Toldrá, F : Springer Science & Business Media Year: 2012
8.2.e- Meat science: Cabi., Editors: Warriss, P. D. Year: 2001
8.2.f- Handbook of Meat, Poultry and Seafood Quality: Editors: Leo M. L. Nollet Year: 2012
8.2.g- Lawrie's meat science, Seventh Edition (Woodhead Publishing in Food Science, Technology and Nutrition): Editors: R.A. Lawrie year: 2006

8-2: Recmended books:

- 8.2.a- **Hui, Y., Astiasaran, I., Sebranek, J., Talon, R. and Toldrá, F.** (2014). Handbook of fermented meat and poultry: John Wiley & Sons.
8.2.b- **Nollet, L. M. and Toldra, F.** (2015). Handbook of Food Analysis, -Two Volume Set: CRC Press.

8-3: Egyptian Knowledge Bank:

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- 8.3.b - The science of meat quality: Original publisher: Wiley, Editors: Chris R. Kerth, Year: 2013

Scientific Journals

- Journal of dairy science.
- Journal of Animal Science.
- Journal of food protection.
- Food and drug analysis journal.
- Journal of Meat science.

Scientific websites

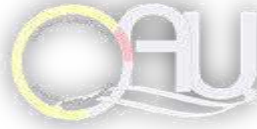
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Course Coordinator:

Prof. Dr. Nader Yehia Moustafa

Head of Department:

Prof. Dr.Nader Yehia Moustafa



Course specification (2021 / 2022)

1 - Basic Information:

Code number: 218 (2)

Course title: Poultry and rabbit meat inspection

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 144 hrs.

Lectures: 48 (48 weeks- 1hr/week)

Practical: 96 (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

To provide student with basic knowledge and skills concerning about the composition of poultry and rabbit meat inspection to gain the skills to analyze meat of poultry and rabbit physically and chemically and to write a report about the suitability of each sample for human consumption.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1 List Physical character of poultry and rabbit
- a.2 Explain Chemical composition of meat and meat products
- a.3 Discuss the adulteration of poultry and rabbit meat and meat products
- a.4 Illustrate preservation (definition, aim, general and specific tests for detection of preservatives)
- a.5 Identify Residues in poultry meat.
- a.6 Write on Methods of inspection of poultry and rabbit meat.
- a.7 List and discuss Sources of contamination of poultry and rabbit meat.
- a.8 Show Effect of stress on meat quality of of poultry and rabbit

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1 judge on the quality of poultry at abattoirs.
- b2 judge on the quality of poultry meat products at the processing plants and markets.
- b3 Design and organize the appropriate quantitative and qualitative methodologies.
- b4 Summarize the important problem from case interaction, utilizing available.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

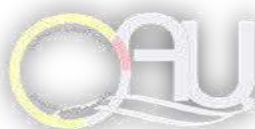
By the end of the course, students should be able to:

- c1 Prepare, preserve and transport samples to the laboratory for examination.
- c2 Examine poultry meat samples (chemically, microbiologically and for residue).
- c3 Apply the methods to minimize the risks of contamination and cross infection.
- c4 Apply the HACCP system at the abattoirs, Processing plants and methods to confirm its correct application

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1 Show how to work effectively as a member of a team in the delivery of services to community.
- d2 Support effective communication with the public, colleagues and appropriate authorities.
- d3 Apply communicating skills, have access to the internet and retrieve information
- d4 Write reports in a form that is satisfactory and understandable.
- d5 point out primary research techniques and critical evaluation.



4 - COURSE CONTENTS:

TOPIC	Total hours (Semester)	Hours for lecture	Hours for practical
Physical character of meat of poultry and rabbit	4	4	-
Chemical composition of meat of poultry and rabbit	6	6	-
Adulteration of meat of poultry and rabbit	20	8	12
Preservation (definition, aim, general and specific tests for detection of preservatives)	16	6	10
knowledge about residues in meat of poultry and rabbit	12	2	10
Methods of inspection of poultry and rabbit meat	8	2	6
Sources of contamination of poultry and rabbit meat	20	8	12
Effect of stress on meat quality of poultry and rabbit	20	4	16
Advanced technique for detection of meat adulteration	38	8	30
Total	144	48	96

5- TEACHING & LEARNING METHODS:

5.1. Advanced lectures PowerPoint presentations including videos, and whiteboard Discussion and brain storming

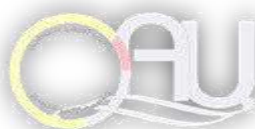
5.2. Practical sessions:

5.3. Self learning

Computer researches and faculty library visits to prepare essays

5.4. Distance Teaching and Learning: Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1- advanced lectures*	a1 to a8	b1, b2		D4
2- Practical sessions		b1 –b2,b3	c1 to c4	d1,d2,d4, d5
3- Self learning				d3
4- Distance Teaching and Learning	a1 to a8	b1 to b4	c1 to c4	d1 to d5



*Lectures and some practical topics may be offered face to face or via distance teaching and learning

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	At the end of the academic year
7.c grads	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
7.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a8	b1, b2, b4	C4	D5
Practical exams	a3, a5, a6, a7	b1, b2, b4	c1 to c4	d4,d5
Oral exams	a1 to a8	b1 to b4		D5
Student activities		B3,b4		d1. d2.d3, d4,d5

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

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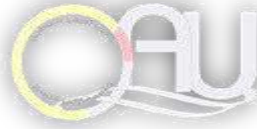
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8-2: Recmonded books:

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- 8.2.b- Nollet, L. M. and Toldra, F. (2015). Handbook of Food Analysis, -Two Volume Set: CRC Press.

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2013

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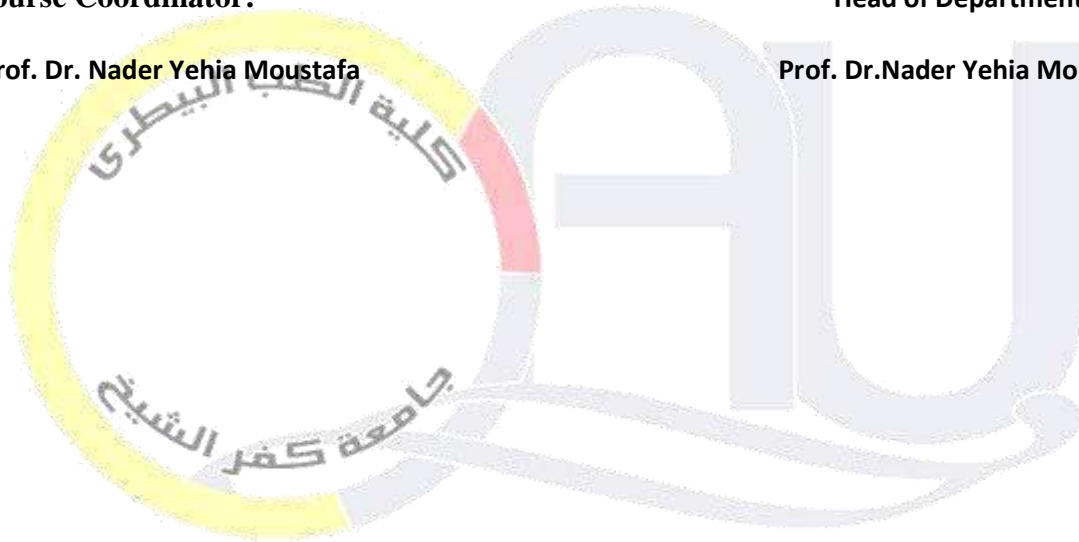
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Course Coordinator:

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Head of Department:

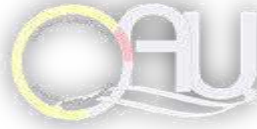
Prof. Dr. Nader Yehia Moustafa





Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding								Intellectual Skills				Practical & Professional Skills				General & Transferable Skills				
			1	2	3	4	5	6	7	8	1	2	3	4	1	2	3	4	1	2	3	4	5
1	Physical character of meat of poultry and rabbit	4	x					x			x								X	x	x	x	x
2	Chemical composition of meat of poultry and rabbit	6		X		x		x			x	x			x	x			X	x	x	x	x
3	Adulteration of meat of poultry and rabbit	20			x	x					x	x	x	x	x	x			X	x	x	x	x
4	Preservation (definition, aim, general and specific tests for detection of preservatives)	16	x	X	x	x	x	x			x	x	x	x	x	x	x	x	X	x	x	x	x
5	knowledge about residues in meat of poultry and rabbit	12					x	x			x	x	x	x	x	x		x	X	x	x	x	x
6	Methods of inspection of poultry and rabbit meat	8						x			x	x	x	x	x	x	x	x	X	x	x	x	X
7	Sources of contamination of poultry and rabbit meat	20	x	x						x	x				x	x			X	x	x	x	x
8	Effect of stress on meat quality of of poultry and rabbit	20			x			x		x	x	x	x	x	x	x			X	x	x	x	x



Course specification (2021 / 2022)

1 - Basic Information:

Code number: 219 (2)

Course title: Meat technology.

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 144 hrs.

Lectures: 48 (48 weeks- 1hr/week)

Practical: 96 (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

To provide student with basic knowledge and skills concerning of meat, poultry fish technology and to gain the skills to improve the quality of meat products.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1 Write on Aim and introduction to meat technology
- a2 Summarize meat additives
- a3 Describe the Assessment of plant hygiene (Monitoring and evaluation of parameters e.g. microbiology, chemical and physical for product safety)
- a4 List Main steps in manufacture of meat products (sausage, pasterma, luncheon, minced meat, beef burger,)
- a5 Discuss Spoilage and defects of meat products
- a6 Illustrate meat preservation (Technologies used to render food safe, keep contaminants below dangerous levels and that prevent recontamination during or after manufacture)
- a7 Explain Application of HACCP system on manufacture of each meat products
- a8 Enhance the hygienic levels of meat products
- a9 Write on Processing faults occur during manufacture of some products.
- a10 List Appearance defects of meat products.
- a11 List chemical defects of meat and fish products.
- a12 Explain the Food safety

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1 Summarize the important problem of meat, poultry fish technology
- b2 Weigh role of meat, poultry fish technology
- b3 Construct the appropriate quantitative and qualitative methodologies for diagnosis.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

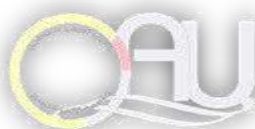
By the end of the course, students should be able to:

- C.1 Solve, control problem of meat, poultry fish technology
- C.2 Select food implicated, prepare, preserve and transport samples to the laboratory for examination.
- C.3 Examine and judge samples from of meat, poultry fish products

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1 Show how to work effectively as a member of a team in the delivery of services to community.



- d2 Support effective communication with the public, colleagues and appropriate authorities.
 d3 Apply communicating skills, have access to the internet and retrieve information
 d4 Write reports in a form that is satisfactory and understandable.
 d5 Point out primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

TOPIC	Total hours (Semester)	Hours for lecture	Hours for practical
Aim and introduction to meat technology	4	4	-
meat additives	6	6	-
Assessment of plant hygiene (Monitoring and evaluation of parameters e.g. microbiology, chemical and physical for product safety)	20	4	16
Main steps in manufacture of meat products (sausage, pasterma, luncheon, minced meat, beef burger	20	6	14
Spoilage and defects of meat products	22	6	16
Meat preservation (Technologies used to render food safe, keep contaminants below dangerous levels and that prevent recontamination during or after manufacture)	10	4	6
Application of HACCP system on manufacture of each meat products	18	4	14
Enhancing the hygienic levels of meat products	18	6	12
Processing faults occur during manufacture of some products.	6	2	4
Appearance defects of meat products.	6	2	4
chemical defects of meat and fish products	6	2	4
Food safety	8	2	6
Total	144	48	96

5- TEACHING & LEARNING METHODS:

5.1. Advanced lectures PowerPoint presentations including videos, and whiteboard
 Discussion and brain storming

5.2. Practical sessions:

5.3. Self-learning

Computer researches and faculty library visits to prepare essays

5.4. Distance Teaching and Learning: Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.



Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1- advanced lectures*	a1 to a12	b1, b2		D4
2- Practical sessions		b1 –b2,b3	c1 to c3	d1,d2,d4, d5
3- Self learning				d3
4- Distance Teaching and Learning	a1 to a12	b1 to b3	c1 to c3	d1 to d5

*Lectures and some practical topics may be offered face to face or via distance teaching and learning

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination	Activities
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year	At the end of the academic year
<u>7.c grads</u>	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
7.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a12	b1, b2		D4
Practical exams		b3	c1 to c3	
Oral exams	a1 to a12	b1,b2,b3		d4
Student activities		b2		d1. d2.d3, d4d5

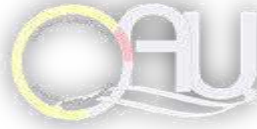
KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- 8.2.a- Brown, M. (2000). HACCP in the meat industry: Elsevier.
- 8.2.b - Hui, Y. H., Nip, W.-K. and Rogers, R. (2001). Meat science and applications: CRC Press.
- 8.2.c Handbook of Meat and Meat Processing, Second Edition: Editors: Y. H. Hui Year: 2012
- 8.2.d Meat biotechnology: Editors: Toldrá, F : Springer Science & Business Media Year: 2012
- 8.2.e- Meat science: Cabi., Editors: Warriss, P. D. Year: 2001
- 8.2.f- Handbook of Meat, Poultry and Seafood Quality: Editors: Leo M. L. Nollet Year: 2012
- 8.2.g- Lawrie's meat science, Seventh Edition (Woodhead Publishing in Food Science, Technology and Nutrition): Editors: R.A. Lawrie year: 2006

8-2: Recmended books:



8.2.a- Hui, Y., Astiasaran, I., Sebranek, J., Talon, R. and Toldrá, F. (2014). Handbook of fermented meat and poultry: John Wiley & Sons.

8.2.b- Nollet, L. M. and Toldra, F. (2015). Handbook of Food Analysis, -Two Volume Set: CRC Press.

8-3: Egyptian Knowledge Bank:

- 8.3.a - Meat Inspection and Control in the Slaughterhouse: Original publisher: Wiley, Editors: Thimjos Ninios JanneLundén HannuKorkeala Maria Fredriksson-Ahomaa, Year: 2015
- 8.3.b - The science of meat quality: Original publisher: Wiley, Editors: Chris R. Kerth, Year: 2013

Scientific Journals

- Journal of dairy science.
- Journal of Animal Science.
- Journal of food protection.
- Food and drug analysis journal.
- Journal of Meat science.

Scientific websites

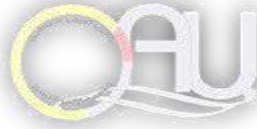
- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
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- Codex- alimentarius: <https://www.fao.org/fao-who-codexalimentarius/en/>

Course Coordinator:

Prof. Dr. Nader Yehia Moustafa

Head of Department:

Prof. Dr.Nader Yehia Moustafa



Course specification (2021 / 2022)

1 - Basic Information:

Code number: 220 (2)

Course title: **Hygienic control of meat and meat products.**

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 192 hrs (48 weeks- 4hrs/week)

Lectures: 96hrs (48 weeks- 2hrs/week)

Practical: 96 (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

To provide student with basic knowledge and skills concerning of microbiology of meat and fish products and to gain the skills to analyze meat and fish samples and meat products microbiologically and to write a report about the suitability of each sample for human consumption.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1 Identify the sources of meat and fish products contamination
- a.2 List the factors affecting microbial growth.
- a.3 Explain the microbiology of meat
- a.4 Define The microbiology of fish
- a.5 Recognize the Microbiology of minced meat and luncheon
- a.6 Explain the Microbiology of sausage and pasterma
- a.7 Illustrate the Microbiology of Microbiology of frankfurters and beef burger
- a.8 Describe the Microbiology of smoked fish
- a.9 Show on the Microbiology of salted fish
- a.10 Explain the Microbiology of canned fish
- a.11 Illustrate Meat and fish-borne pathogens and spoilage organisms
- a.12 Identify the indicator organisms
- a.13 Summarize the Microbial defects in meat and meat products
- a.14 Discuss the advanced technique for detection of microorganisms

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1 Weigh the important problem from case interaction, utilizing available.
- b.2 construct the appropriate quantitative and qualitative methodologies.
- b.3 Develop the HACCP system at the meat and fish plants and methods to confirm its correct application

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

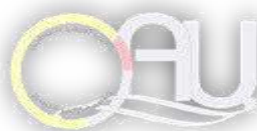
By the end of the course, students should be able to:

- c.1 Prepare, preserve and transport samples to the laboratory for examination.
- c.2 Show how to minimize the risks of contamination and cross infection.
- c.3 Examine and judge meat and fish samples and their products microbiologically and apply the sensitivity test to the isolated organisms.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1 Show how to work effectively as a member of a team in the delivery of services to community.



- d2 Support effective communication with the public, colleagues and appropriate authorities.
 d3 Apply communicating skills, have access to the internet and retrieve information
 d4 Write reports in a form that is satisfactory and understandable.
 d5 Point out primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

TOPIC	Total hours (Semester)	Hours for lecture	Hours for practical
Sources of meat and fish products contamination	4	4	-
Factors affecting microbial growth.	4	4	-
knowledge about the microbiology of meat	4	4	-
knowledge about the the microbiology of fish	4	4	-
Microbiology of minced meat and luncheon	14	6	8
Microbiology of of sausage and pasterma	14	6	8
Microbiology of of frankufurters and beef burger	14	6	8
Microbiology of smoked fish	14	6	8
Microbiology of salted fish	14	6	8
Microbiology of of canned fish	14	6	8
Meat and fish-borne pathogens and spoilage organisms	34	16	18
Food poisoning	24	14	10
Microbial defects in meat and meat products	16	8	8
indicator organisms	8	4	4
Advanced technique for detection of microorganisms	16	8	8
Total	192	96	96

5- TEACHING & LEARNING METHODS:

5.1. Advanced lectures PowerPoint presentations including videos, and whiteboard

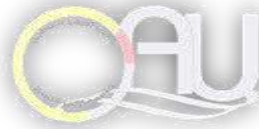
Discussion and brain storming

5.2. Practical sessions:

5.3. Self-learning

Computer researches and faculty library visits to prepare essays

5.4. Distance Teaching and Learning: Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.



Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1- advanced lectures*	a1 to a14	b1, b2		d5
2- Practical sessions		b1 –b2,b3	c1 to c3	d1,d2,d4, d5
3- Self learning				d3
4- Distance Teaching and Learning	a1 to a14	b1 to b3	c1 to c3	d1 to d5

*Lectures and some practical topics may be offered face to face or via distance teaching and learning

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination	Activities
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year	At the end of the academic year
<u>7.c grads</u>	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
7.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a14	b1 to b3		D5
Practical exams		b1 to b3	c1 to c3	D1,d2, d4,d5
Oral exams	a1 to a14			d2
Student activities				d1. d2.d3,d5

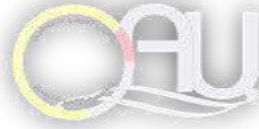
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- 8.2.f- Handbook of Meat, Poultry and Seafood Quality: Editors: Leo M. L. Nollet Year: 2012
- 8.2.g- Lawrie's meat science, Seventh Edition (Woodhead Publishing in Food Science, Technology and Nutrition): Editors: R.A. Lawrie year: 2006

8-2: Recmended books:



8.2.a- Hui, Y., Astiasaran, I., Sebranek, J., Talon, R. and Toldrá, F. (2014). Handbook of fermented meat and poultry: John Wiley & Sons.

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- Journal of food protection.
- Food and drug analysis journal.
- Journal of Meat science.

Scientific websites

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- Codex- alimentarius: <https://www.fao.org/fao-who-codexalimentarius/en/>

Course Coordinator:

Prof. Dr. Nader Yehia Moustafa

Head of Department:

Prof. Dr. Nader Yehia Moustafa



Course specification (2021 / 2022)

1 - Basic Information:

Code number: 221 (2)

Course title: Meat by products advanced

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 192 hrs (48 weeks- 4hrs/week)

Lectures: 96hrs (48 weeks- 2hrs/week)

Practical: 96 (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

To provide student with basic knowledge and skills concerning of meat by products and to gain the skills to, the useful uses of by products and to write a report about the values of each by products for economically use.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1 List the Sources of meat by products
- a.2 Define the Sources of poultry by products
- a.3 Describe the Sources of fish by products
- a.4 Recognize the Sources of ostriches by products
- a.5 Identify the uses of meat by products
- a.6 Illustrate the uses of poultry and ostriches by products
- a.7 Mention the uses of fish by products
- a.8 Summarize the Economic values of meat by products
- a.9 Show up the Economic values of poultry and ostriches by products
- a.10 Explain the Economic values of fish by products
- a.11 Enumerate The methods of meat by products treatments
- a.12 Write on The methods of poultry and ostriches by products treatments
- a.13 Converse The methods of fish by products treatments
- a.14 Discuss the advanced technique for detection of different meat species

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1 Summarize the important problem from case interaction, utilizing available.
- b.2 Construct the appropriate quantitative and qualitative methodologies.
- b.3 Develop the HACCP system at the byproducts plants and methods to confirm its correct application

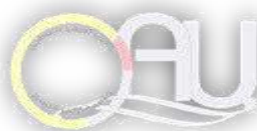
3- C: PRACTICAL AND PROFESSIONAL SKILLS:

- c.1 Prepare, preserve and transport samples to the laboratory for examination.
- c.2 Show how to minimize the risks of contamination and cross infection.
- c.3 Examine and judge of meat, poultry and ostriches and fish by products

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1 Show how to work effectively as a member of a team in the delivery of services to community.
- d2 Support effective communication with the public, colleagues and appropriate authorities.
- d3 Apply communicating skills, have access to the internet and retrieve information
- d4 Write reports in a form that is satisfactory and understandable.



d5 point out primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

TOPIC	Total hours (Semester)	Hours for lecture	Hours for practical
Sources of poultry by products	8	8	-
Sources of fish by products	6	6	-
Sources of meat by products	24	8	16
Economic values of meat by products	16	8	8
Sources of ostriches by products	8	8	-
uses of meat by products	24	8	16
uses of poultry and ostriches by products	16	8	8
uses of fish by products	22	8	14
Economic values of fish by products	16	8	8
Economic values of poultry and ostriches by products	10	8	2
methods of fish by products treatments	20	6	14
methods of poultry and ostriches by products treatments	4	2	2
methods of meat by products treatments	10	5	5
advanced technique for detection of different meat species	8	5	3
Total	192	96	96

5- TEACHING & LEARNING METHODS:

5.1. Advanced lectures PowerPoint presentations including videos, and whiteboard Discussion and brain storming

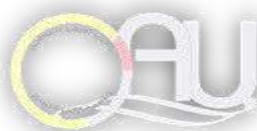
5.2. Practical sessions:

5.3. Self-learning

Computer researches and faculty library visits to prepare

5.4. Distance Teaching and Learning: Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1- advanced lectures*	a1 to a14	b1, b2		d5
2- Practical sessions		b1 –b2,b3	c1 to c3	d1,d2,d4, d5
3- Self learning				d3
4- Distance Teaching and Learning	a1 to a14	b1 to b3	c1 to c3	d1 to d5



*Lectures and some practical topics may be offered face to face or via distance teaching and learning

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
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7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination	Activities
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year	At the end of the academic year
<u>7.c grads</u>	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
7.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a14	b1 to b3		D5
Practical exams		b1 to b3	c1 to c3	D1,d2, d4,d5
Oral exams	a1 to a14			d2
Student activities				d1. d2.d3,d5

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

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8-2: Recmended books:

- 1- 8.2.a- Hui, Y., Astiasaran, I., Sebranek, J., Talon, R. and Toldrá, F. (2014). Handbook of fermented meat and poultry: John Wiley & Sons.
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Scientific Journals

- Journal of dairy science.
- Journal of Animal Science.
- Journal of food protection.
- Food and drug analysis journal.
- Journal of Meat science.

Scientific websites

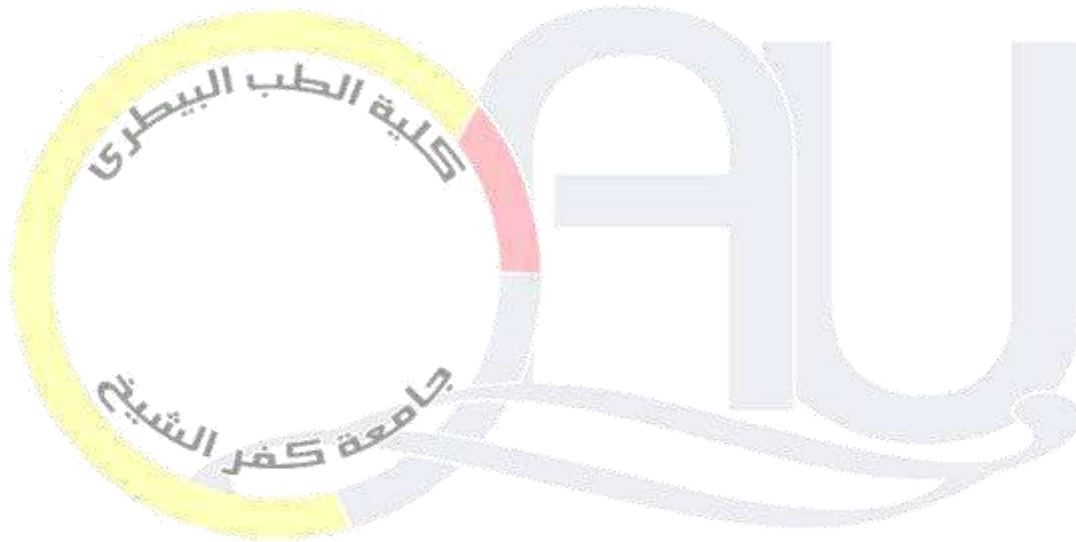
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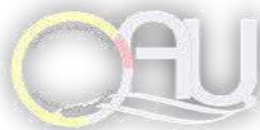
Course Coordinator:

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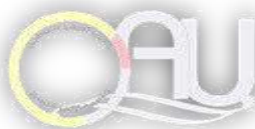
Prof. Dr. Nader Yehia Moustafa





Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding														Intellectual Skills			Practical & Professional Skills				General & Transferable Skills																										
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	1	2	3	1	2	3	4	1	2	3	4																							
1	Sources of poultry by products	8	x															x															x	x			x													
2	Sources of fish by products	6	x	x															x	x	x														x	x	x	x												
3	Sources of meat by products	24		x	x														x	x	x															x	x	x	x											
4	Economic values of meat by products	16	x	x		x													x	x	x																x	x	x	x										
5	Sources of ostriches by products	8		x		x	x												x	x	x																x	x		x										
6	uses of meat by products	24		x	x	x	x	x											x	x	x																	x	x		x									
7	uses of poultry and ostriches by products	16		x	x			x	x											x	x																		x	x		x								
8	uses of fish by products	22		x	x			x	x	x										x	x	x																		x	x	x	x							
9	Economic values of fish by products	16	x	x	x	x	x	x	x	x	x									x	x	x																			x	x	x	x						
10	Economic values of poultry and ostriches by products	10		x			x	x												x	x	x																				x	x	x	x					
11	methods of fish by products treatments	20	x	x	x	x	x	x	x	x	x	x								x	x	x																					x	x		x				
12	methods of poultry and ostriches by products treatments	4	x	x	x	x	x	x	x	x	x	x								x	x	x																							x	x		x		
13	methods of meat by products treatments	10	x	x	x	x	x	x	x	x	x	x								x	x	x																								x	x		x	
14	advanced technique for detection of different meat species	8	x	x	x	x	x	x	x	x	x	x								x	x	x	x																								x	x		x



Course specification (2021 / 2022)

1 - Basic Information:

Code number: 222 (2)

Course title: Food analysis, meat and meat products.

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 192 hrs. (48 weeks- 4hrs/week)

Lectures: 96hrs (48 weeks- 2hrs/weeks)

Practical: 96 (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

To provide student with basic knowledge and skills concerning about the composition of meat and meat products to gain the skills to analyze meat physically and chemically and to write a report about the suitability of each sample for human consumption.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1 Illustrate the physical character of meat and met products
- a2 Discuss the Chemical composition of meat and meat products
- a3 Explain the Adulteration of meat and meat products
- a4 Discuss the Preservation (definition, aim, general and specific tests for detection of preservatives)
- a5 list and identify the Residues in meat
- a6 Mention Edible fats and oils
- a7 write on meat chemistry
- a8 Discribe the Composition of meat
- a9 Converse what are the Advanced technique for food analysis.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1 Design and organize the appropriate quantitative and qualitative methodologies.
- b2 Summarize the important problem from case interaction, utilizing available.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

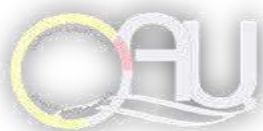
By the end of the course, students should be able to:

- c.1 Prepare, preserve and transport samples to the laboratory for examination.
- c.2 Point out how to minimize the risks of contamination and cross infection.
- c.3 Examine and judge meat samples, meat products, physically and chemically.
- c.4 Examine and judge meat samples, meat products, for the presence of inhibitory substances.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1 Show how to work effectively as a member of a team in the delivery of services to community.
- d2 Support effective communication with the public, colleagues and appropriate authorities.
- d3 Apply communicating skills, have access to the internet and retrieve information
- d4 Write reports in a form that is satisfactory and understandable.
- d5 point out primary research techniques and critical evaluation.



4 - COURSE CONTENTS:

TOPIC	Total hours (Semester)	Hours for lecture	Hours for practical
Physical character of meat and meat products	28	14	14
Chemical composition of meat and meat products	28	14	14
Adulteration of meat and meat products	20	10	10
Preservation (definition, aim, general and specific tests for detection of preservatives)	20	10	10
knowledge about residues in meat	20	10	10
Meat spoilage	12	6	6
meat chemistry	20	10	10
Composition of meat	24	12	12
Advanced technique for food analysis	20	10	10
Total	192	96	96

5- TEACHING & LEARNING METHODS:

5.1. Advanced lectures PowerPoint presentations including videos, and whiteboard Discussion and brain storming

5.2. Practical sessions:

5.3. Self-learning

Computer researches and faculty library visits to prepare essays

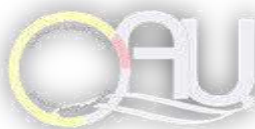
5.4. Distance Teaching and Learning: Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1- advanced lectures*	a1 to a9	b1, b2		d5
2- Practical sessions		b1 –b2	c1 to c4	d1,d2,d4, d5
3- Self learning				d3
4- Distance Teaching and Learning	a1 to a9	b1 to b2	c1 to c4	d1 to d5

*Lectures and some practical topics may be offered face to face or via distance teaching and learning

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- Activation of office hours.



- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	At the end of the academic year
7.c grads	50	20	20	10

7.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a9	b1 to b2		D5
Practical exams		b1 to b2	c1 to c4	D1,d2, d4,d5
Oral exams	a1 to a9			d2
Student activities				d1. d2.d3,d5

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- 8.2.a- Brown, M. (2000). HACCP in the meat industry: Elsevier.
- 8.2.b - Hui, Y. H., Nip, W.-K. and Rogers, R. (2001). Meat science and applications: CRC Press.
- 8.2.c Handbook of Meat and Meat Processing, Second Edition: Editors: Y. H. Hui Year: 2012
- 8.2.d Meat biotechnology: Editors: Toldrá, F : Springer Science & Business Media Year: 2012
- 8.2.e- Meat science: Cabi., Editors: Warriss, P. D. Year: 2001
- 8.2.f- Handbook of Meat, Poultry and Seafood Quality: Editors: Leo M. L. Nollet Year: 2012
- 8.2.g- Lawrie's meat science, Seventh Edition (Woodhead Publishing in Food Science, Technology and Nutrition): Editors: R.A. Lawrie year: 2006

8-2: Recmended books:

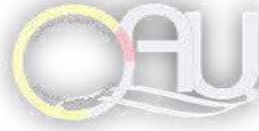
- 2- 8.2.a- Hui, Y., Astiasaran, I., Sebranek, J., Talon, R. and Toldrá, F. (2014). Handbook of fermented meat and poultry: John Wiley & Sons.
- 8.2.b- Nollet, L. M. and Toldra, F. (2015). Handbook of Food Analysis, -Two Volume Set: CRC Press.

8-3: Egyptian Knowledge Bank:

- 8.3.a - Meat Inspection and Control in the Slaughterhouse: Original publisher: Wiley, Editors: Thimjos Ninios JanneLundén HannuKorkeala Maria Fredriksson-Ahomaa, Year: 2015
- 8.3.b - The science of meat quality: Original publisher: Wiley, Editors: Chris R. Kerth, Year: 2013

Scientific Journals

- Journal of dairy science.
- Journal of Animal Science.
- Journal of food protection.
- Food and drug analysis journal.
- Journal of Meat science.



Scientific websites

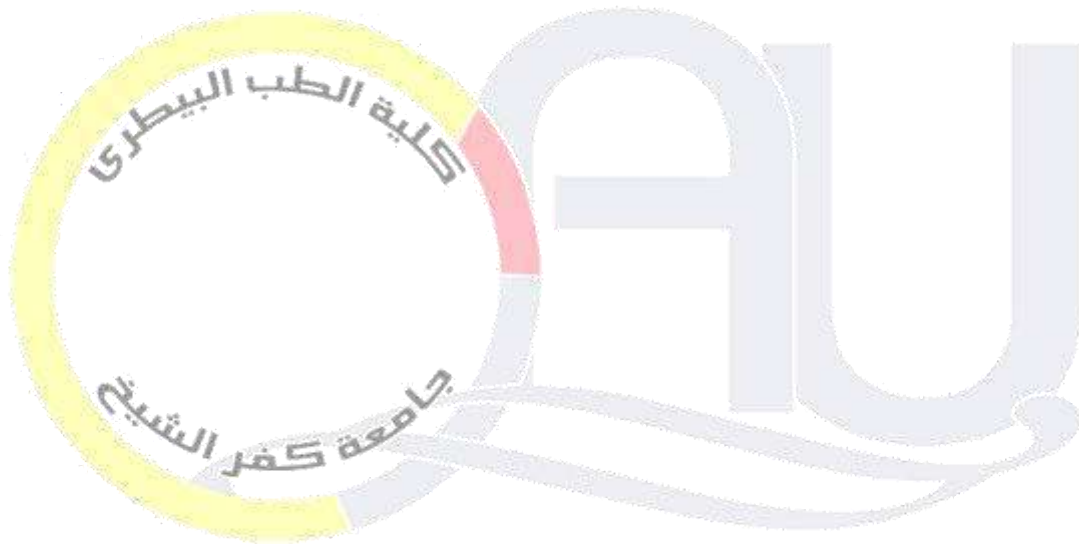
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 - <http://www.sciencedirect.com/>

Course Coordinator:

Head of Department:

Prof. Dr. Nader Yehia Moustafa

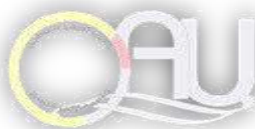
Prof. Dr. Nader Yehia Moustafa





Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding									Intellectual Skills			Practical & Professional Skills				General & Transferable Skills								
			1	2	3	4	5	6	7	8	9	1	2		1	2	3	4	1	2	3	4	5				
1	Physical character of meat and meat products	28	X											X				X	X	X	X		X	X		X	
2	Chemical composition of meat and meat products	28	X	x										X	X			X	X	X	X		X	X	X	X	X
3	Adulteration of meat and meat products	20		x	x									X	X			X	X	X	X		X	X	X	X	X
4	Preservation (definition, aim, general and specific tests for detection of preservatives)	32	X	x		x								X	X			X	X	X	X		X	X	X	X	X
5	knowledge about residues in meat	20		x		x	x							X				X	X	X	X		X	X		X	X
6	Meat spoilage	24		x	x			x	x						X			X					X	X		X	X
7	meat chemistry	20		x	x			x	x	x				X	X			X	X	X	X		X	X	X	X	X
8	Composition of meat	20	x	x	x	x	x	x	x	x				X	X			X	X	X	X		X	X	X	X	X
9	Advanced technique for food analysis	20	x	x	x	x	x	x	x	x	x			X	X			X	X	X	X		X	X	X	X	X



Course specification (2021 / 2022)

1 - Basic Information:

Code number: 223(2)

Course title: **Preservation of meat and fish.**

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 192 hrs (48 weeks- 4hrs/week)

Lectures: 96hrs (48 weeks- 2hrs/week)

Practical: 96 (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

To provide student with basic knowledge and skills concerning of meat and fish preservation and to gain the skills to improve the quality of preserved meat

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1 Discuss cold storage of meat and fish
- a2 list drying of meat
- a 3 Recognize smoking of meat ,and fish
- a4 Describe salting of meat ,and fish
- a5 Illustrate pickling of meat and fish
- a6 Mention canning of meat and fish
- a7 Write on meat irradiation
- a8 Explain how Enhance the hygienic levels of preserved meat using advanced technique
- a9 Show up Food safety
- a10 Show the methods of assessment of preserved food with rapid and advanced technique

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1 Organize the important problem of meat, and fish preservation
- b2 Summarize the role of meat and fish preservation
- b3 Design the appropriate quantitative and qualitative methodologies for diagnosis.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

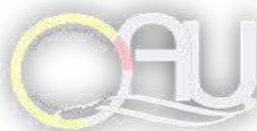
By the end of the course, students should be able to:

- c1 solve, control problem of meat and fish preservation
- c2 Select food implicated, prepare, preserve and transport samples to the laboratory for examination.
- c3 Examine and judge samples from of meat, and fish products

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1 Show how to work effectively as a member of a team in the delivery of services to community.
- d2 Support effective communication with the public, colleagues and appropriate authorities.
- d3 Apply communicating skills, have access to the internet and retrieve information
- d4 Write reports in a form that is satisfactory and understandable.
- d5 point out primary research techniques and critical evaluation.



4 - COURSE CONTENTS:

TOPIC	Total hours (Semester)	Hours for lecture	Hours for practical
Cold storage of meat and fish	24	12	12
Drying of meat	24	12	12
Smoking of meat ,and fish	24	12	12
Salting of meat ,and fish	24	12	12
Pickling of meat and fish	20	10	10
Canning of meat and fish	16	8	8
Meat irradiation	12	6	6
Enhancing the hygienic levels of meat products	20	10	10
Food safety	14	7	7
Assessment of preserved food with rapid and advanced technique	14	7	7
Total	192	96	96

5- TEACHING & LEARNING METHODS:

5.1. Advanced lectures PowerPoint presentations including videos, and whiteboard Discussion and brain storming

5.2. Practical sessions:

5.3. Self learning

Computer researches and faculty library visits to prepare essays

5.4. Distance Teaching and Learning: Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1- advanced lectures*	a1 to a10	b1, b2		d5
2- Practical sessions		b1 –b2,b3	c1 to c3	d1,d2,d4, d5
3- Self learning				d3
4- Distance Teaching and Learning	a1 to a10	b1 to b3	c1 to c3	d1 to d5

*Lectures and some practical topics may be offered face to face or via distance teaching and learning

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-



- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	At the end of the academic year
7.c grads	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
7.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a10	b1 to b3		D5
Practical exams		b1 to b3	c1 to c3	D1,d2, d4,d5
Oral exams	a1 to a10			d2
Student activities				d1. d2.d3,d5

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

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- 8.2.c Handbook of Meat and Meat Processing, Second Edition: Editors: Y. H. Hui Year: 2012
- 8.2.d Meat biotechnology: Editors: Toldrá, F : Springer Science & Business Media Year: 2012
- 8.2.e- Meat science: Cabi., Editors: Warriss, P. D. Year: 2001
- 8.2.f- Handbook of Meat, Poultry and Seafood Quality: Editors: Leo M. L. Nollet Year: 2012
- 8.2.g- Lawrie's meat science, Seventh Edition (Woodhead Publishing in Food Science, Technology and Nutrition): Editors: R.A. Lawrie year: 2006

8-2: Recommended books:

- 3- 8.2.a- Hui, Y., Astiasaran, I., Sebraneck, J., Talon, R. and Toldrá, F. (2014). Handbook of fermented meat and poultry: John Wiley & Sons.
- 8.2.b- Nollet, L. M. and Toldra, F. (2015). Handbook of Food Analysis, -Two Volume Set: CRC Press.

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- 8.3.b - The science of meat quality: Original publisher: Wiley, Editors: Chris R. Kerth, Year: 2013

Scientific Journals

- Journal of dairy science.
- Journal of Animal Science.
- Journal of food protection.



- Food and drug analysis journal.
- Journal of Meat science.

Scientific websites

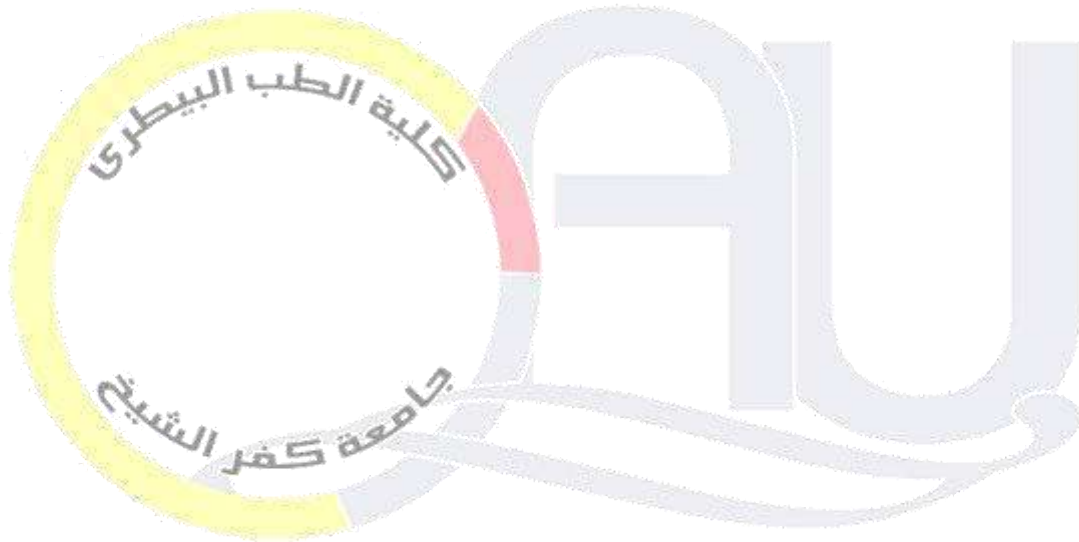
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- Codex- alimentarius: <https://www.fao.org/fao-who-codexalimentarius/en/>

Course Coordinator:

Head of Department:

Prof. Dr. Nader Yehia Moustafa

Prof. Dr. Nader Yehia Moustafa





Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding										Intellectual Skills				Practical & Professional Skills				General & Transferable Skills											
			1	2	3	4	5	6	7	8	9	10	1	2	3		1	2	3			1	2	3	4	5						
1	Cold storage of meat and fish	24	x												x						x						x	x			x	
2	Drying of meat	24	x	x											x	x	x				x	x	x				x	x	x	x	x	
3	Smoking of meat ,and fish	24		x	x										x	x	x				x	x	x				x	x	x	x	x	
4	Salting of meat ,and fish	24	x	x		x									x	x	x				x	x	x				x	x	x	x	x	
5	Pickling of meat and fish	20		x		x	x								x	x	x				x	x	x				x	x			x	x
6	Canning of meat and fish	24		x	x	x	x	x							x	x	x				x	x	x				x	x			x	x
7	Meat irradiation	12		x	x				x	x						x	x				x	x					x	x			x	x
8	Enhancing the hygienic levels of meat products	20		x	x				x	x	x				x	x	x				x	x	x				x	x	x	x	x	
9	Food safety	20	x	x	x	x	x	x	x	x	x				x	x	x				x	x	x				x	x	x	x	x	
10	Assessment of preserved food with rapid and advanced technique	14	x	x	x	x	x	x	x	x	x	x			x	x	x				x	x	x				x	x	x	x	x	



Course specification (2021 / 2022)

1 - Basic Information:

Code number: 224 (2)

Course title: Hygienic criteria in meat and fish plant

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 192 hrs (48 weeks- 4hrs/week)

Lectures: 96hrs (48 weeks- 2hrs/week)

Practical: 96 (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

To provide student with basic knowledge and skills concerning about the Hygienic criteria in meat and fish plant and to gain the skills to analyze meat and fish products and to write a report about the suitability of each sample for human consumption and the hygiene of the plant.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1 Locate the standard used to establish the industry.
- a2 Identify the hygienic measures adopted inside and outside the industry.
- a3 Discuss the application of HACCP system in meat and fish plants
- a4 Write on the detergent and chemical sanitizer.
- a5 Summarize the cleaning procedures.
- a6 Draw on the designing of clean in place system (CIP)
- a7 Explain the verification of cleaning
- a8 Recognize on the methods of detection of efficiency of sanitization.
- a9 Illustrate the criteria for evaluation of meat and fish products.
- a10 Converse the advanced technique for detection of hygienic meat and fish plant

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1 Weigh the important problem from case interaction, utilizing available.
- b2 Design appropriate quantitative and qualitative methodologies.
- b3 Develop the HACCP system at the meat and fish plants and methods to confirm its correct application

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

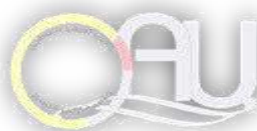
By the end of the course, students should be able to:

- c1 Apply criteria for evaluation of meat and fish products.
- c2 Show how to minimize the risks of contamination and cross infection.
- c3 Examine and judge efficiency of cleaning and sanitization of meat and fish equipments.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1 Show how to work effectively as a member of a team in the delivery of services to community.
- d2 Support effective communication with the public, colleagues and appropriate authorities.
- d3 Apply communicating skills, have access to the internet and retrieve information
- d4 Write reports in a form that is satisfactory and understandable.
- d5 point out primary research techniques and critical evaluation.



4 - COURSE CONTENTS:

TOPIC	Total hours (Semester)	Hours for lecture	Hours for practical
knowledge about standard used to establish the industry.	20	10	10
Hygienic measures adopted inside and outside the industry.	24	12	12
Application of HACCP system in meat and fish plants	20	10	10
Knowledge about detergent and chemical sanitizer	24	12	12
Cleaning procedures.	24	12	12
Designing of clean in place system (CIP)	16	8	8
Verification of cleaning	12	6	6
Detection of efficiency of sanitization.	20	10	10
Criteria for evaluation of meat and fish products.	24	12	12
Advanced technique for detection of hygienic meat and fish plant	8	4	4
Total	192	96	96

5- TEACHING & LEARNING METHODS:

5.1. Advanced lectures PowerPoint presentations including videos, and whiteboard Discussion and brain storming

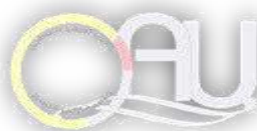
5.2. Practical sessions:

5.3. Self learning

Computer researches and faculty library visits to prepare essays

5.4. Distance Teaching and Learning: Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1- advanced lectures*	a1 to a10	b1, b2		d5
2- Practical sessions		b1 –b2,b3	c1 to c3	d1,d2,d4, d5
3- Self learning				d3
4- Distance Teaching and Learning	a1 to a10	b1 to b3	c1 to c3	d1 to d5



*Lectures and some practical topics may be offered face to face or via distance teaching and learning

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination	Activities
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year	At the end of the academic year
<u>7.c grads</u>	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
7.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a10	b1 to b3		D5
Practical exams		b1 to b3	c1 to c3	D1,d2, d4,d5
Oral exams	a1 to a10			d2
Student activities				d1. d2.d3,d5

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

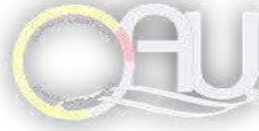
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- 8.2.f- Handbook of Meat, Poultry and Seafood Quality: Editors: Leo M. L. Nollet Year: 2012
- 8.2.g- Lawrie's meat science, Seventh Edition (Woodhead Publishing in Food Science, Technology and Nutrition): Editors: R.A. Lawrie year: 2006

8-2: Recmoned books:

- 4- 8.2.a- Hui, Y., Astiasaran, I., Sebranek, J., Talon, R. and Toldrá, F. (2014). Handbook of fermented meat and poultry: John Wiley & Sons.
- 8.2.b- Nollet, L. M. and Toldra, F. (2015). Handbook of Food Analysis, -Two Volume Set: CRC Press.

8-3: Egyptian Knowledge Bank:

- 8.3.a - Meat Inspection and Control in the Slaughterhouse: Original publisher: Wiley, Editors: Thimjos Ninios JanneLundén HannuKorkeala Maria Fredriksson-Ahomaa, Year: 2015
- 8.3.b - The science of meat quality: Original publisher: Wiley, Editors: Chris R. Kerth, Year: 2013



Scientific Journals

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- Journal of Animal Science.
- Journal of food protection.
- Food and drug analysis journal.
- Journal of Meat science.

Scientific websites

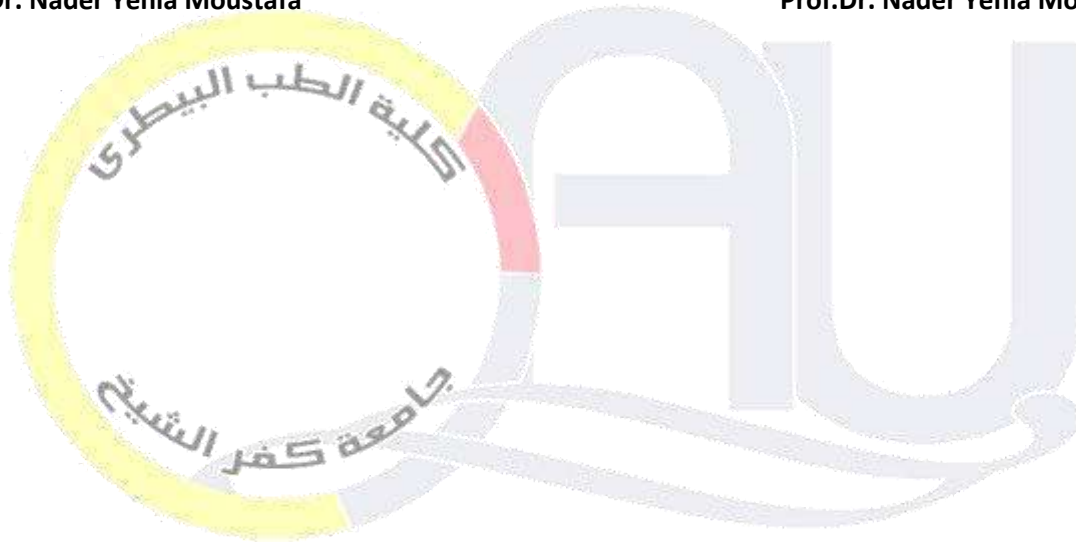
- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- FAO: <https://www.fao.org/home/en>
- Codex- alimentarius: <https://www.fao.org/fao-who-codexalimentarius/en/>

Course Coordinator:

Head of Department:

Prof. Dr. Nader Yehia Moustafa

Prof. Dr. Nader Yehia Moustafa



Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding										Intellectual Skills				Practical & Professional Skills				General & Transferable Skills							
			1	2	3	4	5	6	7	8	9	10	1	2	3		1	2	3			1	2	3	4	5		
1	knowledge about standard used to establish the industry..	20	x										x					x						x	x		x	
2	Hygienic measures adopted inside and outside the industry.	24	x	x									x	x	x			x	x	x				x	x	x	x	x
3	Application of HACCP system in meat and fish plants	20		x	x								x	x	x			x	x	x				x	x	x	x	x
4	Knowledge about detergent and chemical sanitizer	24	x	x		x							x	x	x			x	x	x				x	x	x	x	x
5	Cleaning procedures.	24		x		x	x						x	x	x			x	x	x				x	x		x	x
6	Designing of clean in place system (CIP)	24		x	x	x	x	x					x	x	x			x	x	x				x	x		x	x
7	Verification of cleaning	12		x	x			x	x					x	x			x						x	x		x	x
8	Detection of efficiency of sanitization.	20		x	x			x	x	x			x	x	x			x	x	x				x	x	x	x	x
9	Criteria for evaluation of meat and fish products.	24	x	x	x	x	x	x	x	x	x		x	x	x			x	x	x				x	x	x	x	x
10	Advanced technique for detection of hygienic meat and fish plant	8	x	x	x	x	x	x	x	x	x	x	x	x	x			x	x	x				x	x	x	x	x



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Surgery, anesthesiology and Radiology

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy

(Veterinary Surgery)

Kafrelsheikh University

Faculty of Veterinary Medicine

Department of Surgery, anesthesiology and Radiology

Program Specification for PhD Degree

(2021-2022)

A- Administrative information:

- 1- **Awarding Body:** Kafrelsheikh University
- 2- **Teaching Body:** Faculty of Veterinary Medicine
- 3- **Department responsible:** **Surgery, anesthesiology and Radiology**
- 4- **Program Title:** PhD Degree in Veterinary Medicine (Veterinary Surgery)
- 5- **Final award:** PhD Degree
- 6- **Registration period:** 3-5 years
- 7- **Program Coordinator:** Prof. Dr.
- 8- **External evaluator:** Prof. Dr.
- 9- **Date of revision:**
- 10- **Date of approval:**

B- Professional information:

1- Aims of the Program:

- Allow graduate to create new knowledge and understanding in Surgery, anesthesiology and Radiology through the process of research and inquiry.
- Enable graduate to achieve competency in modern technology

- Provide the graduate with the opportunity to develop communication skills, recent techniques and tools in the field of Veterinary Surgery and experience of scientific research skills.
- Giving the graduate the ability to be creative to advance Veterinary Surgery through new scientific research.
- Enable graduate to achieve capability in modern technology to develop practical research project.
- Demonstrate an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and present their own research data for the improvement of the Veterinary Surgery.
- Have the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibit awareness about current Veterinary Surgery and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of Veterinary Surgery.

2- Academic standards:

**Academic reference standards (ARS) adopted by the faculty committee No(1)
14/9/2014**

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Mastery of the basics and methodologies of scientific research.

- 2) Continuous work for the addition of knowledge in the field of specialization.
- 3) Apply analytical and critical approach of knowledge in the field of specialization and relevant area.
- 4) Integrate the specialized knowledge with the relevant ones to discover and develop the relation between them.
- 5) Demonstrate a deep awareness of the ongoing problems and modern theories in the field of specialization
- 6) Identify of the Professional problems and find innovative solutions for them.
- 7) Mastery of a wide range of professional skills in the field of specialization.
- 8) Orientation towards the development of methods and tools as well as, new techniques for professional practice.
- 9) Use of appropriate technological means to serve his professional practice.
- 10) Communicate effectively and lead the team work in various professional contexts.
- 11) Decision-making using available information.
- 12) Employment and raising the available fund and work to find new resources.
- 13) Awareness of his role in the development of society and safe community.
- 14) Deposit in a manner reflecting the commitment to integrity, credibility, and the professional rules.
- 15) Commitment to self-continuous development and transfer of his knowledge and experience to others.

4-Programme outcomes [intended learning outcomes (ILOs)]

a) Knowledge and understanding

By the end of this program the graduate should be able to:

- a.1. Discuss the updated and sophisticated scientific theories describing the different surgical conditions, anesthetic regimen, diagnostic imaging and related fields.
- a.2. Identify variety of therapeutics and/ or surgical protocols for the surgical conditions treatment.
- a.3. Outline the principles and different methods and tools of scientific

research.

- a.4. Employ ethics of scientific research during his research proposal.
- a.5. Translate legal and ethical principles regulating surgical practice in the area in his/her research work.
- a.6. Recognize principles and the basics of quality assurance in the area of professional practice in the field of Surgery, Anesthesiology and Radiology.
- a.7. Recognize the roll of the surgical intervention, surgery room cleaning and biological hazards on the environmental and maintenance.

b) Intellectual skills

By the end of this program the graduate should be able to:

- b.1. Correlate the collected information with the diagnostic aids results to reach the correct diagnosis.
- b.2. Select the most suitable decision for professional problem interference on the basis of available data
- b.3. Conduct scientific research for significant impact on some professional issues.
- b.4. Design experimental proposal in scientific manner according to available animal models.
- b.5. Construct a scientific paper in Surgery, Anesthesiology and Radiology
- b.6. Asses risks in the field of Surgery, Anesthesiology and Radiology.
- b.7. Plan to enhance the performance in field of Surgery, Anesthesiology and Radiology.
- b.8. Take decisions for dealing with field problem under different contexts.
- b.9. Be creative and innovative in the area of specialization.
- b.10. Share and lead scientific open discussion in the field of Surgery, Anesthesiology and Radiology based on evidences and proofs.

c) Professional and practical skills

By the end of this program the graduate should be able to:

- c.1. Practice the advances in basis and modern professional skills in the area of Surgery, Anesthesiology and Radiology.
- c.2. Write scientific reports about the clinical problems.
- c.3. Interpret and valuate professional reports.
- c.4. Evaluate and modernize methods and tools in the area of Surgery,

Anesthesiology and Radiology.

- c.5. Apply the most novel method and tool for solving professional problem.
- c.6. Plan for the improvement of professional practice and developing performance of others.

d) General and transferable skill

By the end of this program, the graduate should be able to:

- d.1. Communicate effectively in different ways of communications for the improvement surgery, anesthesiology and radiology professional practice.
- d.2. Select information technology that serves professional practice.
- d.3. Teach others and evaluate their performance skills.
- d.4. Self-evaluate and identify personal learning requirements
- d.5. Use different resources for obtaining information and knowledge.
- d.6. Lead team under different professional circumstances.
- d.7. Manage scientific meetings with the ability to manage time efficiently.

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, and seminars.

6-Assessments:

The program depends on different assessment ways:

a. Course assessment:

1. Final written exam
 - To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
2. Practical exam
 - To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
3. Oral exam
 - To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.

b. Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific

problems and judge the advancement in his research work

c. PhD Thesis assessment

- Annual reports adopted by the Faculty.
- Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
- Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1-3; b1,2
Oral	a1-3; b1,2
Practical	c1-7
Qualifying Exam	a1-7; b1-10
Thesis	a4-7; b1-10; c1-6; d1-7

7. Program structure

a. Program duration (years):

PhD degree from 3-5 years and it should not exceed a period of six years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law.

b. Program courses:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council so that include 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. The student will entitled to apply for the exam only after meeting attendance rate for each

courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c- Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d- Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion .

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in veterinary surgery includes:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1

	266/2	166- radiology and ultrasonography	2	2
	258/2	158- embryo transfer	1	2

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and	2	2

		histochemistry of urogenital system		
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2

	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed	2	2

		factories		
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Pathology				
	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology				
	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology				
	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology				
	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3

	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
81- Advanced immunology			2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
198/2	99- Fish parasitology	1	2	
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1
Hygiene and	208/2	108- Hygienic control of milk and	2	2

control of milk and dairy products		dairy products		
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2

	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/ 2	134- Stress diseases during animals transport.		
Infectious diseases	235/ 2	135- Infectious diseases of cattle	2	2
	236/ 2	136- Infectious diseases of sheep and goat	2	2
	237/ 2	137- Infectious diseases camel	2	2
	238/ 2	138 Infectious diseases of equine	2	2
	239/ 2	139- Infectious diseases of pet animals	2	2
	240/ 2	140- Infectious diseases lab animals	1	2
	241/ 2	141- Infectious diseases of udder and newly born animals	2	2
	242/ 2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in	2	2

		ruminants- equine- pet animals)		
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in polutry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2

	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and	2	-

		improvement (advanced).		
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (Veterinary Surgery) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medical science lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.
3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.
5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.
7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.

8. The applicant should submit a seminar(Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).
9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met: Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.
10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and incase of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.
11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards bit to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.
12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.
13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his

study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade	Percentage
-------	------------

Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
1	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	5
3	Alumni	Questioners	5
4	External examiners	Questioners	1
5	External evaluators	reports	1

Program Coordinator:

Head of Department:

Dr. Alaa Ghazy Soliman

Prof Dr. Gamal Elsayad

Matching program ILOs with ARS - Matrix

Program ILOs	ARS																											
	K&U (a)					I.S. (b)										P.P. (c)					G.T. (d)							
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7		
K&U	1,2,3	4,	5	6	7																							
I.S.						1	2	3,4	5	6	7	8	9	10														
P.P.															1	2,3	4	5	6									
G.T.																												



Program Specification Matrix

PhD in Veterinary Medical Sciences (Veterinary Surgery)

Courses		Total Contact hours/ course	No. of hours / week			K.U (a)							I.S (b)										P.P (c)						G.T (d)							
Code	Name		Lect.	Lab.	Total	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	1	2	3	4	5	6	7	
Predocloral courses (10-12 theoretical and practical hours weekly for 12 months)						x	x						x	x	x									x	x	x				x	x	x	x	x	x	x
Qualification exam								x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Thesis								x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

ARS for PhD in Veterinary Medical Sciences (Veterinary Surgery)

1) Graduate attributes

The graduate should have the ability for:

- 1) Mastering the basics and methodologies of scientific research in Veterinary Surgery with using of different tools
- 2) Performing continuous effort to acquire and add knowledge relevant to Veterinary Surgery regarding methods and instruments through reading, writing reports and essays or making presentations.
- 3) Analysis of information in laboratory medicine and related fields including anatomy, histology, pathology, veterinary medicine etc.
- 4) Integrate the specialized knowledge with the relevant ones to discover and develop the relation between them.
- 5) Demonstrate a deep awareness of the ongoing problems and modern theories in the field of Veterinary Surgery
- 6) Identify of the Professional problems and find innovative solutions for them.
- 7) Mastery of a wide range of professional skills in the field of Veterinary Surgery.
- 8) Orientation towards the development of methods and tools as well as, new techniques for professional practice.
- 9) Use of appropriate technological means to serve his professional practice.
- 10) Communicate effectively and lead the team work in various professional contexts.
- 11) Decision-making using available information.
- 12) Employment and raising the available fund and work to find new resources.
- 13) Awareness of his role in the development of society and safe community.
- 14) Deposit in a manner reflecting the commitment to integrity, credibility, and the professional rules.
- 15) Commitment to self-continuous development and transfer of his knowledge and experience to others.

A) Knowledge and understanding

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Recent theories, principles and knowledge in the field Veterinary Surgery.	Recent theories, principles and knowledge in the field of specialization and related areas
2)	Principles methodologies and ethics of scientific research regarding Veterinary Surgery.	Basics, methodologies and ethics of scientific research and its different tools
3)	Legal and ethical principles of Veterinary Surgery regulations and safety (hazards, precautions, protective instruments).	Legal and ethical principles of professional practice in the area of specialization
4)	The principles and the basics of quality assurance in the c Veterinary Surgery such as instrumentation, automation and calibration.	Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Awareness with the effect of good and accurate laboratory work on the environment and environmental development through accurate diagnosis of animal diseases and maintenance of animal and human health.	Awareness with the effect of professional practice on the environment and methods of its maintain and development

B) Intellectual skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analyze and evaluate clinical findings and integrate results with other clinical information to elicit proper interpretation.	Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solve diagnostic problems based on available laboratory data.	Solving professional problems using available data
3)	Plan scientific research studies in the field of Veterinary Surgery including new approaches, methods and applications that can manage problems through laboratory diagnosis.	Conducting scientific research studies that add to knowledge
4)	Formulate scientific papers efficiently through colleting, analyzing and interpreting data and developing evidence based learning and practice.	Formulating scientific papers
5)	Assess risks in the clinical work regarding improper use of some instruments or handling	Risk-assessment in the field of specialization

	samples of tissues.	
6)	Plan to improve performance in Veterinary Surgery work.	Planning to enhance the performance in field of specialization
7)	Take safe clinical decisions pertaining to clinical Pathology services particularly in complex and unpredictable situations.	Making professional decisions under different professional contexts
8)	Show innovative and creative skills in clinical practice, professional learning and scientific endeavor.	Creation and innovative in the area of specialization
9)	Discuss the laboratory results and lead scientific open discussion in relation to Veterinary Surgery based on evidences and proofs.	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern laboratory skills in Veterinary Surgery and related techniques	Mastering basic and modern professional skills in the area of specialization
2)	Writing and evaluating clinical report including Veterinary Surgery	Writing and evaluating professional reports
3)	Evaluating and modernizing methods and instruments in Veterinary Surgery to ensure quick and accurate interpretation.	Evaluating and modernizing methods and tools in the area of specialization
4)	Using different laboratory techniques properly and analyze clinical reports in algorism manner to get correct diagnosis.	Using modern technological means to serve professional practice
5)	Planning for the improvement of clinical practice through introduction of new methods and techniques and developing performance of others by training.	Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Communicate effectively in different ways with teaching staff, colleagues and community.	Effective communication

2)	Utilize information technology to serve Veterinary Surgery work.	Utilizing information technology to serve development of professional practice
3)	Teach others and evaluate their performance.	Teaching others and evaluating their performance
4)	Asses himself and life-long learning.	Self-assessment and continuous learning
5)	Use library, computer and other resources to acquire, apply and disseminate scientific knowledge.	Using different resources to obtain knowledge and information
6)	Work in a team and lead team under different professional circumstances.	Team working and leading a team in familiar professional contexts
7)	Manage scientific meetings with the ability to manage time efficiently.	Management of scientific meetings with the ability to manage time efficiently

ثالثاً: برامج الدكتوراه

١- مواصفات الخريج

- خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادراً على:
١. إتقان أساسيات و منهجيات البحث العلمي
 ٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
 ٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
 ٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطاً و مطوراً للعلاقات البيئية بينها
 ٥. إظهار وعيا عميقاً بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
 ٦. تحديد المشكلات المهنية و إيجاد حلولاً مبتكرة لحلها
 ٧. إتقان نطاقاً واسعاً من المهارات المهنية في مجال التخصص
 ٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
 ٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
 ١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
 ١١. اتخاذ القرار في ظل المعلومات المتاحة
 ١٢. توظيف الموارد المتاحة بكفاءة و تنميتها و العمل على إيجاد موارد جديدة
 ١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
 ١٤. التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة
 ١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢- المعايير القياسية العامة

المعرفة و الفهم:

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً علي الفهم و الدراية بكل من:

أ- النظريات و الأساسيات و الحديث من المعارف في مجال التخصص و المجالات ذات العلاقة

- ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
 ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
 ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
 ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و وطرق تنمية البيئة و صيانتها

المهارات الذهنية

- بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً على:
- أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
 ب- حل المشاكل المتخصصة استناداً علي المعطيات المتاحة
 ج- إجراء دراسات بحثية تضيف إلى المعارف
 د- صياغة أوراق علمية
 هـ- تقييم المخاطر في الممارسات المهنية
 و- التخطيط لتطوير الأداء في مجال التخصص
 ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة
 ح- الابتكار/ الإبداع
 ط- الحوار و النقاش المبني علي البراهين و الأدلة

المهارات المهنية

- بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً على:
- أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
 ب- كتابة و تقييم التقارير المهنية
 ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
 د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
 هـ- التخطيط لتطوير الممارسة المهنية و تنمية أداء الآخرين

المهارات العامة و المنتقلة

- بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- التواصل الفعال بأنواعه المختلفة
 - ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية
 - ت- تعليم الآخرين وتقييم أداءهم
 - ث- التقييم الذاتي والتعلم المستمر
 - ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
 - ح- العمل في فريق وقيادة فرق العمل
 - خ- إدارة اللقاءات العلمية والقدرة علي إدارة الوقت

Course specification (2021/2022)

1 - Basic Information:

Code number 259/2
Course title: General Veterinary Surgery (Advanced)
Academic Year: PhD Veterinary Medicine Program
Total teaching hours: 240 h
Lectures: 96 hrs. (48 weeks- 2hrs/week)
Practical: 144 hrs. (48 weeks- 3hrs/week)

2 - OVERALL AIMS OF THE COURSE:

The aim of the course is to provide the postgraduate students with an appropriate background covering the general surgical affections and conditions in different animal species.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Identify the basis of the inflammatory process and its consequences.
- a2. Distinguish the surgical affections of tendon, joint, and surface body swellings.
- a3. Explain types of fracture and fracture healing.
- a4. Familiarize the different types of incisions, wounds, surgical instruments, suture material, and suture pattern.
- a5. Explain how to manage burns and wounds.
- a6. Recognize the methods of bandage, splint, and cast in animals
- a7. Memorize the surgical antiseptic procedures

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1. Evaluate the articles, and collected research papers in general veterinary surgery.
- b2. Differentiate between different types of cyst, burse, wound, and hernias.
- b3. Illustrate how to deal with hernias and muscle injury.
- b4. Analyze different superficial surgical swelling for accurate diagnosis.
- b5. Diagram a plan for treatment of a fracture.
- b6. Conclude the more suitable time for interference in the different surgical conditions.
- b7. Judge and comment accurately upon the obtained results on his given results

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Apply principles of surgical asepsis, sterilization and disinfection.
- c2. Handle surgical facilities and equipment effectively.
- c3. Perform preoperative and Intraoperative care of the patient as well as surgeon preparation.
- c4. Practice surgical instrumentation, biomaterials, suturing, and hemostasis.
- c5. Manage the postoperative care.
- c6. Employ maintenance of the surgical environment.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1. Perform group working, good management and problem solving ability.
- d2. Conduct good communications.
- d3. Use new technology and has the ability of self-learning.

d4. Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
Inflammation	9	4	5
Bursitis	4	4	-
Tendon affections	6	6	-
Joint affections	6	6	-
Phlegmon, gangrene	4	4	-
Wounds and their healing	16	4	12
Fracture	18	6	12
Abscess	16	6	10
Cysts	4	4	-
Tumors	4	4	-
Hemorrhage and Hemostasis	18	6	12
Hernias	18	6	12
Fistula and sinus	4	4	-
Burns and scalds	4	4	-
Anti-sepsis and septic procedures	16	4	12
Dressing and bandage	18	6	12
Surgical instruments	16	4	12
Suture materials	16	4	12
Suture patterns	15	6	9
Injections	16	4	12
Clinical cases	12	-	12
Total	240	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about General Veterinary Surgery

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1-a7	b1-b7	-	d1-d4
Practical sessions	-	b1-b7	c1-c6	d1-d4
Self-Learning		b1-b7		d1- d2

activities				
Distance Teaching and Learning	a1 to a7	b1 to b7	c1 to c6	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6- METHODS FOR DISABLED STUDENTS:

- Discussions with them during practical sessions and lectures
- Giving them advice whenever needed

7-student assessment:

7.a: Used method	Written examination	Oral examination	Practical examination
7.b: Time	At the end of the year	At the end of the year	At the end of the year
7.c: Grads	50	25	25

7.2. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a7	b1,5,6,7		
Practical exams		b1,5,6,7	c1 to c6	
Oral exams	a1 to a5	b2,3,4		d4
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Recommended books:

- Equine Surgery 2011 Jörg A. Auer, and John A. Stick
- Manual of Equine Field Surgery, 2016 Wilson, David A., DVM
- Dollar's Veterinary Surgery J.J O'Connor **2019**
- Veterinary Surgery **2016** E. R Frank
- Treatment of equine fracture **2014** H.R. Denny
- Current Concepts in Veterinary Surgery, 2019 K. Fouad, M. Saleh and M. Shokry.

8-2: SUGGESTED books:

- Kirk and Bistner's Hbk. of Veterinary Procs and Emerg. Trtmt 9th ed.. - R. Ford, et al., (Saunders, 2020)
- General Surgery. M.V. Plakhoton, 2010 Fubini, S.L. and Ducharme, N.G. (2017): Farm animal surgery. 2nd Ed. Elsevier.
- Techniques in Large Animal Surgery, 3rd edition. 2007

8-3. Scientific Journals

- Journal of Veterinary surgery
- Journal of the American Veterinary Medical Association
- Orthopedics and Traumatology.

8-4. Scientific websites

- [The Egyptian Knowledge Bank: https://www.ekb.eg/web/guest/home](https://www.ekb.eg/web/guest/home)
- <https://www.vetsurgeryonline.com/>
- <https://www.acvs.org/> The American College of *Veterinary Surgeons*
- <https://www.veterinary-practice.com/>

Course Coordinator:

Head of Department:

Dr. Alaa Ghazy Soliman

Prof Dr. Gamal Elsayad

Course Matrix for achievement of Intended Learning Outcomes

	Topics	hr	knowledge							INTELLECTUAL SKILLS							PRACTICAL AND PROFESSIONAL SKILLS:						General & Transferable Skills					
			1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	1	2	3	4		
1	Inflammation	9	x							x						x	x						x	x	x	x	x	x
2	Bursitis	4	x							x						x	x						x	x	x	x	x	x
3	Tendon affections	6		x						x						x	x						x	x	x	x	x	x
4	Joint affections	6		x						x						x	x						x	x	x	x	x	x
5	Phelgmon, gangrene	4		x						x			x			x	x						x	x	x	x	x	x
6	Wounds and their healing	16					x			x	x	x	x			x	x						x	x	x	x	x	x
7	Fracture	18			x					x				x		x	x						x	x	x	x	x	x
8	Abscess	16		x						x	x	x	x			x	x						x	x	x	x	x	x
9	Cysts	4		x						x			x			x	x						x	x	x	x	x	x
10	Tumors	4		x						x			x			x	x						x	x	x	x	x	x
11	Hemorrhage and Haemostasis	18		x						x			x			x	x						x	x	x	x	x	x
12	Hernias	18		x						x	x	x	x			x	x						x	x	x	x	x	x
13	Fistula and sinus	4		x						x						x	x						x	x	x	x	x	x
14	Burns and scalds	4					x			x						x	x						x	x	x	x	x	x
15	Anti-sepsis and septic procedures	16							x	x						x	x	x					x	x	x	x	x	x
16	Dressing and bandage	18						x		x						x	x						x	x	x	x	x	x
17	Surgical instruments	16				x				x						x	x		x	x	x		x	x	x	x	x	x
18	Suture materials	16				x				x						x	x		x	x	x		x	x	x	x	x	x
19	Suture patterns	15				x				x						x	x		x	x	x		x	x	x	x	x	x

20	Injections	16													X	X					X	X	X	X	X	X
21	Clinical cases	12													X	X					X	X	X	X	X	X

Course specification (2021/2022)

1 - Basic Information:

Code number: 260/2
Course title: Regional Veterinary Surgery
Academic Year: PhD Veterinary Medicine Program
Total teaching hours: 240 h
Lectures: 96 hrs. (48 weeks- 2hrs/week)
Practical: 144 hrs. (48 weeks- 3hrs/week)

2 - OVERALL AIMS OF THE COURSE:

The aim of the course is to provide the postgraduate students with a basic education in the different surgical affections of the various body systems in different animal species and the main diagnostic tools to for accurate diagnosis the prognosis and method for treatment of each affection

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Recognize the surgical affections of the respiratory system
- a2. Describe the surgical affection of digestive system
- a3. Contrast the surgical affection of urinary system
- a4. Identify the surgical affection of genital system
- a5. Explain the surgical affection of udder

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1. Examine the animals and distinguish the presented clinical signs to reach the most suspected diagnosis.
- b2. Differentiate between different diseases and specify the present illness.
- b3. Illustrate different methods for diagnosing of such surgical affections.
- b4. Select the suitable treatment for each disease either medical and/or surgical.
- b5. Predict the prognosis of each affection after surgery.
- b6. Measure the surgical outcomes of each surgical technique.
- b7. Figure out post-operative complications corresponding to each affection.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Apply a plan for diagnosis and treatment.
- c2. Adapt accurate diagnostic tools or technique.
- c3. Perform preoperative techniques and patient preparation correctly.
- c4. Handle different anesthetic regimen for surgeries.
- c5. Predict the most appropriate surgical techniques for each affection.
- c6. Exercise on different surgeries and procedures.
- c7. Solve any post-operative complications.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1- Perform group working, good management and problem solving ability.
- d2- Conduct good communications.
- d3- Use new technology and has the ability of self-learning.
- d4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

Topics	No. of hours	Lecture	Practical
Surgery of Respiratory System	50	20	30
Surgery of Digestive System	60	26	34
Surgery of Urinary system	50	20	30
Surgery of the Genital System	50	20	30
Surgery of the udder	30	10	20
Total	240	96	144

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming
- * **Practical sessions:**
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about Regional Veterinary Surgery
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1-a5	b1-b7	-	d1-d4
Practical sessions	-	b1-b7	c1-c7	d1-d4
Self-Learning activities		b1-b7		d1- d2
Distance Teaching and Learning	a1 to a5	b1 to b7	c1 to c7	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6- METHODS FOR DISABLED STUDENTS:

- Discussions with them during practical sessions and lectures
- Giving them advice whenever needed

7-student assessment:

7.a: Used method	Written examination	Oral examination	Practical examination

7.b: Time	At the end of the year	At the end of the year	At the end of the year
7.c: Grads	50	25	25

7.2. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1,5,6,7		
Practical exams		b1,5,6,7	c1 to c7	
Oral exams	a1 to a5	b2,3,4		d4
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Recommended books:

- Equine Surgery 2011 Jörg A. Auer, and John A. Stick
- Manual of Equine Field Surgery, 2016 Wilson, David A., DVM
- Dollar's Veterinary Surgery J.J O'Connor 2019
- Veterinary Surgery 2016 E. R Frank
- Treatment of equine fracture 2014 H.R. Denny
- Current Concepts in Veterinary Surgery, 2019 K. Fouad, M. Saleh and M. Shokry.

8-2: SUGGESTED books:

- Kirk and Bistner's Hbk. of Veterinary Procs and Emerg. Trtmt 9th ed.. - R. Ford, et al., (Saunders, 2020)
- General Surgery. M.V. Plakhoton, 2010 Fubini, S.L. and Ducharme, N.G. (2017): Farm animal surgery. 2nd Ed. Elsevier.
- Techniques in Large Animal Surgery, 3rd edition. 2007

8-3. Scientific Journals

- Journal of Veterinary surgery
- Journal of the American Veterinary Medical Association
- Orthopedics and Traumatology.

8-4. Scientific websites

- [The Egyptian Knowledge Bank: https://www.ekb.eg/web/guest/home](https://www.ekb.eg/web/guest/home)
- <https://www.vetsurgeryonline.com/>
- <https://www.acvs.org/> The American College of *Veterinary Surgeons*
- <https://www.veterinary-practice.com/>

Course Coordinator:

Head of Department:

Dr. Alaa Ghazy Soliman

Prof Dr. Gamal Elsayad

Course Matrix for achievement of Intended Learning Outcomes

	Topics	hr	KNOWLEDGE and UNDERSTANDING					INTELLECTUAL SKILLS							PRACTICAL AND PROFESSIONAL SKILLS:							General & Transferable Skills				
			1	2	3	4	5	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	
1	Surgery of Respiratory System	50	x					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
2	Surgery of Digestive System	60		x				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
3	Surgery of Urinary system	50			x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
4	Surgery of the Genital System	50				x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
5	Surgery of the udder	30					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Course specification (2021/2022)

1 - Basic Information:

Code number: 261/2

Course title: **surgery of eye, ear, nose, and larynx**

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: **192 h**

Lectures: **96 hrs. (48 weeks- 2hrs/week)**

Practical: **96 hrs. (48 weeks- 2hrs/week)**

2 - OVERALL AIMS OF THE COURSE:

The aim of the course is to provide the postgraduate students with an appropriate background covering the common and important general surgical emergencies and affections of eye, ear, nose, and larynx

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Recognize the applied ocular anatomy, examination, affections, and surgical treatment in different animal species.
- a2. List the ear anatomy, examination, affections, and surgical treatment in different animal species.
- a3. Describe the nasal anatomy, examination, affections, and surgical treatment in different animal species.
- a4. Explain the laryngeal anatomy, examination, affections, and surgical treatment in different animal species.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1. Predict the most suspected examination and deferential diagnosis of ocular, auricular, nasal, and laryngeal affections in different animal species.
- b2. Evaluate the different options and tools for ocular, auricular, nasal, and laryngeal surgical interference.
- b3. Plan for ocular, auricular, nasal, and laryngeal surgery in different animals species.
- b4. Predict the surgical outcomes.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Operate systemic examination for diagnosing of ocular, auricular, nasal, and laryngeal surgical conditions.
- c2. Formulate a suitable anesthetic regimen for ocular, auricular, nasal, and laryngeal surgery according to animal species.
- c3. Prepare the animal for surgery and application of pre-operative procedures.
- c4. Use the facility of the surgery theater.
- c5. Solve the corresponding post-operative complications.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1- Perform group working , good management and problem solving ability.

- d2- Conduct good communications.
- d3- Use new technology and has the ability of self-learning.
- d4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

Topic	No. of hours	Lecture	Practical
Ophthalmology	48	24	24
Auricular affections	48	24	24
Nasal affections	48	24	24
Laryngeal affections	48	24	24
Total	192	96	96

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming
- * **Practical sessions:**
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about surgery of eye, ear, nose, and larynx
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1-a4	b1-b4	-	d1-d4
Practical sessions	-	b1-b4	c1-c5	d1-d4
Self-Learning activities		b1-b4		d1- d2
Distance Teaching and Learning	a1 to a4	b1 to b4	c1 to c5	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6- METHODS FOR DISABLED STUDENTS:

- Discussions with them during practical sessions and lectures
- Giving them advice whenever needed

7-student assessment:

7.a: Used method	Written examination	Oral examination	Practical examination
7.b: Time	At the end of the year	At the end of the year	At the end of the year
7.c: Grads	50	25	25

7.2. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1,5,6,7		
Practical exams		b1,5,6,7	c1 to c7	
Oral exams	a1 to a5	b2,3,4		d4
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Recommended books:

- Equine Surgery 2011 Jörg A. Auer, and John A. Stick
- Manual of Equine Field Surgery, 2016 Wilson, David A., DVM
- Dollar's Veterinary Surgery J.J O'Connor **2019**
- Veterinary Surgery **2016** E. R Frank
- Treatment of equine fracture **2014** H.R. Denny
- Current Concepts in Veterinary Surgery, 2019 K. Fouad, M. Saleh and M. Shokry.
- BSAVA Manual of Canine and Feline Ophthalmology, 3rd Edition. 2015 [David Gould](#), [Gillian McLellan](#). ISBN: 978-1-905-31942-8

8-2: SUGGESTED books:

- Kirk and Bistner's Hbk. of Veterinary Procs and Emerg. Trtmt 9th ed.. - R. Ford, et al., (Saunders, 2020)
- General Surgery. M.V. Plakhoton, 2010 Fubini, S.L. and Ducharme, N.G. (2017): Farm animal surgery. 2nd Ed. Elsevier.
- Techniques in Large Animal Surgery, 3rd edition. 2007
- Equine Ophthalmology (2nd ed.) 2011 Brian C. Gilger
- Slatter's Fundamentals of Veterinary Ophthalmology 2008 David J. Maggs

8-3. Scientific Journals

- Journal of Veterinary surgery
- Journal of the American Veterinary Medical Association
- Orthopedics and Traumatology.

8-4. Scientific websites

- [The Egyptian Knowledge Bank: https://www.ekb.eg/web/guest/home](https://www.ekb.eg/web/guest/home)
- <https://www.vetsurgeryonline.com/>
- <https://www.acvs.org/> The American College of *Veterinary Surgeons*
- <https://www.veterinary-practice.com/>

Course Coordinator:

Head of Department:

Dr. Alaa Ghazy Soliman

Prof Dr. Gamal Elsayad

Course Matrix for achievement of Intended Learning Outcomes

	Topics	hr	KNOWLEDGE and UNDERSTANDING				INTELLECTUAL SKILLS				PRACTICAL AND PROFESSIONAL SKILLS:					General & Transferable Skills			
			1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4
1	Ophthalmology	48	X				X	X	X	X	X	X	X	X	X	X	X	X	X
2	Auricular affections	48		X			X	X	X	X	X	X	X	X	X	X	X	X	X
3	Nasal affections	48			X		X	X	X	X	X	X	X	X	X	X	X	X	X
4	Laryngeal affections	48				X	X	X	X	X	X	X	X	X	X	X	X	X	X

Course specification (2021/2022)

1 - Basic Information:

Code number: 262/2
Course title: **Surgery of the Digestive System**
Academic Year: **PhD Veterinary Medicine Program**
Total teaching hours: **192 h**
Lectures: **96 hrs. (48 weeks- 2hrs/week)**
Practical: **96 hrs. (48 weeks- 2hrs/week)**

2 - OVERALL AIMS OF THE COURSE:

The aim of the course is to provide the postgraduate students with a basic education in the field of surgical affections of the alimentary tract in different animal species and the varieties of diagnostic techniques and the possible options for medical and/or surgical treatment.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Describe the detailed surgical anatomy of digestive system with recognition of the differences in different animal species.
- a2. Review various surgical affections of digestive systems and distinguish the differentials in different animal species.
- a3. Identify method of inspect animals with digestive system diseases.
- a4. Identify possible anesthetic regimen for surgery.
- a5. Review the surgical techniques and procedures used to treat different digestive system affections in different animals.
- a6. Tell the suspected post-operative complication.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1. Predict the most suspected diagnosis and deferential diagnosis of digestive system diseases in different animals.
- b2. Evaluate the possible options for treatment either medical and/or surgical.
- b3. Assess the patient risk factors and prognosis of each disease.
- b4. Predict the surgical outcomes of each operation.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Use the facility of the surgery theater.
- c2. Prepare the animal for surgery and practice of pre-operative procedures.
- c3. Employ a suitable anesthetic regimen for abdominal surgery according to animal species.
- c4. Operate different surgical techniques in different animal species.
- c5. Solve the post-operative complications.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1- Perform group working , good management and problem solving ability.
- d2- Conduct good communications.

d3- Use new technology and has the ability of self-learning.

d4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

Topics	No. of hours	Lecture	Practical
Dentistry	24	12	12
Mouth ,Tongue and pharynx	24	12	12
Salivary glands	24	12	12
Esophagus	24	12	12
Simple &Compound Stomach	24	12	12
Rumen and abomasum	24	12	12
Intestine	24	12	12
Rectum and Anus	24	12	12
total	192	96	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about surgery of Digestive System

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1-a6	b1-b4	-	d1-d4
Practical sessions	-	b1-b4	c1-c5	d1-d4
Self-Learning activities		b1-b4		d1- d2
Distance Teaching and Learning	a1 to a6	b1 to b4	c1 to c5	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6- METHODS FOR DISABLED STUDENTS:

- Discussions with them during practical sessions and lectures
- Giving them advice whenever needed

7-student assessment:

7.a: Used method	Written examination	Oral examination	Practical examination
7.b: Time	At the end of the year	At the end of the year	At the end of the year
7.c: Grads	50	25	25

7.2. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a6	b1-b4		
Practical exams		b1-b4	c1 to c5	
Oral exams	a1 to a6	b1-b4		d4
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Recommended books:

- Equine Surgery 2011 Jörg A. Auer, and John A. Stick
- Manual of Equine Field Surgery, 2016 Wilson, David A., DVM
- Dollar's Veterinary Surgery J.J O'Connor 2019
- Veterinary Surgery 2016 E. R Frank
- Treatment of equine fracture 2014 H.R. Denny
- Current Concepts in Veterinary Surgery, 2019 K. Fouad, M. Saleh and M. Shokry.
- BSAVA Manual of Canine and Feline Ophthalmology, 3rd Edition. 2015 [David Gould](#), [Gillian McLellan](#). ISBN: 978-1-905-31942-8

8-2: SUGGESTED books:

- Kirk and Bistner's Hbk. of Veterinary Procs and Emerg. Trtmt 9th ed.. - R. Ford, et al., (Saunders, 2020)
- General Surgery. M.V. Plakhoton, 2010 Fubini, S.L. and Ducharme, N.G. (2017): Farm animal surgery. 2nd Ed. Elsevier.
- Techniques in Large Animal Surgery, 3rd edition. 2007
- Equine Ophthalmology (2nd ed.) 2011 Brian C. Gilger
- Slatter's Fundamentals of Veterinary Ophthalmology 2008 David J. Maggs

8-3. Scientific Journals

- Journal of Veterinary surgery
- Journal of the American Veterinary Medical Association
- Orthopedics and Traumatology.

8-4. Scientific websites

- [The Egyptian Knowledge Bank: https://www.ekb.eg/web/guest/home](https://www.ekb.eg/web/guest/home)

- <https://www.vetsurgeryonline.com/>
- <https://www.acvs.org/> The American College of *Veterinary Surgeons*
- <https://www.veterinary-practice.com/>

Course Coordinator:

Head of Department:

Dr. Alaa Ghazy Soliman

Prof Dr. Gamal Elsayad

Course Matrix for achievement of Intended Learning Outcomes

	Topics	hrs.	KNOWLEDGE and UNDERSTANDING						INTELLECTUAL SKILLS				PRACTICAL AND PROFESSIONAL SKILLS:					General & Transferable Skills			
			1	2	3	4	5	6	1	2	3	4	1	2	3	4	5	1	2	3	4
1	Dentistry	24	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	Mouth ,Tongue and pharynx	24	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	Salivary glands	24	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	Esophagus	24	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	Simple &Compound Stomach	24	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	Rumen and abomasum	24	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	Intestine	24	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	Rectum and Anus	24	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X



Course specification (2021/2022)

1 - Basic Information:

Code number: 263/2
Course title: Surgical affections of the Limbs, Hoof and Claw
Academic Year: PhD Veterinary Medicine Program
Total teaching hours: 192 h
 Lectures: 96 hrs. (48 weeks- 2hrs/week)
 Practical: 96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

The aim of the course is to provide the postgraduate students with a basic education in the field of veterinary surgery of limbs and hoof & claw affections.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. List various surgical affections of musculoskeletal system.
- a2. Identify the most common affections of the equine hoof.
- a3. Summarize different surgical affections of the claw
- a4. Explain different diagnostic aids and methods for each disease conditions

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1. Evaluate the scientific papers essential for his research project.
- b2. Interpret the collected data each surgical case.
- b3. Judge the prognosis of each case and
- b4. Select the most suitable method for treatment of each surgical case.
- b5. Specify the surgery maneuvers.
- b6. Design discharge system for the operated animal.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- b1. Practice the most recent and advanced diagnostic techniques and tools necessary to evaluate the lame animals.
- b2. Perform essential skills those support surgical techniques.
- b3. Practice the more sophisticated surgical procedures for the lame conditions in the most effective way.
- b4. Practice the post- operative care and how to deal with postoperative complications.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1- Perform group working, good management and problem solving ability.
- d2- Conduct good communications.
- d3- Use new technology and has the ability of self-learning.
- d4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

Topic	No. of	Lecture	Practical
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	hours		
Diagnosis of lameness	48	24	24
Surgical affections of the hoof.	36	18	18
Surgical affections of the claw.	36	18	18
Surgical affections of the fore limb.	36	18	18
Surgical affections of the hind limb.	36	18	18
Total	192	96	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about surgery of Digestive System

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1-a4	b1-b6	-	d1-d4
Practical sessions	-	b1-b6	c1-c4	d1-d4
Self-Learning activities		b1-b6		d1- d2
Distance Teaching and Learning	a1 to a4	b1 to b6	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6- METHODS FOR DISABLED STUDENTS:

- Discussions with them during practical sessions and lectures
- Giving them advice whenever needed

7-student assessment:

7.a: Used method	Written examination	Oral examination	Practical examination
7.b: Time	At the end of the year	At the end of the year	At the end of the year
7.c: Grads	50	25	25

7.2. Methods	7. Student Assessment
	Intended Learning Outcomes Covered



	KU	IS	PPS	GTS
Written exams	a1 to a4	b1-b6		
Practical exams		b1-b6	c1 to c4	
Oral exams	a1 to a4	b1-b6		d4
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Recommended books:

- Equine Surgery 2011 Jörg A. Auer, and John A. Stick
- Manual of Equine Field Surgery, 2016 Wilson, David A., DVM
- Dollar's Veterinary Surgery J.J O'Connor 2019
- Veterinary Surgery 2016 E. R Frank
- Treatment of equine fracture 2014 H.R. Denny
- Current Concepts in Veterinary Surgery, 2019 K. Fouad, M. Saleh and M. Shokry.

8-2: SUGGESTED books:

- Kirk and Bistner's Hbk. of Veterinary Procs and Emerg. Trtmt 9th ed.. - R. Ford, et al., (Saunders, 2020)
- General Surgery. M.V. Plakhoton, 2010 Fubini,
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- Techniques in Large Animal Surgery, 3rd edition. 2007

8-3. Scientific Journals

- Journal of Veterinary surgery
- Journal of the American Veterinary Medical Association
- Orthopedics and Traumatology.

8-4. Scientific websites

- [The Egyptian Knowledge Bank: https://www.ekb.eg/web/guest/home](https://www.ekb.eg/web/guest/home)
- <https://www.vetsurgeryonline.com/>
- <https://www.acvs.org/> The American College of *Veterinary Surgeons*
- <https://www.veterinary-practice.com/>

Course Coordinator:

Head of Department:

Dr. Alaa Ghazy Soliman

Prof Dr. Gamal Elsayad



Course Matrix for achievement of Intended Learning Outcomes

	Topics	hr	KNOWLEDGE and UNDERSTANDING				INTELLECTUAL SKILLS						PRACTICAL AND PROFESSIONAL SKILLS:				General & Transferable Skills			
			1	2	3	4	1	2	3	4	5	6	1	2	3	4	1	2	3	4
1	Diagnosis of lameness	48	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	Surgical affections of the hoof.	36		X		X	X	X	X	X	X	X		X	X		X	X	X	X
3	Surgical affections of the claw.	36			X	X	X	X	X	X	X	X		X	X		X	X	X	X
4	Surgical affections of the fore limb.	36				X	X	X	X	X	X	X		X	X		X	X	X	X
5	Surgical affections of the hind limb.	36				X	X	X	X	X	X	X		X	X		X	X	X	X



Course specification (2021/2022)

1 - Basic Information:

Code number: 264/2
Course title: **Experimental Surgery**
Academic Year: **PhD Veterinary Medicine Program**
Total teaching hours: **192 h**
Lectures: **96 hrs. (48 weeks- 2hrs/week)**
Practical: **96 hrs. (48 weeks- 2hrs/week)**

2 - OVERALL AIMS OF THE COURSE:

The aim of the course is to provide the postgraduate students with a basic education in the field of experimental surgery and the ethics of using experimental animals and select the ideal animal model.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Discuss the moral, ethical and legal regulation in scientific research, surgery and experimental animals.
- a2. Recognize the quality principle in research work.
- a3. Outline regimens for anesthetizing experimental animals.
- a4. Describe the outline for experimental surgery.
- a5. Define the different experimental surgical protocols for different body systems.
- a6. Review the diagnostic imaging techniques (radiology & ultrasonography).

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1. Design schedule for experimental surgery proposal.
- b2. Select the correct regimens for anesthetizing experimental animals.
- b3. Specify the experimental surgical protocol for different body systems.
- b4. Interpret the diagnostic image correctly

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Carry out experimental animal Anesthesia in proper manner.
- c2. Operate suitable technique to operate the experimental animal.
- c3. Use the diagnostic imaging technique efficiently.
- c4. Setup a plan for treatment.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1- Perform group working, good management and problem solving ability.
- d2- Conduct good communications.
- d3- Use new technology and has the ability of self-learning.
- d4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

Topic	No. of hours	Lecture	Practical
Experimental Surgery of the gastro-intestinal tract.	48	24	24
Different tech. of skin graft.	24	12	12
Experimental Surgery of the Urinary system	24	12	12
Experimental ophthalmic surgery	24	12	12
Experimental Surgery of the teeth and oral cavity	24	12	12
Experimental surgery of the gland	24	12	12
Experimental orthopedic surgery	24	12	12
Total	192	96	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about experimental surgery

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1-a6	b1-b4	-	d1-d4
Practical sessions	-	b1-b4	c1-c4	d1-d4
Self-Learning activities		b1-b4		d1- d2
Distance Teaching and Learning	a1 to a6	b1 to b4	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6- METHODS FOR DISABLED STUDENTS:

- Discussions with them during practical sessions and lectures
- Giving them advice whenever needed

7-student assessment:

7.a: Used method	Written examination	Oral examination	Practical examination
7.b: Time	At the end of the year	At the end of the year	At the end of the year
7.c: Grads	50	25	25



7.2. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1-b6		
Practical exams		b1-b6	c1 to c3	
Oral exams	a1 to a4	b1-b6		d4
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Recommended books:

- Equine Surgery 2011 Jörg A. Auer, and John A. Stick
- Manual of Equine Field Surgery, 2016 Wilson, David A., DVM
- Dollar's Veterinary Surgery J.J O'Connor 2019
- Veterinary Surgery 2016 E. R Frank
- Treatment of equine fracture 2014 H.R. Denny
- Current Concepts in Veterinary Surgery, 2019 K. Fouad, M. Saleh and M. Shokry.

8-2: SUGGESTED books:

- Kirk and Bistner's Hbk. of Veterinary Procs and Emerg. Trtmt 9th ed.. - R. Ford, et al., (Saunders, 2020)
- General Surgery. M.V. Plakhoton, 2010 Fubini,
- S.L. and Ducharme, N.G. (2017): Farm animal surgery. 2nd Ed. Elsevier.
- Techniques in Large Animal Surgery, 3rd edition. 2007
- An Atlas of Veterinary Surgery, 2019 Johon Hickman and Robert G. Walker

8-3. Scientific Journals

- Journal of Veterinary surgery
- Journal of the American Veterinary Medical Association
- Orthopedics and Traumatology.

8-4. Scientific websites

- [The Egyptian Knowledge Bank: https://www.ekb.eg/web/guest/home](https://www.ekb.eg/web/guest/home)
- <https://www.vetsurgeryonline.com/>
- <https://www.acvs.org/> The American College of Veterinary Surgeons
- <https://www.veterinary-practice.com/>

Course Coordinator:

Head of Department:

Dr. Alaa Ghazy Soliman

Prof Dr. Gamal Elsayad

Course Matrix for achievement of Intended Learning Outcomes

	Topics	hrs.	KNOWLEDGE and UNDERSTANDING						INTELLECTUAL SKILLS				PRACTICAL AND PROFESSIONAL SKILLS:				General & Transferable Skills			
			1	2	3	4	5	6	1	2	3	4	1	2	3	4	1	2	3	4
1	Experimental Surgery of the gastro-intestinal tract.	48	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
2	Different tech. of skin graft.	24	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
3	Experimental Surgery of the Urinary system	24	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
4	Experimental ophthalmic surgery	24	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
5	Experimental Surgery of the teeth and oral cavity	24	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
6	Experimental surgery of the gland	24	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7	Experimental orthopedic surgery	24	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x



Course specification (2021/2022)

1 - Basic Information:

Code number: 265/2

Course title: **Veterinary Anaesthesiology**

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 144 hrs.

Lectures: 48 hrs. (48 weeks- 1hrs/week)

Practical: 96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

This course aimed to enable the postgraduate students to gain first the experience in different anesthetic regimen for different animal species, anesthetic procedures of each animal species, and different types of Anesthetic drugs.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. Explain different methods of anesthesia for each animal species especially general anesthesia.
- a2. Discuss the various anesthetic regimens for each animal species with especial references to stages and plans of general anesthesia.
- a3. Identify the most suitable regimen of anesthesia for each condition.
- a4. Express different parts of anesthetic machine.
- a5. Express the intra-operative monitoring for preventing deleterious effects.
- a6. Post-operative follow up of the anesthetized animal.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1. Evaluate the articles and collected research papers in veterinary Anesthesiology.
- b2. Apply suitable anesthetic regimen for each clinical cases.
- b3. Evaluate the ways chosen to anesthetize an animal for surgery.
- b4. Specify the anesthetic regimen combination for each case.
- b5. Interpret the information about the anesthetic risk patients.
- b6. Judge the current methods of anesthetizing such patients.
- b7. Examine anesthetized animals under anesthesia.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Use recent techniques and tools necessary to anesthetizing different animal species.
- c2. Handle general inhalation anesthetic machine.
- c3. Examine animal's vitals under general anesthesia.
- c4. Perform local and regional analgesia.
- c5. Manage animals during recovery from anesthesia.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1- Perform group working, good management and problem solving ability.
- d2- Conduct good communications.
- d3- Use new technology and has the ability of self-learning.
- d4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

Topic	No. of hours	Lecture	Practical
Local analgesia	18	6	12
Prineural analgesia about the head	18	6	12
Prineural analgesia about the limb	18	6	12
Prineural analgesia about the trunk.	18	6	12
Spinal analgesia	18	6	12
Narcosis	18	6	12
Premedications	18	6	12
General anesthesia	18	6	12
Total	144	48	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about Veterinary Anaesthesiology

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1-a6	b1-b7	-	d1-d4
Practical sessions	-	b1-b7	c1-c5	d1-d4
Self-Learning activities		b1-b7		d1- d2
Distance Teaching and Learning	a1 to a6	b1 to b7	c1 to c5	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6- METHODS FOR DISABLED STUDENTS:

- Discussions with them during practical sessions and lectures
- Giving them advice whenever needed

7-student assessment:

7.a: Used method	Written examination	Oral examination	Practical examination
7.b: Time	At the end of the year	At the end of the year	At the end of the year



7.c: Grads

50

25

25

7.2. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a6	b1-b7		
Practical exams		b1-b7	c1 to c5	
Oral exams	a1 to a6	b1-b7		d4
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Recommended books:

- Manual of Equine Anaesthesia and analgesia Doherty, T. J. 2019
- Handbook of Equine Anaesthesia 2nd ed. 2007 Taylor
- Wright's Veterinary Anaesthesia 2019

8-2: SUGGESTED books:

- Veterinary Anesthesia, WILLIAM V. LUMB , 3rd edition, 2018
- Veterinary Anesthesia, L.W.HALL K.W.CLARKE, 10th edition 2014

8-3. Scientific Journals

- Journal of Veterinary surgery
- Journal of the American Veterinary Medical Association
- Orthopedics and Traumatology.

8-4. Scientific websites

- [The Egyptian Knowledge Bank: https://www.ekb.eg/web/guest/home](https://www.ekb.eg/web/guest/home)
- <https://www.vetsurgeryonline.com/>
- <https://www.acvs.org/> The American College of *Veterinary Surgeons*
- <https://www.veterinary-practice.com/>

Course Coordinator:

Head of Department:

Dr. Alaa Ghazy Soliman

Prof Dr. Gamal Elsayad



Course Matrix for achievement of Intended Learning Outcomes

	Topics	hr	KNOWLEDGE and UNDERSTANDING						INTELLECTUAL SKILLS							PRACTICAL AND PROFESSIONAL SKILLS:					General & Transferable Skills			
			1	2	3	4	5	6	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4
1	Local analgesia	18	x	x	x		x	x	x	x	x	x	x	x	x	x			x		x	x	x	x
2	Prineural analgesia about the head	18	x	x	x		x	x	x	x	x	x	x	x	x	x			x		x	x	x	x
3	Prineural analgesia about the limb	18	x	x	x		x	x	x	x	x	x	x	x	x	x			x		x	x	x	x
4	Prineural analgesia about the trunk.	18	x	x	x		x	x	x	x	x	x	x	x	x	x			x		x	x	x	x
5	Spinal analgesia	18	x	x	x		x	x	x	x	x	x	x	x	x	x			x		x	x	x	x
6	Narcosis	18	x	x	x		x	x	x	x	x	x	x	x	x	x				x	x	x	x	x
7	Premedications	18	x	x	x		x	x	x	x	x	x	x	x	x	x			x		x	x	x	x
8	General anesthesia	18	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x



Course specification (2021/2022)

1 - Basic Information:

Code number: 266/2
Course title: Radiology and ultrasonography
Academic Year: PhD Veterinary Medicine Program
Total teaching hours: 192 h
Lectures: 96 hrs. (48 weeks- 2hrs/week)
Practical: 96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

The aim of the course is to provide the postgraduate students with a basic education in the field of veterinary Radiology and ultrasonography.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a1. State different diagnostic imaging procedures of different body systems for different animal species.
- a2. List diagnostic imaging procedures of different systems.
- a3. Identify the different diagnostic imaging tools.
- a4. Know the most suitable exposure factors.
- a5. List the radiographic and ultrasonography artifacts

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1. Interpret x-ray films.
- b2. Assess and judge the used methods of radiological examination of the patients.
- b3. Evaluate the articles and collected research papers in veterinary diagnostic imaging.
- b4. Evaluate the current parameters and exposure factors for obtaining diagnostic image.
- b5. Interpret ultrasonic image.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1. Investigate and evaluate the recent techniques necessary to radiological examination of different animals.
- c2. Operate different radiological examination procedures like, X-ray, Ultrasound for each species.
- c3. Operate X-rays machine effectively.
- c4. Use the ultrasound machine effectively

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d1- Perform group working, good management and problem solving ability.
- d2- Conduct good communications.
- d3- Use new technology and has the ability of self-learning.
- d4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

Topic	No. of hours	Lecture	Practical
General radiographic terminology	16	16	-
X-ray	88	40	48
Ultrasound	88	40	48
Total	192	96	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library Making individual reports about Veterinary Radiology and ultrasonography

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1-a5	b1-b5	-	d1-d4
Practical sessions	-	b1-b5	c1-c4	d1-d4
Self-Learning activities		b1-b5		d1- d2
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6- METHODS FOR DISABLED STUDENTS:

- Discussions with them during practical sessions and lectures
- Giving them advice whenever needed

7-student assessment:

7.a: Used method	Written examination	Oral examination	Practical examination
7.b: Time	At the end of the year	At the end of the year	At the end of the year
7.c: Grads	50	25	25



	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1-b4		
Practical exams		b1-b4	c1 to c4	
Oral exams	a1 to a5	b1-b4		d4
Student activities				d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Recommended books:

- Thrall, Donald E. Textbook of veterinary diagnostic radiology. 7th ed. Elsevier Health Sciences, **2018**.
- Textbook of gastrointestinal radiology. Vol. 1. Philadelphia, PA: Saunders, **2008**.
- Burk, Ronald L., and Norman Ackerman. Small animal radiology and ultrasonography: a diagnostic atlas and text. No. Ed. 3. WB Saunders Co., **2003**.

8-2: SUGGESTED books:

- **Textbook of Gastrointestinal Radiology**. Richard M. Gore, Marc Levine. 5th ed. 2021. Elsevier. ISBN: 9780323640824

8-3. Scientific Journals

- Journal of Veterinary surgery
- Journal of the American Veterinary Medical Association
- Orthopedics and Traumatology.

8-4. Scientific websites

- [The Egyptian Knowledge Bank: https://www.ekb.eg/web/guest/home](https://www.ekb.eg/web/guest/home)
- <https://www.vetsurgeryonline.com/>
- <https://www.acvs.org/> The American College of *Veterinary Surgeons*
- <https://www.veterinary-practice.com/>

Course Coordinator:

Head of Department:

Dr. Alaa Ghazy Soliman

Prof Dr. Gamal Elsayad



Course Matrix for achievement of Intended Learning Outcomes

	Topics	hrs.	KNOWLEDGE and UNDERSTANDING					INTELLECTUAL SKILLS					PRACTICAL AND PROFESSIONAL SKILLS:				General & Transferable Skills					
			1	2	3	4	5	1	2	3	4	5	1	2	3	4	1	2	3	4		
1	General radiographic terminology	16	x	x	x	x	x												x	x	x	x
2	X-ray	88	x	x	x	x	x	x	x	x	x	x		x	x	x			x	x	x	x
3	Ultrasound	88	x	x	x	x	x			x	x	x	x	x			x		x	x	x	x



Kafrelsheikh University
Faculty of Veterinary Medicine



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Hygiene and Preventive Medicine

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy
(Animal and Poultry Behavior and Management)



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Hygiene and Preventive Medicine

Program Specification for PhD Degree
(2021-2022)

A- Administrative information:

- 1- **Awarding Body:** Kafrelsheikh University
- 2- **Teaching Body:** Faculty of Veterinary Medicine
- 3- **Department responsible:** Department of Hygiene and Preventive Medicine
- 4- **Program Title:** PhD Degree in Veterinary medicine (Animal and Poultry Behavior and Management)
- 5- **Final award:** PhD Degree
- 6- **Registration period:** 3-5 years
- 7- **Program Coordinator:** Prof. Dr.
- 8- **External evaluator:** Prof. Dr.
- 9- **Date of revision:**
- 10- **Date of approval:**

B- Professional information:

1- Aim of the Program:

- Allow graduate to create new knowledge and understanding in Animal, Poultry and Fish Behavior and Management through the process of research and inquiry.
- Enable graduate to achieve competency in modern technology
- Provide the graduate with the opportunity to develop communication skills, recent techniques and tools in the field of Animal, Poultry and Fish Behavior and Management and experience of scientific research skills.



- Giving the graduate the ability to be creative to advance Animal and Poultry Behavior and Management through new scientific research.
- Enable graduate to achieve capability in modern technology to develop practical research project.
- Demonstrate an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and present their own research data for the improvement of the animal and poultry welfare and performance.
- Have the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibit awareness about current Animal and Poultry Behavior and managerial problems and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of Animal, Poultry and Fish Behavior and Management.

2- Academic standards:

**Academic reference standards (ARS) adopted by the faculty committee
No 1 (14/9/2014)**

3-Graduate attributes:

Upon successful completion of the program, the graduate has the ability to:

- 1) Mastering of the basics and methodologies of scientific research.
- 2) Continuous work in the addition of knowledge in the field of Animal and poultry behavior and Management
- 3) Apply analytical and critical approach of knowledge in the field of Animal and poultry behavior and Management
- 4) Integrate the specialized knowledge with the relevant ones, discovering and developing the relation between them.
- 5) Demonstrate a deep awareness of the ongoing problems and modern theories in the field of Animal and poultry behavior and Management.
- 6) Identify of the Professional problems and find innovative solutions to solve it.



- 7) Mastery of a wide range of professional skills in the field of Animal and poultry behavior and Management
- 8) Orientation towards the development of methods and tools as well as, new techniques for professional practice.
- 9) Use of appropriate technological means to serve his professional practice.
- 10) Communicate effectively and lead the team work in various professional contexts.
- 11) Decision-making in light of available information.
- 12) Employment and raising the available fund and work to find new resources.
- 13) Awareness of his role in the development of society and preserve community.
- 14) Deposit in a manner reflecting the commitment to integrity, credibility, and the professional rules.
- 15) Commitment to self-continuous development and transfer of his knowledge and experience to others..

4-Programme outcomes [intended learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

- a.1.** Recognize recent theories, principles and knowledge in animal, poultry and fish behavior and management for improvement of animal performance and welfare. In addition to diagnose and know the actual causes of abnormal animal behavior.
- a.2.** Apply principles methodologies and ethics of scientific research and its tools in improvement of welfare and performance of animals, poultry and fish.
- a.3.** Define legal and ethical principles of the area of animal, poultry and fish behavior and management.
- a.4.** Recognize principles and the basics of quality assurance in the field of animal, poultry and fish behavior and management.
- a.5.** Apply knowledge and understanding of animal, poultry and fish behavior and management for enhancing their welfare and productivity.
- a.6.** Recognize the effect of different animal, poultry and fish management systems on behavior, wealth and performance. Also describe the methods of prevention and control of abnormal animal behavior



-
- a.7.** Describe the principles, methodologies and ethics of scientific research of animal, poultry and fish behavior and management.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1.** Analyze and evaluate information in the field of specialization and analogies and inference from it
- b.2.** Solve specialized problem based on the available data.
- b.3.** Carrying out research studies that adding to the knowledge.
- b.4.** Formulate of scientific papers.
- b.5.** Assessment the risks in professional practice.
- b.6.** Planning to improve performance in the field of Animal and poultry behavior and Management.
- b.7.** Take professional decision in the different professional contexts.
- b.8.** Innovation/ Creativity.
- b.9.** Dialogue and discussion built on evidence.

c. Practical and professional skills:

At the end of the program, postgraduate will inquire the ability of:

- c.1.** Mastering basic professional skills and modern in the area of Animal and poultry behavior and Management
- c.2.** Writing and evaluation of professional reports
- c.3.** Evaluate and develop the methods and existing tools in the area of Animal and poultry behavior and Management
- c.4.** Use of technological means to serve the professional practice.
- c.5.** Planning for the development of professional practice and improve of the performance of others.



d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d1. Effective communication of all kinds
- d2. Use of information technology to serve the development of professional practice
- d3. Learn of others and evaluate their performance.
- d4. Self-evaluation and continuous learning.
- d5. Use of different sources for gaining information and knowledge.
- d6. Work in a team and lead team work.
- d7. Manage of scientific meetings and time

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, and seminars.

6-Assessments:

The program depends on different assessment ways:

- a. Course assessment:
 1. Final written exam
 - To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
 2. Practical exam
 - To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
 3. Oral exam
 - To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.
- b. Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work



c. PhD Thesis assessment

- Annual reports adopted by the Faculty.
- Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
- Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1-2; b1,2,3
Oral	a1-2; b1,2,3
Practical	c1-2
Qualifying Exam	a1-5; b1-9
Thesis	a3-5; b4-9; c1-5; d1-7

7. Program structure

a. Program duration (years):

PhD degree from 3-5 years and it should not exceed a period of six years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law.

b. Program courses:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council so that include 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. The student will entitled to apply for the exam only after meeting attendance rate for each

courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c-Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d-Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion.

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Animal and Poultry Behavior and Management include:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild	2	2



		animals		
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and	1	1



		histochemistry of body muscles, heart and blood vessels		
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2



Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
162/2	62- Fish nutrition	1	2	
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2



	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
		81- Advanced immunology	2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2



	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1
Hygiene and control of milk and dairy products	208/2	108- Hygienic control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk	1	1



		production, milk born diseases, hygiene of table egg, edible fats and oils		
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/2	134- Stress diseases during animals transport.		
Infectious	235/	135- Infectious diseases of cattle	2	2



diseases	2			
	236/ 2	136- Infectious diseases of sheep and goat	2	2
	237/ 2	137- Infectious diseases camel	2	2
	238/ 2	138 Infectious diseases of equine	2	2
	239/ 2	139- Infectious diseases of pet animals	2	2
	240/ 2	140- Infectious diseases lab animals	1	2
	241/ 2	141- Infectious diseases of udder and newly born animals	2	2
	242/ 2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific	2	2



		courses in farm and pet Animals)		
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in polutry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and	276/2	176- farm animal hygiene (2	2



environmental hygiene		advanced)		
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
284/2	184- veterinary epidemiology – specific courses in animal environment	2	-	
Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2



Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medicine (Animal and Poultry Behavior and Management) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.



9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medicine lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.
3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.
5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.
7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.



8. The applicant should submit a seminar (Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).
9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met: Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.
10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and in case of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.
11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards it to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.
12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.
13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his



study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade	Percentage



Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
1	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

Program Coordinator

Head of Department

Prof. Dr. Tarek Mahmoud Mousa

Prof. Dr. Tarek Mahmoud Mousa



Matching program ILOs with ARS - Matrix

Matching program ILOs with ARS-Matrix

Program ILOs	ARS																															
	K&U (a)							I.S. (b)							P.P. (c)					G.T. (d)												
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	1	2	3	4	5	6	7	
K&U	1	2	3	4	5	6	7																									
I.S.								1	2	3	4	5	6	7	8	9	10	11	12													
P.P.																				1	2	3	4	5								
G.T.																									1	2	3	4	5	6	7	



Kafrelsheikh University
Faculty of Veterinary Medicine



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Hygiene and Preventive Medicine



ARS for PhD in Veterinary Medicine (Animal and Poultry Behavior and Management)

1) Graduate attributes

The graduate should have the ability for:

- 1) Mastering the basics and methodologies of scientific research of animal, poultry and fish behavior and management for better dealing with behavioral and productive problems professionally.
- 2) Performing continuous effort to add knowledge about improvement of animal, poultry and fish welfare and performance.
- 3) Analysis of information in of animal, poultry and fish behavior and management and related fields including genetics, production, nutrition, physiology, economics, etc.
- 4) Integrating data collected from the animal, poultry and fish farms with related experimental findings to reach the correct system for improvement of their welfare as well as performance.
- 5) Showing deep awareness with the ongoing animal, poultry and fish behavioral and managerial problems and modern theories in solving these problems.
- 6) Identifying the main causes of abnormal animal behavior and suggesting the appropriate solutions and preventive measures.
- 7) Mastering of a wide range of professional skills in experimental design, data collection, animal observations, behavior measuring, analysis, and interpretation of animal, poultry and fish behavioral and management data.
- 8) Acquiring trends towards developing modern methods and tools in animal, poultry and fish behavioral and management.
- 9) Using appropriate technological means to serve professional practice.
- 10) Communicating effectively with animal breeders, students and colleagues and leading work team through professional scale.
- 11) Making decision in different behavioral and management problems situations especially under field conditions.
- 12) Using of the available resources efficiently in the development of new



techniques and work to find new resources.

- 13) Being aware with his role in society development and community preservation.
- 14) Acting with integrity, credibility and according to the rules of profession.
- 15) Realizing the importance of self and life-long learning and progress

A) Knowledge and understanding

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Recent theories, principles and knowledge in animal, poultry and fish behavior and management for improvement of animal performance and welfare. In addition to diagnose and know the actual causes of abnormal animal behavior.		Recent theories, principles and knowledge in the field of specialization and related areas
2)	Principles methodologies and ethics of scientific research and its tools in improvement of welfare and performance of animals, poultry and fish.		Basics, methodologies and ethics of scientific research and its different tools
3)	Legal and ethical principles in the area of animal, poultry and fish behavior and management.		Legal and ethical principles of professional practice in the area of specialization
4)	Principles and the basics of quality assurance in animal housing, welfare and management in the field of animal, poultry and fish behavior and management		Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Awareness with the effect of different management systems on the animal, poultry and fish behavior, wealth and production. Also describe the methods of prevention and control abnormal animal behavior		Awareness with the effect of professional practice on the environment and methods of its maintain and development

B) Intellectual skills

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>



1)	Analyzing and evaluating information about behavior and management of animals, poultry and fish and the eliciting from them	Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solving behavioral, managerial and productive problems using available data	Solving professional problems using available data
3)	Performing scientific research studies that can give significant impact on the improvement of animal, poultry and fish behavior and management.	Conducting scientific research studies that add to knowledge
4)	Formulating scientific papers in animal, poultry and fish behavior and management	Formulating scientific papers
5)	Risk-assessment of in the field of animal, poultry and fish behavior and management	Risk-assessment in the field of specialization
6)	Planning to enhance the performance and achieve welfare in the field of animal, poultry and fish behavior and management	Planning to enhance the performance in field of specialization
7)	Making professional decisions for improvement of animal, poultry and fish performance under different professional contexts	Making professional decisions under different professional contexts
8)	Creation and innovative in the area of animal, poultry and fish behavior and management	Creation and innovative in the area of specialization
9)	Dialogue and discussion based on behavioral and management evidences and proofs	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills in the field of animal, poultry and fish behavior and management and diagnosis and control of abnormal animal behavior		Mastering basic and modern professional skills in the area of specialization
2)	Writing and evaluating professional animal, poultry and fish behavioral and management reports		Writing and evaluating professional reports
3)	Evaluating and modernizing methods and tools in improvement of welfare and performance of animal, poultry and fish.		Evaluating and modernizing methods and tools in the area of specialization
4)	Using modern technological means to serve improvement of animal, poultry and fish welfare and productivity		Using modern technological means to serve professional practice
5)	Planning for the maximizing performance and achieve animal welfare by applying recent techniques in animal, poultry and fish behavior and		Planning for the improvement of professional practice and developing performance of others



management.

D) General and transferable skill

Adopted ARS	NARS (PhD)
<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1) Effective communication with animal, poultry and fish producers, students and veterinarians.	Effective communication
2) Utilizing information technology to serve development of animal and poultry behavior and management practice	Utilizing information technology to serve development of professional practice
3) Teaching others and evaluating their performance	Teaching others and evaluating their performance
4) Self-assessment and continuous learning	Self-assessment and continuous learning
5) Using different resources to obtain knowledge and information	Using different resources to obtain knowledge and information
6) Team working and leading a team in familiar professional contexts	Team working and leading a team in familiar professional contexts
7) Management of scientific meetings with the ability to manage time efficiently	Management of scientific meetings with the ability to manage time efficiently

ثالثا: برامج الدكتوراه

١- مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطا و مطورا للعلاقات البيئية بينها
٥. إظهار وعيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حلولاً مبتكرة لحلها
٧. إتقان نطاقا واسعا من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تنميتها والعمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصادقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢- المعايير القياسية العامة



المعرفة و الفهم:

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا علي الفهم والدراية بكل من:
أ- النظريات و الأساسيات والحديث من المعارف في مجال التخصص والمجالات ذات العلاقة

- ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
- ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
- ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
- ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و وطرق تنمية البيئة وصيانتها

المهارات الذهنية

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

- أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
- ب- حل المشاكل المتخصصة استنادا على المعطيات المتاحة
- ج- إجراء دراسات بحثية تضيف إلى المعارف
- د- صياغة أوراق علمية
- هـ- تقييم المخاطر في الممارسات المهنية
- و- التخطيط لتطوير الأداء في مجال التخصص
- ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة
- ح- الابتكار/ الإبداع
- ط- الحوار و النقاش المبني على البراهين والأدلة

المهارات المهنية

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

- أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
- ب- كتابة و تقييم التقارير المهنية
- ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
- د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
- هـ- التخطيط لتطوير الممارسة المهنية و تنمية أداء الآخرين

المهارات العامة و المنتقلة

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

- أ- التواصل الفعال بأنواعه المختلفة
- ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية
- ت- تعليم الآخرين و تقييم أداءهم
- ث- التقييم الذاتي و التعلم المستمر
- ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
- ح- العمل في فريق و قيادة فرق العمل
- خ- إدارة اللقاءات العلمية و القدرة على إدارة الوقت



Kafrelsheikh University
Faculty of veterinary medicine
Department of Hygiene and Preventive Medicine

Course Specifications for PhD (2021 / 2022)

1-Basic information

Course code: 144 /2

Course title: Behavior and Management of Ruminant Animals (سلوكيات ورعاية المجترات)

Program on which the course is given: PhD Program

The department offers the course: Department of Hygiene and Preventive Med.

Total teaching hours: 240 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 144 hrs (48 weeks- 3hrs/week)

2-Overall aims of the course:

After completing the course the postgraduates are expected to be able to acquire broad knowledge about behavior & management of Ruminant (cattle, buffalo, sheep, Goat and camel)

3- Intended Learning Outcomes of Course (ILOs).

A- Knowledge and understanding:

After completing this course the student will be able to:

- A1) Comprehend the basic of normal behaviors, management and health maintenance of **Ruminant (cattle, buffalo, sheep, Goat and camel)**
- A2) Enumerate and summarizes the actual etiological factors which can induce behavioral disorders of **Ruminant (cattle, buffalo, sheep, Goat and camel)**
- A3) Realize the proper management of **Ruminant (cattle, buffalo, sheep, Goat and camel)** which in turn will be reflected in the form of high performance and productivity of the animals

B- Intellectual skills:

- B1- Assess the diagnosis of abnormal behavior by judging the body language of **Ruminant (cattle, buffalo, sheep, Goat and camel)**
- B2- Modify the management systems of **Ruminant** in order to obtain high performance and productivity.
- B3- Assess and criticize, how data given in **Ruminant** behavior are derived.

C- Professional and practical skills:

- C.1). Restrain the animals for examination safely, correctly and humanely.
- C.2). Obtain the history of the case and perform a physical examination whether it is an individual animal or a group of animals.
- C.3). Write a report about soundness of animals.



C.4). Solve the different behavior disorder or vices in **Ruminant (cattle, buffalo, sheep, Goat and camel)**

D-General and transferable skills:

After successful completion of the course, the students should be able to:

- D.1. Work under pressure and or in a team work.
- D.2. Utilize computer and the Internet to search for information
- D.3. Conduct research papers and project.

4- Course topics: (Behavior and Management of Ruminant Animals):

:

	Topics	Total hours (Semester)	Hours of lecture	Hours of practical
1	General introduction of ruminant behavior	20	20	--
2	Behavior of ruminant	20	20	--
3	Management of ruminant	40	40	--
4	Vices of ruminant	16	16	--
5	Points and restraint of ruminant	30		30
6	Housing management (Grooming, fastening, clipping, shearing, washing and dipping) of the ruminant	30		30
7	Signs of health & Administration of medicine	40		40
8	Dentition and Animal identification	44		44
	Total	240	96	144

1-Advanced Lectures (Using data show to display slides, photos and videos, white board and brain storming)

2-Discussion and class activities

3- Practical training (Practical demonstrations and discussions)

4- Internet researches and faculty library visits to prepare essays and presentations.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1-Advanced lectures	A1 to A3	B1, B2, B3		D1,D3
2- Discussion and class activities		B1 to B3		D1 to D3
3- Internet researches and assays		B1 to B3		D2, D4
4- Practical training			C1 to C4	

During the Corona pandemic, emphasis was placed on following precautionary measures such as social distancing, wearing a face mask and gloves, and using disinfectants. Also, if there is a case of



infection among students, faculty members, or their contacts with infected people, they are prevented from attending until the end of the isolation period to ensure that the epidemic does not spread among students.

Lectures: The students will be subdivided into groups The on-site lectures will be given for each group beside online lectures. Teaching tools include Data show, and a blackboard and online videos.

Practical: Students are divided into 8 groups, each group in one session (two hour / week). The students practice demand, supply and elasticity problem solving. Teaching tools include Data show, overhead projector and whiteboard.

6. Methods for Students with Limited Capabilities:-

- No disabled students until now, but if present, the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b Time	At the end of 48 weeks	At the end of 48 weeks	After the end of 48 weeks
7.c Grads	50	20	30

Methods	Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	A1 to A3	B1 to B3		
Practical exams			C1 to C4	
Oral exams	A1 to A3	B1 to B3		D1 to D3

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. Learning and Reference Materials:

8-1: Basic Materials:

- The department notes: E-Book available for students.

8-2: Recmonded Books:

- Animal Behavior by Keller Breland, Marian Breland, et al. | Aug 27, 2018
- Animal Behavior: Concepts, Methods, and Applications, by Shawn E. Nordell and Thomas J. Valone | Jul 21, 2020
- Color Atlas of Animal and Poultry Behavior, by Mohamed Mohamed and Salah Al-Shami | Mar 1, 2020
- Understanding Animal Behaviour (What to Measure and Why), by Sergio Pellis | May 20, 2021

8.3: Web sites and journals..... and so on

- WWW.PubMed.com



Kafrelsheikh University
Faculty of Veterinary Medicine



-
- International of Veterinary Information Services (IVIS)
 - www.Vet.net.com
 - Journal of Hormone and Behavior
 - Journal of applied Animal Ethology
 - Journal of applied Animal behavior
 - Journal of Dairy Sciences

Course Coordinator:

Prof. Dr. Tarek Balabel

Signature

Head of Department

Prof. Dr. Tarek Balabel

Signature

Date: 29/8/2021



• Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding			Intellectual skills			Practical & Professional Skills				General Skills		
			A1	A2	A3	B1	B2	B3	C1	C2	C3	C4	D1	D2	D3
1	General introduction of ruminant behavior	20	X		X	X		X					X		
2	Behavior of ruminant	20		X			X							X	X
3	Management of ruminant	40	X		X	X		X					X	X	
4	Vices of ruminant	16		X			X							X	X
5	Points and restraint of animals	30							X	X					
6	Housing management (Grooming, fastening, clipping, shearing, washing and dipping) of ruminant	30								X	X				
7	Signs of health & Administration of medicine	40								X	X				
8	Dentition and Animal identification	44							X	X		X			



Kafrelsheikh University
Faculty of veterinary medicine
Department of Hygiene and Preventive Medicine

Course Specifications for PhD (2021 / 2022)

1-Basic information

Course code: 145 /2

Course title: Behavior and Management of Equine (سلوكيات ورعاية الخيول)

Program on which the course is given: PhD Program

The department offers the course: Department of Hygiene and Preventive Med.

Total teaching hours: 240 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 144 hrs (48 weeks- 3hrs/week)

2-Overall aims of the course:

After completing the course the postgraduates are expected to be able to acquire broad knowledge about behavior & management of equine

3- Intended Learning Outcomes of Course (ILOs).

A-Knowledge and understanding:

After completing this course the student will be able to:

- A1) Comprehend the basic of normal behaviors, management and health maintenance of equine
- A2) Enumerate and summarizes the actual etiological factors which can induce behavioral disorders of equine
- A3) Realize the proper management of equine which in turn will be reflected in the form of high performance and productivity of the animals

B- Intellectual skills:

- B1- Assess the diagnosis of abnormal behavior by judging the body language of equine
- B2- Modify the management systems of equine in order to obtain high performance and productivity.
- B3- Assess and criticize, how data given in equine behavior are derived.

C- Professional and practical skills:

- C.1). Restrain the animals for examination safely, correctly and humanely.
- C.2). Obtain the history of the case and perform a physical examination whether it is an individual animal or a group of animals.
- C.3). Write a report about soundness of animals.
- C.4). Solve the different behavior disorder or vices in equine

D-General and transferable skills:

After successful completion of the course, the students should be able to:



- D.1. Work under pressure and or in a team work.
- D.2. Utilize computer and the Internet to search for information
- D.3. Conduct research papers and project.

4- Course topics: (Behavior and Management of equine):

:

	Topics	Total hours (Semester)	Hours of lecture	Hours of practical
1	General introduction of equine behavior	20	20	--
2	Behavior of equine	20	20	--
3	Management of equine	40	40	--
4	Vices of equine	16	16	--
5	Points and restraint of equine	30		30
6	Stable management (Grooming, fastening, clipping, bedding, clothing and washing) of equine	30		30
7	Signs of health & Administration of medicine	40		40
8	Dentition and Animal identification	44		44
	Total	240	96	144

1-Advanced Lectures (Using data show to display slides, photos and videos, white board and brainstorming)

2-Discussion and class activities

3- Practical training (Practical demonstrations and discussions)

4- Internet researches and faculty library visits to prepare essays and presentations.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1-Advanced lectures	A1 to A3	B1, B2, B3		D1,D3
2- Discussion and class activities		B1 to B3		D1 to D3
3- Internet researches and assays		B1 to B3		D2, D4
4- Practical training			C1 to C4	

During the Corona pandemic, emphasis was placed on following precautionary measures such as social distancing, wearing a face mask and gloves, and using disinfectants. Also, if there is a case of infection among students, faculty members, or their contacts with infected people, they are prevented from attending until the end of the isolation period to ensure that the epidemic does not spread among students.



Lectures: The students will be subdivided into groups The on-site lectures will be given for each group beside online lectures. Teaching tools include Data show, and a blackboard and online videos.

Practical: Students are divided into 8 groups, each group in one session (two hour / week). The students practice demand, supply and elasticity problem solving. Teaching tools include Data show, overhead projector and whiteboard.

6. Methods for Students with Limited Capabilities:-

- No disabled students until now, but if present, the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b Time	At the end of 48 weeks	At the end of 48 weeks	After the end of 48 weeks
7.c Grads	50	20	30

Methods	Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	A1 to A3	B1 to B3		
Practical exams			C1 to C4	
Oral exams	A1 to A3	B1 to B3		D1 to D3

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. Learning and Reference Materials:

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- International of Veterinary Information Services (IVIS)
- www.Vet.net.com
- Journal of Hormone and Behavior
- Journal of applied Animal Ethology



Kafrelsheikh University
Faculty of Veterinary Medicine



- Journal of applied Animal behavior
- Journal of Dairy Sciences

Course Coordinator:

Prof. Dr. Tarek Balabel

Signature

Head of Department

Prof. Dr. Tarek Balabel

Signature

Date: 29/8/2021



• Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding			Intellectual skills			Practical & Professional Skills				General Skills		
			A1	A2	A3	B1	B2	B3	C1	C2	C3	C4	D1	D2	D3
1	General introduction of equine behavior	20	X		X	X		X					X		
2	Behavior of equine	20		X			X							X	X
3	Management of equine	40	X		X	X		X					X	X	
4	Vices of equine	16		X			X							X	X
5	Points and restraint of equine	30							X	X					
6	Stable management (Grooming, fastening, clipping, bedding, clothing and washing) of equine	30								X	X				
7	Signs of health & Administration of medicine	40								X	X				
8	Dentition and Animal identification	44							X	X		X			



Kafrelsheikh University
Faculty of veterinary medicine
Department of Hygiene and Preventive Medicine

Course Specifications for PhD (2021 / 2022)

1-Basic information

Course code: 146 /2

Course title: Behavior and Management of Pet Animals (سلوكيات ورعاية الحيوانات المنزلية)

Program on which the course is given: PhD Program

The department offers the course: Department of Hygiene and Preventive Med.

Total teaching hours: 144 hrs

Lectures: 48 hrs (48 weeks- 1hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2-Overall aims of the course:

After completing the course the postgraduates are expected to be able to acquire broad knowledge about behavior & management of pets

3- Intended Learning Outcomes of Course (ILOs).

A-Knowledge and understanding:

After completing this course the student will be able to:

- A1) Comprehend the basic of normal behaviors, management and health maintenance of pets
- A2) Enumerate and summarizes the actual etiological factors which can induce behavioral disorders of pets
- A3) Realize the proper management of pets which in turn will be reflected in the form of high performance and productivity of the animals

B- Intellectual skills:

- B1- Assess the diagnosis of abnormal behavior by judging the body language of pets
- B2- Modify the management systems of pets in order to obtain high performance and productivity.
- B3- Assess and criticize, how data given in pets behavior are derived.

C- Professional and practical skills:

- C.1). Restrain the animals for examination safely, correctly and humanely.
- C.2). Obtain the history of the case and perform a physical examination whether it is an individual animal or a group of animals.
- C.3). Write a report about soundness of animals.
- C.4). Solve the different behavior disorder or vices in pets

D-General and transferable skills:



After successful completion of the course, the students should be able to:

- D.1. Work under pressure and or in a team work.
- D.2. Utilize computer and the Internet to search for information
- D.3. Conduct research papers and project.

4- Course topics: (Behavior and Management of pet animals):

:

	Topics	Total hours (Semester)	Hours of lecture	Hours of practical
1	General introduction of pets' behavior	8	8	--
2	Behavior of pets	16	16	--
3	Management of pets	16	16	--
4	Vices of pets	8	8	--
5	Points and restraint of pets	20		20
6	Housing management (Grooming, fastening, clipping, bedding, clothing and washing) of pets	30		30
7	Signs of health & Administration of medicine	20		20
8	Dentition and Animal identification	26		26
	Total	144	48	96

1-Advanced Lectures (Using data show to display slides, photos and videos, white board and brainstorming)

2-Discussion and class activities

3- Practical training (Practical demonstrations and discussions)

4- Internet researches and faculty library visits to prepare essays and presentations.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1-Advanced lectures	A1 to A3	B1, B2, B3		D1,D3
2- Discussion and class activities		B1 to B3		D1 to D3
3- Internet researches and assays		B1 to B3		D2, D4
4- Practical training			C1 to C4	

During the Corona pandemic, emphasis was placed on following precautionary measures such as social distancing, wearing a face mask and gloves, and using disinfectants. Also, if there is a case of infection among students, faculty members, or their contacts with infected people, they are



prevented from attending until the end of the isolation period to ensure that the epidemic does not spread among students.

Lectures: The students will be subdivided into groups The on-site lectures will be given for each group beside online lectures. Teaching tools include Data show, and a blackboard and online videos.

Practical: Students are divided into 8 groups, each group in one session (two hour / week). The students practice demand, supply and elasticity problem solving. Teaching tools include Data show, overhead projector and whiteboard.

6. Methods for Students with Limited Capabilities:-

- No disabled students until now, but if present, the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b Time	At the end of 48 weeks	At the end of 48 weeks	After the end of 48 weeks
7.c Grads	50	20	30

Methods	Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	A1 to A3	B1 to B3		
Practical exams			C1 to C4	
Oral exams	A1 to A3	B1 to B3		D1 to D3

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. Learning and Reference Materials:

8-1: Basic Materials:

- The department notes: E-Book available for students.

8-2: Recmoned Books:

- Animal Behavior by Keller Breland, Marian Breland, et al. | Aug 27, 2018
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Kafrelsheikh University
Faculty of Veterinary Medicine



- www.Vet.net.com
- Journal of Hormone and Behavior
- Journal of applied Animal Ethology
- Journal of applied Animal behavior
- Journal of Dairy Sciences

Course Coordinator:

Prof. Dr. Tarek Balabel

Signature

Head of Department

Prof. Dr. Tarek Balabel

Signature

Date: 29/8/2021



• Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding			Intellectual skills			Practical & Professional Skills				General Skills		
			A1	A2	A3	B1	B2	B3	C1	C2	C3	C4	D1	D2	D3
1	General introduction of pets' behavior	8	X		X	X		X					X		
2	Behavior of pets	16		X			X							X	X
3	Management of pets	16	X		X	X		X					X	X	
4	Vices of pets	8		X			X							X	X
5	Points and restraint of pets	20							X	X					
6	Housing management (Grooming, fastening, clipping, bedding, clothing and washing) of pets	30								X	X				
7	Signs of health & Administration of medicine	20								X	X				
8	Dentition and Animal identification	26							X	X		X			



Kafrelsheikh University
Faculty of veterinary medicine
Department of Hygiene and Preventive Medicine

Course Specifications for PhD (2021 / 2022)

1-Basic information

Course code: 147 /2

Course title: Behavior and Management of laboratory animals (سلوكيات ورعاية الحيوانات المعملية)

Program on which the course is given: PhD Program

The department offers the course: Department of Hygiene and Preventive Med.

Total teaching hours: 144 hrs

Lectures: 48 hrs (48 weeks- 1hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2-Overall aims of the course:

After completing the course the postgraduates are expected to be able to acquire broad knowledge about behavior & management of laboratory animals

3- Intended Learning Outcomes of Course (ILOs).

A-Knowledge and understanding:

After completing this course the student will be able to:

- A1) Comprehend the basic of normal behaviors, management and health maintenance of laboratory animals
- A2) Enumerate and summarizes the actual etiological factors which can induce behavioral disorders of laboratory animals
- A3) Realize the proper management of laboratory animals which in turn will be reflected in the form of high performance and productivity of the animals

B- Intellectual skills:

B1 - Assess the diagnosis of abnormal behavior by judging the body language of laboratory animals

B2- Modify the management systems of laboratory animals in order to obtain high performance and productivity.

B3- Assess and criticize, how data given in laboratory animals behavior are derived.

C- Professional and practical skills:

C.1). Restrain the animals for examination safely, correctly and humanely.

C.2). Obtain the history of the case and perform a physical examination whether it is an individual animal or a group of animals.

C.3). Write a report about soundness of animals.



C.4). Solve the different behavior disorder or vices in laboratory animals

D-General and transferable skills:

After successful completion of the course, the students should be able to:

- D.1. Work under pressure and or in a team work.
- D.2. Utilize computer and the Internet to search for information
- D.3. Conduct research papers and project.

4- Course topics: (Behavior and Management of laboratory animals):

:

	Topics	Total hours (Semester)	Hours of lecture	Hours of practical
1	General introduction of laboratory animal behaviors	8	8	--
2	Behavior of laboratory animals	16	16	--
3	Management of laboratory animals	16	16	--
4	Vices of laboratory animals	8	8	--
5	Points and restraint of laboratory animals	20		20
6	Bedding and housing management of laboratory animals	30		30
7	Signs of health & Administration of medicine	20		20
8	Animal identification	26		26
	Total	144	48	96

1-Advanced Lectures (Using data show to display slides, photos and videos, white board and brainstorming)

2-Discussion and class activities

3- Practical training (Practical demonstrations and discussions)

4- Internet researches and faculty library visits to prepare essays and presentations.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1-Advanced lectures	A1 to A3	B1, B2, B3		D1,D3
2- Discussion and class activities		B1 to B3		D1 to D3
3- Internet researches and assays		B1 to B3		D2, D4
4- Practical training			C1 to C4	

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6. Methods for Students with Limited Capabilities:-

- No disabled students until now, but if present, the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b Time	At the end of 48 weeks	At the end of 48 weeks	After the end of 48 weeks
7.c Grads	50	20	30

Methods	Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	A1 to A3	B1 to B3		
Practical exams			C1 to C4	
Oral exams	A1 to A3	B1 to B3		D1 to D3

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. Learning and Reference Materials:

8-1: Basic Materials:

- The department notes: E-Book available for students.

8-2: Recmonded Books:

- Animal Behavior by Keller Breland, Marian Breland, et al. | Aug 27, 2018
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- Understanding Animal Behavior (What to Measure and Why), by Sergio Pellis | May 20, 2021

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Course Coordinator:

Prof. Dr. Tarek Balabel

Signature

Head of Department

Prof. Dr. Tarek Balabel

Signature

Date: 29/8/2021



• Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding			Intellectual skills			Practical & Professional Skills				General Skills		
			A1	A2	A3	B1	B2	B3	C1	C2	C3	C4	D1	D2	D3
1	General introduction of laboratory animal behaviors	8	X		X	X		X					X		
2	Behavior of laboratory animals	16		X			X							X	X
3	Management of laboratory animals	16	X		X	X		X					X	X	
4	Vices of laboratory animals	8		X			X							X	X
5	Points and restraint of laboratory animals	20							X	X					
6	Bedding and housing management of laboratory animals	30								X	X				
7	Signs of health & Administration of medicine	20								X	X				
8	Animal identification	26							X	X		X			



Kafrelsheikh University
Faculty of veterinary medicine
Department of Hygiene and Preventive Medicine

Course Specifications for PhD (2021 / 2022)

1-Basic information

Course code: 148 /2

Course title: Behavior and Management of wild Animals (سلوكيات ورعاية الحيوانات البرية)

Program on which the course is given: PhD Program

The department offers the course: Department of Hygiene and Preventive Med.

Total teaching hours: 192 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2-Overall aims of the course:

After completing the course the postgraduates are expected to be able to acquire broad knowledge about behavior & management of wild animals

3- Intended Learning Outcomes of Course (ILOs).

A-Knowledge and understanding:

After completing this course the student will be able to:

- A1) Comprehend the basic of normal behaviors, management and health maintenance of wild animals
- A2) Enumerate and summarizes the actual etiological factors which can induce behavioral disorders of wild animals
- A3) Realize the proper management of wild animals which in turn will be reflected in the form of high performance and productivity of the animals

B- Intellectual skills:

- B1 - Assess the diagnosis of abnormal behavior by judging the body language of wild animals
- B2- Modify the management systems of wild animals in order to obtain high performance and productivity.
- B3- Assess and criticize, how data given in wild animals behavior are derived.

C- Professional and practical skills:

- C.1). Restrain the animals for examination safely, correctly and humanely.
- C.2). Obtain the history of the case and perform a physical examination whether it is an individual animal or a group of animals.
- C.3). Write a report about soundness of animals.
- C.4). Solve the different behavior disorder or vices in wild animals



D-General and transferable skills:

After successful completion of the course, the students should be able to:

- D.1. Work under pressure and or in a team work.
- D.2. Utilize computer and the Internet to search for information
- D.3. Conduct research papers and project.

4- Course topics: (Behavior and Management of wild animals):

:

	Topics	Total hours (Semester)	Hours of lecture	Hours of practical
1	General introduction of wild animal behaviors	20	20	--
2	Behavior of wild animals	20	20	--
3	Management of wild animals	30	30	--
4	Vices of wild animals	26	26	--
5	Points and restraint of wild animals	20		20
6	Bedding and housing management of wild animals	30		30
7	Signs of health & Administration of medicine	20		20
8	Animal identification	26		26
	Total	192	96	96

1-Advanced Lectures (Using data show to display slides, photos and videos, white board and brainstorming)

2-Discussion and class activities

3- Practical training (Practical demonstrations and discussions)

4- Internet researches and faculty library visits to prepare essays and presentations.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1-Advanced lectures	A1 to A3	B1, B2, B3		D1,D3
2- Discussion and class activities		B1 to B3		D1 to D3
3- Internet researches and assays		B1 to B3		D2, D4
4- Practical training			C1 to C4	

During the Corona pandemic, emphasis was placed on following precautionary measures such as social distancing, wearing a face mask and gloves, and using disinfectants. Also, if there is a case of infection among students, faculty members, or their contacts with infected people, they are



prevented from attending until the end of the isolation period to ensure that the epidemic does not spread among students.

Lectures: The students will be subdivided into groups The on-site lectures will be given for each group beside online lectures. Teaching tools include Data show, and a blackboard and online videos.

Practical: Students are divided into 8 groups, each group in one session (two hour / week). The students practice demand, supply and elasticity problem solving. Teaching tools include Data show, overhead projector and whiteboard.

6. Methods for Students with Limited Capabilities:-

- No disabled students until now, but if present, the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b Time	At the end of 48 weeks	At the end of 48 weeks	After the end of 48 weeks
7.c Grads	50	25	25

Methods	Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	A1 to A3	B1 to B3		
Practical exams			C1 to C4	
Oral exams	A1 to A3	B1 to B3		D1 to D3

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. Learning and Reference Materials:

8-1: Basic Materials:

- The department notes: E-Book available for students.

8-2: Recmoned Books:

- Animal Behavior by Keller Breland, Marian Breland, et al. | Aug 27, 2018
- Animal Behavior: Concepts, Methods, and Applications, by Shawn E. Nordell and Thomas J. Valone | Jul 21, 2020
- Color Atlas of Animal and Poultry Behavior, by Mohamed Mohamed and Salah Al-Shami | Mar 1, 2020
- Understanding Animal Behavior (What to Measure and Why), by Sergio Pellis | May 20, 2021

8.3: Web sites and journals..... and so on

- WWW.PubMed.com
- International of Veterinary Information Services (IVIS)



Kafrelsheikh University
Faculty of Veterinary Medicine



- www.Vet.net.com
- Journal of Hormone and Behavior
- Journal of applied Animal Ethology
- Journal of applied Animal behavior
- Journal of Dairy Sciences

Course Coordinator:

Prof. Dr. Tarek Balabel

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• Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding			Intellectual skills			Practical & Professional Skills				General Skills		
			A1	A2	A3	B1	B2	B3	C1	C2	C3	C4	D1	D2	D3
1	General introduction of wild animal behaviors	20	X		X	X		X					X		
2	Behavior of wild animals	20		X			X							X	X
3	Management of wild animals	30	X		X	X		X					X	X	
4	Vices of wild animals	26		X			X							X	X
5	Points and restraint of wild animals	20							X	X					
6	Bedding and housing management of wild animals	30								X	X				
7	Signs of health & Administration of medicine	20								X	X				
8	Animal identification	26							X	X		X			



Kafrelsheikh University
Faculty of veterinary medicine
Department of Hygiene and Preventive Medicine

Course Specifications for PhD (2021 / 2022)

1-Basic information

Course code: 149 /2

Course title: Behavior and Management of poultry (سلوكيات ورعاية الطيور)

Program on which the course is given: PhD Program

The department offers the course: Department of Hygiene and Preventive Med.

Total teaching hours: 192 hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2-Overall aims of the course:

After completing the course the postgraduates are expected to be able to acquire broad knowledge about behavior & management of poultry

3- Intended Learning Outcomes of Course (ILOs).

A-Knowledge and understanding:

After completing this course the student will be able to:

- A1) Comprehend the basic of normal behaviors, management and health maintenance of poultry
- A2) Enumerate and summarizes the actual etiological factors which can induce behavioral disorders of poultry
- A3) Realize the proper management of poultry which in turn will be reflected in the form of high performance and productivity of the poultry

B- Intellectual skills:

- B1- Assess the diagnosis of abnormal behavior by judging the body language of poultry
- B2- Modify the management systems of poultry in order to obtain high performance and productivity.
- B3- Assess and criticize, how data given in poultry behavior are derived.

C- Professional and practical skills:

- C.1). Catch the poultry for examination safely, correctly and humanely.
- C.2). Obtain the history of the case and perform a physical examination whether it is an individual bird or a group of birds.
- C.3). Write a report about soundness of poultry.
- C.4). Solve the different behavior disorder or vices in poultry



D-General and transferable skills:

After successful completion of the course, the students should be able to:

- D.1. Work under pressure and or in a team work.
- D.2. Utilize computer and the Internet to search for information
- D.3. Conduct research papers and project.

4- Course topics: (Behavior and Management of poultry):

:

	Topics	Total hours (Semester)	Hours of lecture	Hours of practical
1	General introduction of poultry behaviors	20	20	--
2	Behavior of poultry	24	24	--
3	Management of poultry	30	30	--
4	Vices of poultry	22	22	--
5	Points and catching of poultry	20		20
6	Bedding and housing management of poultry	30		30
7	Signs of health & Administration of medicine	20		20
8	Poultry identification	26		26
	Total	192	96	96

1-Advanced Lectures (Using data show to display slides, photos and videos, white board and brainstorming)

2-Discussion and class activities

3- Practical training (Practical demonstrations and discussions)

4- Internet researches and faculty library visits to prepare essays and presentations.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1-Advanced lectures	A1 to A3	B1, B2, B3		D1,D3
2- Discussion and class activities		B1 to B3		D1 to D3
3- Internet researches and assays		B1 to B3		D2, D4
4- Practical training			C1 to C4	

During the Corona pandemic, emphasis was placed on following precautionary measures such as social distancing, wearing a face mask and gloves, and using disinfectants. Also, if there is a case of infection among students, faculty members, or their contacts with infected people, they are



prevented from attending until the end of the isolation period to ensure that the epidemic does not spread among students.

Lectures: The students will be subdivided into groups The on-site lectures will be given for each group beside online lectures. Teaching tools include Data show, and a blackboard and online videos.

Practical: Students are divided into 8 groups, each group in one session (two hour / week). The students practice demand, supply and elasticity problem solving. Teaching tools include Data show, overhead projector and whiteboard.

6. Methods for Students with Limited Capabilities:-

- No disabled students until now, but if present, the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b Time	At the end of 48 weeks	At the end of 48 weeks	After the end of 48 weeks
7.c Grads	50	25	25

Methods	Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	A1 to A3	B1 to B3		
Practical exams			C1 to C4	
Oral exams	A1 to A3	B1 to B3		D1 to D3

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. Learning and Reference Materials:

8-1: Basic Materials:

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- www.Vet.net.com
- Journal of Hormone and Behavior
- Journal of applied Animal Ethology
- Journal of applied Animal behavior
- Journal of Dairy Sciences

Course Coordinator:

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• Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding			Intellectual skills			Practical & Professional Skills				General Skills		
			A1	A2	A3	B1	B2	B3	C1	C2	C3	C4	D1	D2	D3
1	General introduction of poultry behaviors	20	X		X	X		X					X		
2	Behavior of poultry	24		X			X							X	X
3	Management of poultry	30	X		X	X		X					X	X	
4	Vices of poultry	22		X			X							X	X
5	Points and catching of poultry	20							X	X					
6	Bedding and housing management of poultry	30								X	X				
7	Signs of health & Administration of medicine	20								X	X				
8	Poultry identification	26							X	X		X			



Kafrelsheikh University
Faculty of veterinary medicine
Department of Hygiene and Preventive Medicine

Course Specifications for PhD (2021 / 2022)

1-Basic information

Course code: 150 /2

Course title: Behavior and Management of rabbits (سلوكيات ورعاية الارانب)

Program on which the course is given: PhD Program

The department offers the course: Department of Hygiene and Preventive Med.

Total teaching hours: 144 hrs

Lectures: 48 hrs (48 weeks- 1hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2-Overall aims of the course:

After completing the course the postgraduates are expected to be able to acquire broad knowledge about behavior & management of rabbits

3- Intended Learning Outcomes of Course (ILOs).

A-Knowledge and understanding:

After completing this course the student will be able to:

- A1) Comprehend the basic of normal behaviors, management and health maintenance of rabbits
- A2) Enumerate and summarizes the actual etiological factors which can induce behavioral disorders of rabbits
- A3) Realize the proper management of rabbits which in turn will be reflected in the form of high performance and productivity of the animals

B- Intellectual skills:

- B1- Assess the diagnosis of abnormal behavior by judging the body language of rabbits
- B2- Modify the management systems of rabbits in order to obtain high performance and productivity.
- B3- Assess and criticize, how data given in rabbits behavior are derived.

C- Professional and practical skills:

- C.1). Restrain the animals for examination safely, correctly and humanely.
- C.2). Obtain the history of the case and perform a physical examination whether it is an individual animal or a group of animals.
- C.3). Write a report about soundness of animals.
- C.4). Solve the different behavior disorder or vices in rabbits

D-General and transferable skills:



After successful completion of the course, the students should be able to:

- D.1. Work under pressure and or in a team work.
- D.2. Utilize computer and the Internet to search for information
- D.3. Conduct research papers and project.

4- Course topics: (Behavior and Management of rabbits):

:

	Topics	Total hours (Semester)	Hours of lecture	Hours of practical
1	General introduction of rabbits behaviors	8	8	--
2	Behavior of rabbits	16	16	--
3	Management of rabbits	16	16	--
4	Vices of rabbits	8	8	--
5	Points and restraint of rabbits	20		20
6	Bedding and housing management of rabbits	30		30
7	Signs of health & Administration of medicine	20		20
8	Animal identification	26		26
	Total	144	48	96

1-Advanced Lectures (Using data show to display slides, photos and videos, white board and brainstorming)

2-Discussion and class activities

3- Practical training (Practical demonstrations and discussions)

4- Internet researches and faculty library visits to prepare essays and presentations.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1-Advanced lectures	A1 to A3	B1, B2, B3		D1,D3
2- Discussion and class activities		B1 to B3		D1 to D3
3- Internet researches and assays		B1 to B3		D2, D4
4- Practical training			C1 to C4	

During the Corona pandemic, emphasis was placed on following precautionary measures such as social distancing, wearing a face mask and gloves, and using disinfectants. Also, if there is a case of infection among students, faculty members, or their contacts with infected people, they are prevented from attending until the end of the isolation period to ensure that the epidemic does not spread among students.



Lectures: The students will be subdivided into groups The on-site lectures will be given for each group beside online lectures. Teaching tools include Data show, and a blackboard and online videos.

Practical: Students are divided into 8 groups, each group in one session (two hour / week). The students practice demand, supply and elasticity problem solving. Teaching tools include Data show, overhead projector and whiteboard.

6. Methods for Students with Limited Capabilities:-

- No disabled students until now, but if present, the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b Time	At the end of 48 weeks	At the end of 48 weeks	After the end of 48 weeks
7.c Grads	50	20	30

Methods	Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	A1 to A3	B1 to B3		
Practical exams			C1 to C4	
Oral exams	A1 to A3	B1 to B3		D1 to D3

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. Learning and Reference Materials:

8-1: Basic Materials:

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8-2: Recmended Books:

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- www.Vet.net.com
- Journal of Hormone and Behavior
- Journal of applied Animal Ethology



Kafrelsheikh University
Faculty of Veterinary Medicine



- Journal of applied Animal behavior
- Journal of Dairy Sciences

Course Coordinator:

Prof. Dr. Tarek Balabel

Signature

Head of Department

Prof. Dr. Tarek Balabel

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Date: 29/8/2021



• Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding			Intellectual skills			Practical & Professional Skills				General Skills		
			A1	A2	A3	B1	B2	B3	C1	C2	C3	C4	D1	D2	D3
1	General introduction of rabbits behaviors	8	X		X	X		X					X		
2	Behavior of rabbits	16		X			X							X	X
3	Management of rabbits	16	X		X	X		X					X	X	
4	Vices of rabbits	8		X			X							X	X
5	Points and restraint of rabbits	20							X	X					
6	Bedding and housing management of rabbits	30								X	X				
7	Signs of health & Administration of medicine	20								X	X				
8	Animal identification	26							X	X		X			



Kafrelsheikh University
Faculty of veterinary medicine
Department of Hygiene and Preventive Medicine

Course Specifications for PhD (2021 / 2022)

1-Basic information

Course code: 151 /2

Course title: Behavior and Management of experimental Animals (سلوكيات ورعاية حيوانات التجارب)

Program on which the course is given: PhD Program

The department offers the course: Department of Hygiene and Preventive Med.

Total teaching hours: 144 hrs

Lectures: 48 hrs (48 weeks- 1hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2-Overall aims of the course:

After completing the course the postgraduates are expected to be able to acquire broad knowledge about behavior & management of experimental animals

3- Intended Learning Outcomes of Course (ILOs).

A-Knowledge and understanding:

After completing this course the student will be able to:

- A1) Comprehend the basic of normal behaviors, management and health maintenance of experimental animals
- A2) Enumerate and summarizes the actual etiological factors which can induce behavioral disorders of experimental animals
- A3) Realize the proper management of experimental animals which in turn will be reflected in the form of high performance and productivity of the animals

B- Intellectual skills:

- B1- Assess the diagnosis of abnormal behavior by judging the body language of experimental animals
- B2- Modify the management systems of experimental animals in order to obtain high performance and productivity.
- B3- Assess and criticize, how data given in experimental animals behavior are derived.

C- Professional and practical skills:

- C.1). Restrain the animals for examination safely, correctly and humanely.
- C.2). Obtain the history of the case and perform a physical examination whether it is an individual animal or a group of animals.
- C.3). Write a report about soundness of animals.



C.4). Solve the different behavior disorder or vices in experimental animals

D-General and transferable skills:

After successful completion of the course, the students should be able to:

- D.1. Work under pressure and or in a team work.
- D.2. Utilize computer and the Internet to search for information
- D.3. Conduct research papers and project.

4- Course topics: (Behavior and Management of experimental animals):

:

	Topics	Total hours (Semester)	Hours of lecture	Hours of practical
1	General introduction of experimental animal behaviors	8	8	--
2	Behavior of experimental animals	16	16	--
3	Management of experimental animals	16	16	--
4	Vices of experimental animals	8	8	--
5	Points and restraint of experimental animals	20		20
6	Bedding and housing management of experimental animals	30		30
7	Signs of health & Administration of medicine	20		20
8	Animal identification	26		26
	Total	144	48	96

1-Advanced Lectures (Using data show to display slides, photos and videos, white board and brainstorming)

2-Discussion and class activities

3- Practical training (Practical demonstrations and discussions)

4- Internet researches and faculty library visits to prepare essays and presentations.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
1-Advanced lectures	A1 to A3	B1, B2, B3		D1,D3
2- Discussion and class activities		B1 to B3		D1 to D3
3- Internet researches and assays		B1 to B3		D2, D4
4- Practical training			C1 to C4	

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Lectures: The students will be subdivided into groups The on-site lectures will be given for each group beside online lectures. Teaching tools include Data show, and a blackboard and online videos.

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6. Methods for Students with Limited Capabilities:-

- No disabled students until now, but if present, the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b Time	At the end of 48 weeks	At the end of 48 weeks	After the end of 48 weeks
7.c Grads	50	20	30

Methods	Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	A1 to A3	B1 to B3		
Practical exams			C1 to C4	
Oral exams	A1 to A3	B1 to B3		D1 to D3

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. Learning and Reference Materials:

8-1: Basic Materials:

- The department notes: E-Book available for students.

8-2: Recmonded Books:

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- Animal Behavior: Concepts, Methods, and Applications, by Shawn E. Nordell and Thomas J. Valone | Jul 21, 2020
- Color Atlas of Animal and Poultry Behavior, by Mohamed Mohamed and Salah Al-Shami | Mar 1, 2020
- Understanding Animal Behavior (What to Measure and Why), by Sergio Pellis | May 20, 2021

8.3: Web sites and journals..... and so on

- WWW.PubMed.com



Kafrelsheikh University
Faculty of Veterinary Medicine



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- www.Vet.net.com
- Journal of Hormone and Behavior
- Journal of applied Animal Ethology
- Journal of applied Animal behavior
- Journal of Dairy Sciences

Course Coordinator:

Prof. Dr. Tarek Balabel

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Head of Department

Prof. Dr. Tarek Balabel

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Date: 29/8/2021

- **Course Matrix for achievement of Intended Learning Outcomes**

	Topics	Hours	Knowledge & Understanding			Intellectual skills			Practical & Professional Skills				General Skills		
			A1	A2	A3	B1	B2	B3	C1	C2	C3	C4	D1	D2	D3
1	General introduction of experimental animal behaviors	8	X		X	X		X					X		
2	Behavior of experimental animals	16		X			X							X	X
3	Management of experimental animals	16	X		X	X		X					X	X	
4	Vices of experimental animals	8		X			X							X	X
5	Points and restraint of experimental animals	20							X	X					
6	Bedding and housing management of experimental animals	30								X	X				
7	Signs of health & Administration of medicine	20								X	X				
8	Animal identification	26							X	X		X			



Kafrelsheikh University
Faculty of Veterinary Medicine



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Biochemistry

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy

(Biochemistry)



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Biochemistry

Program Specification for PhD Degree **(2021-2022)**

A- Administrative information:

- 1- Awarding Body: Kafrelsheikh University**
- 2- Teaching Body: Faculty of Veterinary Medicine**
- 3- Department responsible: Biochemistry**
- 4- Program Title: PhD Degree in Veterinary medicine**
(Biochemistry)
- 5- Final award: PhD Degree**
- 6- Registration period: 3-5 years**

B- Professional information:

1- Aim of the Program:

- Creation of new knowledge and understanding in Biochemistry and Molecular Biology through the process of research and inquiry.
- Development of communication skills, recent techniques and diagnostic tools in the field of Biochemistry and Molecular Biology and experience of scientific research skills.
- Giving the graduate the ability to be creative to Biochemistry and Molecular Biology through new scientific research.
- Achievement of capability in modern laboratory technology to develop practical research project.
- Demonstrating an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and present their own research data for the protection and promotion of the animal health.



- Giving the student the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibiting awareness about current Biochemistry and Molecular Biology problems and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of Biochemistry and Molecular Biology.

2- Academic standards:

**Academic reference standards (ARS) adopted by the faculty committee
No 1 (14/9/2014)**

3-Graduate attributes:

Upon successful completion of the program, the graduate has the ability to:

- 1) Master the basics and methodologies of scientific research in Biochemistry and Molecular biology.
- 2) Make continuous effort to add knowledge about metabolic pathways.
- 3) Analyze and criticize information in normal metabolism and fields related to Biochemistry including physiology, pharmacology, clinical pathology, etc.
- 4) Integrate specialized knowledge with related information and extrapolate their interrelationship.
- 5) Show deep awareness with the ongoing problems and modern theories in dealing with metabolic disorders.
- 6) Identify the professional problems and suggest innovative solutions of the focus area.
- 7) Master of a wide range of professional skills in applied biochemical and modern molecular technique
- 8) Acquire trends towards developing modern methods and tools in studying and researching in biochemistry and molecular biology.
- 9) Use appropriate technological means including molecular biology, chromatography and others to serve professional practice.
- 10) Communicate effectively and lead work team through professional scale.
- 11) Make decision in different professional situations.



- 12) Use of the available resources efficiently in the development of new techniques and work to find new resources.
- 13) Act with integrity, credibility and according to the rules of profession.
- 14) Realize the importance of self and life-long learning and progress.

4-Programme outcomes [intended learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

- a.1. Recognize the recent theories, principles and knowledge in the field of Biochemistry.
- a.2. Confirm legal and ethical principles of professional practice in the field of Biochemistry.
- a.3. Apply principles and the basics of quality assurance in the area of professional practice in the field of Biochemistry.
- a.4. Confirm the principles, methodologies and ethics of scientific research.
- a.5. Allocate professional practice on the environment and methods of environmental development and maintenance.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1. Analyze the information in the field of Biochemistry and elicit from them.
- b.2. Evaluate professional metabolic and molecular problems using available data.
- b.3. Interpret scientific research studies that can give significant impact on the field of Biochemistry and Molecular Biology.
- b.4. Formulate scientific papers in Biochemistry and Molecular Biology efficiently.
- b.5. Assess risks in the field of Biochemistry and Molecular Biology.
- b.6. Be creative and innovative in the Biochemistry.
- b.7. Evaluate professional decisions and suggestion for dealing with metabolic and molecular problems under different contexts.
- b.8. Plan to enhance the performance in field of Biochemistry and Molecular Biology.
- b.9. Share and lead scientific open discussion in the field of Biochemistry based on evidences and proofs.



c. Practical and professional skills:

At the end of the program, postgraduate will inquire the ability of:

- c.1. Apply basic and modern professional skills in the area of Biochemistry and Molecular Biology.
- c.2. Write and evaluate professional reports.
- c.3. Investigate and modernize methods and tools in the area of Biochemistry and Molecular Biology.
- c.4. Use modern technological means to serve professional practice.
- c.5. Conduct professional practice and developing performance of others

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1. Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology in the improvement of Biochemistry and Molecular Biology professional practice.
- d.2. Utilize information technology to serve professional practice.
- d.3. Teach others and evaluate their performance.
- d.4. Asses himself and life-long learning.
- d.5. Use of different sources for obtaining information and knowledge.
- d.6. Lead team under different professional circumstances.
- d.7. Manage scientific meetings with the ability to manage time efficiently.

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, and seminars.

6-Assessments:

The program depends on different assessment ways:

- a. Course assessment:
 1. Final written exam
 - To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills



2. Practical exam
 - To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
3. Oral exam
 - To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.
- b. Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work
- c. PhD Thesis assessment
 - Annual reports adopted by the Faculty.
 - Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
 - Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1-2; b1,2,3
Oral	a1-2; b1,2,3
Practical	c1-2
Qualifying Exam	a1-5; b1-9
Thesis	a3-5; b4-9; c1-5; d1-7

7. Program structure

a. Program duration (years):

PhD degree from 3-5 years and it should not exceed a period of six years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law.



b. Program courses:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council so that include 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c-Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d-Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion .

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Biochemistry include:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab



Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2



	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and	2	2



		biological uses		
	132/2	32– Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed	2	2



		factories		
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3



	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
		81- Advanced immunology	2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1
Hygiene and	208/2	108- Hygienic and control of milk	2	2



control of milk and dairy products		and dairy products		
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2



	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/ 2	134- Stress diseases during animals transport.		
Infectious diseases	235/ 2	135- Infectious diseases of cattle	2	2
	236/ 2	136- Infectious diseases of sheep and goat	2	2
	237/ 2	137- Infectious diseases camel	2	2
	238/ 2	138 Infectious diseases of equine	2	2
	239/ 2	139- Infectious diseases of pet animals	2	2
	240/ 2	140- Infectious diseases lab animals	1	2
	241/ 2	141- Infectious diseases of udder and newly born animals	2	2
	242/ 2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in	2	2



		ruminants- equine- pet animals)		
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2



	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in polutry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		



Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-



	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (Biochemistry) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medicine lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.
3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.
5. The applicant should pass written, practical and oral exams successfully in all courses.



6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.
7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.
8. The applicant should submit a seminar (Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).
9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met: Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.
10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and incase of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.
11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards bit to the



concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.

12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations



a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**

b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade		Percentage
Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
1	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5



Kafrelsheikh University
Faculty of Veterinary Medicine



Program Co-coordinator:

Head of Department:



Matching program ILOs with ARS - Matrix

Matching program ILOs with ARS-Matrix

Program ILOs	ARS																																
	K&U (a)						I.S. (b)									P.P. (c)					G.T. (d)												
	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7						
K&U	1	2	3	4	5	6																											
I.S.							1	2	3	4	5	6	7	8	9																		
P.P.																1	2	3	4	5													
G.T.																											1	2	3	4	5	6	7

Program Specification Matrix

PhD in Veterinary Medicine (Biochemistry)

Courses		Total Contact hours/ course	No. of hours / week			K.U (a)					I.S (b)									P.P (c)					G.T (d)						
						Lect.	Lab.	Total	1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4
Predoctoral courses (10-12 theoretical and practical hours weekly for 12 months)						x	x				x	x	x							x	x	x			x	x	x	x	x	x	x
Qualification exam								x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Thesis								x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x



ARS for PhD in Veterinary Medicine (Biochemistry)

1) Graduate attributes

The graduate should have the ability for:

- 1) Mastering the basics and methodologies of scientific research in Biochemistry.
- 2) Making continuous effort to add knowledge about metabolic pathways and mechanisms of action of enzymes and hormones at cellular level.
- 3) Analysis of information about normal metabolism and fields related to Biochemistry including physiology, pharmacology, clinical pathology, etc.
- 4) Integrating specialized knowledge with related information and extrapolate their interrelationship.
- 5) Showing deep awareness with the ongoing problems and modern theories in dealing with metabolic disorders and nutritional deficiencies.
- 6) Identifying the professional problems and suggest innovative solutions of the focus area.
- 7) Mastering of a wide range of professional skills in applied biochemical and modern molecular technique
- 8) Acquiring trends towards developing modern methods and tools in studying and researching in biochemistry and molecular biology.
- 9) Using appropriate technological means including molecular biology, chromatography and others to serve professional practice.
- 10) Communicating effectively and leading work team through professional scale.
- 11) Making decision in different professional situations.
- 12) Using of the available resources efficiently in the development of new techniques and work to find new resources.
- 13) Acting with integrity, credibility and according to the rules of profession.
- 14) Realizing the importance of self and life-long learning and progress.

A) Knowledge and understanding

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Recent theories, principles and knowledge in recognizing the relation between different metabolic pathways, metabolic disorders and nutritional deficiencies, mechanisms of action of enzymes, hormones and immune molecules at cellular level.		Recent theories, principles and knowledge in the field of specialization and related areas
2)	The principles, methodologies and ethics of		Basics, methodologies and ethics of

	scientific research and its tools including dealing with laboratory animals.	scientific research and its different tools
3)	Legal and ethical principles of professional practice in the area of Biochemistry and Molecular Biology.	Legal and ethical principles of professional practice in the area of specialization
4)	Principles and the basics of quality assurance in laboratory examination in the biochemical and molecular aspects of the animal.	Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	The effect of professional biochemical and molecular studies on the environment and methods of environmental development and maintenance.	The effect of professional practice on the environment and methods of environmental development and maintenance

B) Intellectual skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analyzing and evaluating information about metabolism and different body functions and chemical laboratory findings concerning blood and other body fluids.	Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solving different problems in the biochemical laboratory using available data.	Solving professional problems using available data
3)	Performing scientific research studies that can give significant impact on the animal biochemical studies and nutrition.	Conducting scientific research studies that add to knowledge
4)	Formulating scientific papers in the area of animal Biochemistry.	Formulating scientific papers
5)	Risk-assessment and confusion in the field of Biochemistry.	Risk-assessment in the field of specialization
6)	Plan to enhance the performance in field of Biochemistry and laboratory diagnosis.	Planning to enhance the performance in field of specialization
7)	Making professional decisions for selecting the ideal method for diagnosis of any metabolic and molecular disorders.	Making professional decisions under different professional contexts
8)	Creation and innovative in the area of Biochemistry and Molecular Biology.	Creation and innovative in the area of specialization
9)	Scientific open discussion in the field of Biochemistry based on evidences and proofs.	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills in laboratory biochemical analysis in order to diagnose different cases of metabolic disorders, nutritional deficiencies, intoxications and infectious diseases	Mastering basic and modern professional skills in the area of specialization
2)	Write and evaluate professional scientific reports involving the analysis report of serum and other body fluids	Writing and evaluating professional reports
3)	Evaluating and modernizing methods and tools in the field of Biochemistry.	Evaluating and modernizing methods and tools in the area of specialization
4)	Using advanced technological means to serve laboratory evaluation for different biochemical parameters	Using modern technological means to serve professional practice
5)	Planning for the improvement of veterinary medicine by applying recent biochemical and molecular techniques in the area of Biochemistry and Molecular Biology.	Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology.	Effective communication
2)	Utilizing information technology to serve development of biochemical and molecular practice	Utilizing information technology to serve development of professional practice
3)	Teach others and evaluate their performance.	Teaching others and evaluating their performance
4)	Asses himself and life-long learning.	Self-assessment and continuous learning
5)	Use library, computer and other resources to acquire, apply and disseminate scientific knowledge.	Using different resources to obtain knowledge and information
6)	Work in a team and lead team under different professional circumstances.	Team working and leading a team in familiar professional contexts
7)	Manage scientific meetings with the ability to manage time efficiently.	Management of scientific meetings with the ability to manage time efficiently

ثالثاً: برامج الدكتوراه

١ - مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادراً على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطاً و مطوراً للعلاقات البيئية بينها
٥. إظهار وعيا عميقاً بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حلولاً مبتكرة لحلها
٧. إتقان نطاقاً واسعاً من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تمهيتها و العمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢ - المعايير القياسية العامة

المعرفة و الفهم:

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً علي الفهم و الدراية بكل من:
أ- النظريات و الأساسيات و الحديث من المعارف في مجال التخصص و المجالات ذات العلاقة

- ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
- ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
- ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
- ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و وطرق تنمية البيئة و صيانتها

المهارات الذهنية

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً على:

- أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
- ب- حل المشاكل المتخصصة استناداً علي المعطيات المتاحة
- ج- إجراء دراسات بحثية تضيف إلى المعارف
- د- صياغة أوراق علمية
- هـ- تقييم المخاطر في الممارسات المهنية
- و- التخطيط لتطوير الأداء في مجال التخصص
- ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة
- ح- الابتكار/ الإبداع
- ط- الحوار و النقاش المبني علي البراهين و الأدلة

المهارات المهنية

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً على:

- أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
- ب- كتابة و تقييم التقارير المهنية
- ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
- د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
- هـ- التخطيط لتطوير الممارسة المهنية و تنمية أداء الآخرين

المهارات العامة و المنتقلة

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً على:

- أ- التواصل الفعال بأنواعه المختلفة
- ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية

- ت- تعليم الآخرين وتقييم أداءهم
- ث- التقييم الذاتي والتعلم المستمر
- ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
- ح- العمل في فريق وقيادة فرق العمل
- خ- إدارة اللقاءات العلمية والقدرة علي إدارة الوقت

DEPARTMENT OF BIOCHEMISTRY
Course specification
(2021 / 2022)

1 - Basic Information:

Code number: 134/2

Course title: : Principles of Biochemistry

Academic Year : PhD Veterinary Medicine Program

Total teaching hours:240 hrs

Lectures:96 hr (48 weeks- 2hrs/week)

Practical:144 hr(48 weeks- 3hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, students should be able to

- 1- provide with professional skills and attitude in handling recent technique and diagnostic tools.
- 2- demonstrate an awareness of the connection with different disciplines of the world – wide research by reviewing the scientific literature.
- 3- solve a problems in area of biochemistry.
- 4- understand the self development and the continuous learning.
- 5- prepare for registering to the PhD degrees in field of the reproductive management and biotechnology

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Demonstrate advanced knowledge and understanding biochemical topics of carbohydrate, lipid,protein,nucleoprotein
- a.2. Describe biochemical metabolic pathway of lipid,carbohydrates and protien .
- a.3. Demonstrate regulatory mechanisms controlling of these metabolic pathways.
- a.4. Demonstrate advanced knowledge and understanding biochemical topics of tissue chemistry and body fluids
- a.5. Acomprehensive examination of metabolism of carbohydrates, lipids, proteins and nucleic acids
- a.6. Identify the enzymes and coenzymes
- a.7. Describe the minerals and their roles in the body functions.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Correlate between different metabolic pathway inside the body.
- b.2. Formulate appropriate mechanisms of biochemical reactions involved in energy production, biosynthesis, and degradation, with attention being given to their role in disease.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Apply the modern techniques to the characterization of biomolecules, with an emphasis on body fluids
- c.2. Perform appropriate measures for colorimetric and spectrophotometer estimation of different metabolites

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Coach and work in team
- d.2. classify different duties

d.3. utilize computer and internet skills

d.4. Develop the ethical behaviors between students and staff members as well as among the students themselves

4 - COURSE CONTENTS:

Topic	No. of hours		
	lecture	practical	Total
Carbohydrate chemistry	9	15	24
Lipid chemistry	9	15	24
Protein chemistry	9	15	24
Nucleoproteins and nucleic acids	6	12	18
Enzymes and coenzymes	12	7	19
Biological Oxidation	3	-	3
Carbohydrate Metabolis	12	16	28
Lipid Metabolism	12	16	28
Protein Metabolism	12	16	28
Mineral Metabolism	4	-	4
The urine	5	20	25
Blood	3	12	15
Total hours	96	144	240

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard

Discussion and brain storming

* **Practical sessions:** Practical demonstration of chemical reactions, Visiting the Central Laboratory

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchro

6. METHODS FOR STUDENTS With limited capabilities:-

• No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	At the end of academic year	At the end of academic year	At the end of academic year
7.c grads	50	20	30

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b2		d4
Practical exams			c1 to c2	d2, d3
Oral exams	a1 to a7	b1 to b2		d1
Student activities	a1, a5			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Biochemistry with clinical correlations(Thomas.M.Devlin).
- Practical.biochemistry and technique(Wilson & Walker).
- Clinical chemistry(Wiliam.J.Marshall)
- Practical.clinical.biochemistry(Alan.H.Gowealock)

8-2: Recmonded books

- LA Moran, HR Horton, KG Scrimgeour, MD Perry .2012 Principles of biochemistry 4th Edit
- B Harrow - Textbook of biochemistry., 1946 Textbook of biochemistry
- RH Garrett, CM Grisham - 2010 Biochemistry4th Edit
- NP Omelyanenko - 2019 -Connective tissue: histophysiology, biochemistry, molecular biology
- GD Fasman - 2018 CRC Handbook of Biochemistry and Molecular Biology: Physical and Chemical Data3rd Edition <https://doi.org/10.1201/9781351072427>

8-3: Egyptian Knowledge Bank:

- Modern Biochemistry (Third Edition): by C Y Lim-Sylianco. pp 626. Aurum Technical Books. Philippines. 1987 .Biochemical Education
- Biochemistry in clinical practice: edited by D. L. Williams and V. Marks, William Heinemann Medical Books, 1983. Trends in Biochemical Sciences, 9(5), p252-253
- Basic biochemistry : by J. Edelman and J. M. Chapman Heinemann Educational Books; London, 1978 .Trends in Biochemical Sciences, 9(5), p252-253
- Atractyloside Chemistry, Biochemistry and Toxicology : Edited by R. Santi and S. Luciani Piccin Medical Books; Padova, 1978.FEBS Letters, 105(2), p391.Elsevier: ScienceDirect
- Basic biochemistry: a visual approach for college and university students: by J. Edelman and J. M. Chapman, Heinemann Educational Books, London and Edinburgh, 1978. Trends in Biochemical Sciences, 4(10), pn258
- Text book of biochemistry in Russia Biokhimiia (Moscow, Russia), 15(2), p191-6
- Neuropathology, endocrinology and biochemistry; brain mechanisms and consciousness: a book review. The American journal of psychiatry
- Vitamins and Nutrition, Litwack, Gerald, PhD. Human Biochemistry.

Scientific Journals

- Journal of Lipid Research

- Free Radical Biology and Medicine
- Biochemical Journal
- Proteins: Structure, Function and Genetics
Journal of Proteome Research
- Cell Communication and Signaling
- Biochemical Pharmacology
- Biochimica et Biophysica Acta - Bioenergetics
- Biochimie Open
- Journal of Neurochemistry
- Journal of Nutritional Biochemistry
- Biochemistry
- Cellular and Molecular Biology Letters
- Journal of Animal Science and Biotechnology
- Journal of Biomolecular NMR
- Molecular Genetics and Metabolism
- Molecular and Cellular Endocrinology
- Journal of Biochemistry
- International Journal of Biochemistry and Cell Biology
- Cancer Genomics and Proteomics
- Biochimica et Biophysica Acta - General Subjects
- Pharmacology Biochemistry and Behavior
- Journal of Biochemistry

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <http://www.labtestsonline.org>
- <http://www.indstate.edu/thcme/mwking/enzyme-kinetics.html>
- <http://www-biol.paisley.ac.uk/kinetics/contents.html>
- bcs.whfreeman.com/biochem5
- www.annualreviews.org

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intellectual Skills		Practical & Professional Skills		General & Transferable Skills				
		1	2	3	4	5	6	7	1	2	1	2	1	2	3	4	
Carbohydrate chemistry	24	✓	✓	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Lipid chemistry	24	✓	✓	✓		✓			✓	✓	✓		✓	✓	✓	✓	✓
Protein chemistry	24	✓	✓	✓		✓			✓	✓	✓		✓	✓	✓	✓	✓
Nucleoproteins and nucleic acids	18	✓	✓	✓		✓			✓	✓	✓		✓	✓	✓	✓	✓
Enzymes and coenzymes	19	✓	✓	✓					✓	✓		✓	✓	✓	✓	✓	✓

Biological Oxidation	3	✓				✓			✓	✓	✓		✓	✓	✓	✓
Carbohydrate Metabolism	28	✓	✓	✓		✓			✓	✓			✓	✓	✓	✓
Lipid Metabolism	28	✓	✓	✓		✓		✓	✓	✓		✓	✓	✓	✓	✓
Protein Metabolism	28	✓	✓	✓		✓			✓	✓		✓	✓	✓	✓	✓
Mineral Metabolism	4							✓	✓	✓		✓	✓	✓	✓	✓
The urine	25			✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
Blood	15			✓				✓	✓	✓	✓	✓	✓	✓	✓	✓

Course Coordinator:

Head of Department:

Prof. Dr. Khalid kahilo

Prof. Dr. Samir Ahmed Elshazly

DEPARTMENT OF BIOCHEMISTRY
Course specification
(2021/ 2022)

1 - Basic Information:

Code number:135/2

Course title:. Biochemistry of Metabolism.

Academic Year : **PhD Veterinary Medicine Program**

Total teaching hours:144hrs

Lectures:48hr (48 weeks hour/week)

Practical: 96hr (48 weeks 2hour/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, students should be able to

- 1- gain knowledge in anabolism and catabolism.
- 2- develop research skills, in the area of laboratory diagnosis in the field of biochemistry.
- 3- provide with skills in interpretation of published literature to prepare them to incorporate and integrate new developments into research and clinical activities.
- 4- detect a problem and take a decision in field of laboratory diagnosis.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Demonstrate advanced knowledge and understanding biochemical topics of metabolism.
- a.2. Describe biochemical metabolic pathway of lipid,carbohydrates and protien .
- a.3. Demonstrate regulatory mechanisms controlling of these metabolic pathways.
- a.4. Clarify the metabolism and detoxification of xenobiotics.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Correlate between different metabolic pathway inside the body.
- b.2. Formulate appropriate mechanisms of biochemical reactions involved in energy production, biosynthesis, and degradation, with attention being given to their role in disease.
- b.3. Detect the detoxification pathways and its relation to the body function.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Apply modern techniques to the characterization of biomolecules, with an emphasis on carbohydrates, lipids ,proteins ,urea and uric acid
- c.2. Detect the most appropriate method for identification of unknown biochemical samples

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Coach and work in team
- d.2. classify different duties
- d.3. utilize computer and internet skills
- d.4. Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

Topic	No. of hours /week
-------	--------------------

	Lecture	Lab.	Total
Enzymes and coenzymes	4	12	16
Vitamins	4	12	16
Hormones	6	14	20
Animal pigments	4	10	14
Putrefaction and detoxication	4	12	16
Biological Oxidation	4	-	4
Carbohydrate Metabolism	4	12	16
Lipid Metabolism	4	12	16
Protein Metabolism	4	12	16
Mineral Metabolism	10	-	10
Total hours	48	96	144

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming
- * **Practical sessions:** Practical demonstration of chemical reactions, Visiting the Central Laboratory
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about poultry or dairy operations
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchr

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7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	At the end of academic year	At the end of academic year	At the end of academic year
7.c grads	50	20	30

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
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Written exams	a1 to a4	b1 to b3		d4
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Oral exams	a1 to a4	b1 to b3		d1
Student activities	a1, a4			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

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- Vitamins and Nutrition, Litwack, Gerald, PhD. Human Biochemistry.

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- Biochimica et Biophysica Acta - Bioenergetics
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- Molecular Genetics and Metabolism
- Molecular and Cellular Endocrinology

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- Cancer Genomics and Proteomics
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<http://www.labtestsonline.org>
<http://www.indstate.edu/thcme/mwking/enzyme-kinetics.html>
<http://www-biol.paisley.ac.uk/kinetics/contents.html>
[bcs.whfreeman.com/biochem5](https://www.whfreeman.com/biochem5)
www.annualreviews.org

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding				Intellectual Skills			Practical & Professional Skills		General & Transferable Skills			
		1	2	3	4	1	2	3	1	2	1	2	3	4
Enzymes and coenzymes	24	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓
Vitamins	24	✓	✓	✓		✓	✓			✓	✓	✓	✓	✓
Hormones	24	✓	✓	✓		✓	✓			✓	✓	✓	✓	✓
Animal pigments	18		✓	✓		✓	✓			✓	✓	✓	✓	✓
Putrefaction and detoxication	19				✓			✓	✓		✓	✓	✓	✓
Biological Oxidation	3	✓				✓	✓		✓		✓	✓	✓	✓
Carbohydrate Metabolism	28	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓
Lipid Metabolism	28	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓
Protein Metabolism	28	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓
Mineral Metabolism	4		✓	✓		✓	✓			✓	✓	✓	✓	✓

Course Coordinator:

Prof. Dr. Khalid kahilo

Head of Department:

Prof. Dr. Samir Ahmed Elshazly

DEPARTMENT OF BIOCHEMISTRY
Course specification
(2021 / 2022)

1 - Basic Information:

Code number: 136/2

Course title: Biochemistry of Tissue and Body Fluids

Academic Year PhD Veterinary Medicine Program

Total teaching hours: 192hrs

Lectures: 96 hr (48 weeks 2hour/week)

Practical: 96hr (48 weeks 2hour/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, students should be able to have the professional knowledge of the Biochemistry and body fluid and their experimental basis

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Demonstrate advanced knowledge and understanding biochemical topics of tissue chemistry and body fluids
- a.2. Recognize the importance and impact of scientific topics of chemistry and metabolism.
- a.3. Understand the way in which the cell degrades nutrients in small steps to allow the energy to be trapped and converted to a useful form
- a.4. A comprehensive examination of metabolism of carbohydrates, lipids, proteins and nucleic acids in tissues.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Explore and interpret the basic principles of biochemistry of tissue chemistry and body fluids necessary for the practice of medicine and for the understanding of other pre-clinical disciplines.
- b.2. Formulate appropriate mechanisms of biochemical reactions involved in energy production, biosynthesis, and degradation, with attention being given to their role in disease

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Apply modern techniques to the characterization of biomolecules, with an emphasis on body fluids
- c.2. Detect appropriate measures for colorimetric and spectrophotometer estimation of different metabolites

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Coach and work in team
- d.2. classify different duties
- d.3. utilize computer and internet skills
- d.4. Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

Topic	No. of hours /week		
	Lecture	Lab.	Total
Carbohydrates chemistry of tissues	10	10	20
Lipids chemistry of tissues	10	10	20

Protein chemistry of tissues	10	10	20
Nucleoproteins and nucleic acids	3	-	3
Enzymes and coenzymes	7	-	7
Putrefaction and detoxication	3	5	8
Carbohydrates metabolism of tissues	10	10	20
Lipid metabolism of tissues	12	12	24
Protein metabolism of tissues	10	12	22
Mineral metabolism.	6		6
Chemistry of blood	5	12	17
The urine and other body fluids	10	15	25
TOTAL	96	96	192

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming
- * **Practical sessions:** Practical demonstration of chemical reactions, Visiting the Central Laboratory
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about poultry or dairy operations
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchro

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	At the end of academic year	At the end of academic year	At the end of academic year
7.c grads	50	25	25

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b2		d4
Practical exams			c1 to c2	d2, d3
Oral exams	a1 to a4	b1 to b2		d1
Student activities	a1, a4			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Biochemistry with clinical correlations(Thomas.M.Devlin).
- Practical.biochemistry and techniquel(Wilson & Walker).

- Clinical chemistry(Wiliam.J.Marshall)
- Practical.clinical.biochemistry(Alan.H.Gowealock)

8-2: Recmonded books

- LA Moran, HR Horton, KG Scrimgeour, MD Perry .2012 Principles of biochemistry 4th Edit
- B Harrow - Textbook of biochemistry., 1946 Textbook of biochemistry
- RH Garrett, CM Grisham - 2010 Biochemistry4th Edit
- NP Omelyanenko - 2019 -Connective tissue: histophysiology, biochemistry, molecular biology
- GD Fasman - 2018 CRC Handbook of Biochemistry and Molecular Biology: Physical and Chemical Data3rd Edition <https://doi.org/10.1201/9781351072427>

8-3: Egyptian Knowledge Bank:

- Modern Biochemistry (Third Edition): by C Y Lim-Sylianco. pp 626. Aurum Technical Books. Philippines. 1987 .Biochemical Education
- Biochemistry in clinical practice: edited by D. L. Williams and V. Marks, William Heinemann Medical Books, 1983. Trends in Biochemical Sciences, 9(5), p252-253
- Basic biochemistry : by J. Edelman and J. M. Chapman Heinemann Educational Books; London, 1978 .Trends in Biochemical Sciences, 9(5), p252-253
- Atractyloside Chemistry, Biochemistry and Toxicology : Edited by R. Santi and S. Luciani Piccin Medical Books; Padova, 1978.FEBS Letters, 105(2), p391.Elsevier: ScienceDirect
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- Neuropathology, endocrinology and biochemistry; brain mechanisms and consciousness: a book review. The American journal of psychiatry
- Vitamins and Nutrition, Litwack, Gerald, PhD. Human Biochemistry.

Scientific Journals

- Journal of Lipid Research
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- Biochemical Journal
- Proteins: Structure, Function and Genetics
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- Cell Communication and Signaling
- Biochemical Pharmacology
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- Biochimie Open
- Journal of Neurochemistry
- Journal of Nutritional Biochemistry
- Biochemistry
- Cellular and Molecular Biology Letters
- Journal of Animal Science and Biotechnology
- Journal of Biomolecular NMR
- Molecular Genetics and Metabolism
- Molecular and Cellular Endocrinology
- Journal of Biochemistry

- International Journal of Biochemistry and Cell Biology
- Cancer Genomics and Proteomics
- Biochimica et Biophysica Acta - General Subjects
- Pharmacology Biochemistry and Behavior
- Journal of Biochemistry

Scientific websites

The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>

<http://www.labtestsonline.org>

<http://www.indstate.edu/thcme/mwking/enzyme-kinetics.html>

<http://www-biol.paisley.ac.uk/kinetics/contents.html>

[bcs.whfreeman.com/biochem5](https://www.whfreeman.com/biochem5)

www.annualreviews.org

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding				Intellectual Skills		Practical & Professional Skills		General & Transferable Skills			
		1	2	3	4	1	2	1	2	1	2	3	4
Carbohydrate chemistry	20	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓
Carbohydrates chemistry of tissues	20	✓	✓	✓		✓		✓		✓	✓	✓	✓
Lipids chemistry of tissues	20	✓	✓	✓		✓		✓		✓	✓	✓	✓
Protein chemistry of tissues	3	✓	✓	✓		✓		✓		✓	✓	✓	✓
Nucleoproteins and nucleic acids	7	✓	✓	✓		✓			✓	✓	✓	✓	✓
Enzymes and coenzymes	8	✓				✓		✓		✓	✓	✓	✓
Putrefaction and detoxication	20			✓		✓	✓	✓		✓	✓	✓	✓
Carbohydrates metabolism of tissues	24	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Lipid metabolism of tissues	22	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Protein metabolism of tissues	6	✓						✓	✓	✓	✓	✓	✓
Mineral metabolism.	17	✓				✓		✓	✓	✓	✓	✓	✓
Chemistry of blood	25	✓				✓	✓		✓	✓	✓	✓	✓
The urine and other body fluids	20	✓				✓	✓		✓	✓	✓	✓	✓

Course Coordinator:

Prof. Dr. Azza m Elkattawy

Head of Department:

Prof. Dr. Samir Ahmed Elshazly

DEPARTMENT OF BIOCHEMISTRY
Course specification
(2021 / 2022)

1 - Basic Information:

Code number: 137/2

Course title: Biochemistry of hormones and reproduction .

Academic Year **PhD Veterinary Medicine Program**

Total teaching hours: 192 hrs

Lectures: 96 hr (48 weeks 2hour/week)

Practical: 96hr (48 weeks 2hour/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, students should be able to

- Recognize the chemical composition of major body fluids (urine, blood) and their clinical importance.
- Describe medical laboratory reports.
- Correlate between chemical compositions of the body and tissue function.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Demonstrate advanced knowledge and understanding biochemical topics of hormones and reproduction
- a.2. Describe biochemical metabolic pathway of hormones in mammals.
- a.3. Illustrate the impact of congenital anomalies associated with inborn error affecting growth and development.
- a.4. Understand the regulation of central metabolism with respect to the needs of the organism in relation to its environment
- a.5. A comprehensive examination of metabolism of carbohydrates, lipids, proteins and nucleic acids.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Explore and interpret the basic principles of biochemistry of hormones necessary for the practice of medicine and for the understanding of other pre-clinical disciplines.
- b.2. Formulate appropriate mechanisms of biochemical reactions involved in energy production, biosynthesis, and degradation, with attention being given to their role in disease

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Apply of modern techniques to the characterization of biomolecules, with an emphasis on biological samples
- c.2. Apply the appropriate methods for PCR.
- c.3. Perform appropriate measures for colorimetric and spectrophotometer estimation of different metabolites

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Coach and work in team
- d.2. Classify different duties
- d.3. Utilize computer and internet skills
- d.4. Develop the ethical behaviors between students and staff members as well as among the students themselves

4 - COURSE CONTENTS:

Topic	No. of hours /week		
	Lecture	Lab.	Total
General characteristics of hormones and mode of action	12	12	24
Chemistry and function of thyroid and parathyroid	12	12	24
Chemistry and function of pancreas and gastrointestinal tract	12	12	24
Chemistry and function of adrenal and gonads	3	-	3
Enzymes and coenzymes	7	-	7
Carbohydrate metabolism	3	8	11
Lipid metabolism	12	14	26
Protein metabolism	12	14	26
Mineral metabolism.	12	12	24
Chemistry of blood	6		6
The urine	5	12	17
TOTAL	96	96	192

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming
- * **Practical sessions:** Practical demonstration of chemical reactions, Visiting the Central Laboratory
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about poultry or dairy operations
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchro

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	At the end of academic year	At the end of academic year	At the end of academic year
7.c grads	50	25	25

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b2		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a5	b1 to b2		d1
Student activities	a1, a4			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

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- Practical.biochemistry and technique(Wilson & Walker).
- Clinical chemistry(Wiliam.J.Marshall)
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8-3: Egyptian Knowledge Bank:

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- Neuropathology, endocrinology and biochemistry; brain mechanisms and consciousness: a book review. The American journal of psychiatry
- Vitamins and Nutrition, Litwack, Gerald, PhD. Human Biochemistry.

Scientific Journals

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- Biochemical Pharmacology
- Biochimica et Biophysica Acta - Bioenergetics
- Biochimie Open
- Journal of Neurochemistry
- Journal of Nutritional Biochemistry
- Biochemistry

- Cellular and Molecular Biology Letters
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- Molecular Genetics and Metabolism
- Molecular and Cellular Endocrinology
- Journal of Biochemistry
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- Cancer Genomics and Proteomics
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- Pharmacology Biochemistry and Behavior
- Journal of Biochemistry

Scientific websites

The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
<http://www.labtestsonline.org>
<http://www.indstate.edu/thcme/mwking/enzyme-kinetics.html>
<http://www-biol.paisley.ac.uk/kinetics/contents.html>
[bcs.whfreeman.com/biochem5](https://www.bcs.whfreeman.com/biochem5)
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Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding					Intellectual Skills		Practical & Professional Skills			General & Transferable Skills			
		1	2	3	4	5	1	2	1	2	3	1	2	3	4
General characteristics of hormones and mode of action	24	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Chemistry and function of thyroid and parathyroid	24	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Chemistry and function of pancreas and gastrointestinal tract	24	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Chemistry and function of adrenal and gonads	3	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Enzymes and coenzymes	7							✓			✓	✓	✓	✓	✓
Carbohydrate metabolism	11			✓	✓	✓		✓		✓	✓	✓	✓	✓	✓
Lipid metabolism	26			✓	✓	✓		✓		✓	✓	✓	✓	✓	✓
Protein metabolism	26			✓	✓	✓		✓		✓	✓	✓	✓	✓	✓
Mineral metabolism.	24			✓				✓			✓	✓	✓	✓	✓
Chemistry of blood	6			✓					✓	✓		✓	✓	✓	✓
The urine	17			✓						✓		✓	✓	✓	✓

Course Coordinator:
Prof. Prof.Dr. Khalid kahilo

Head of Department:
Prof. Dr. Samir Ahmed Elshazly

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 138/2

Course title: Biochemistry of Nutrition

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 192 hrs

Lectures: 96 hr (48 weeks 2hour/week)

Practical: 96hr (48 weeks 2hour/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, students should be able to deep understand of the principles and topics of biochemistry of nutrition and their experimental basis.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Demonstrate advanced knowledge and understanding biochemical topics of nutrition
- a.2. Describe biochemical metabolic pathway in mammals.
- a.3. Illustrate the impact of congenital anomalies associated with inborn error affecting growth and development.
- a.4. Recognize the importance and impact of scientific topics of chemistry and metabolism.
- a.5. Understand the way in which the cell degrades nutrients in small steps to allow the energy to be trapped and converted to a useful form

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Explore and interpret the basic principles of biochemistry of nutrition necessary for the practice of medicine and for the understanding of other pre-clinical disciplines.
- b.2. Formulate appropriate mechanisms of biochemical reactions involved in energy production, biosynthesis, and degradation, with attention being given to their role in disease.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Apply of modern techniques to the characterization of biomolecules, with an emphasis on carbohydrates, lipids ,proteins ,urea and uric acid
- c.2. Perform appropriate measures for colorimetric and spectrophotometer estimation of different metabolites

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Coach and work in team
- d.2. classify different duties
- d.3. utilize computer and internet skills
- d.4. Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS

Topic	No. of hours /week		
	Lecture	Lab.	Total
Carbohydrates chemistry of nutrition	8	10	18
Lipids chemistry of nutrition	7	10	17

Protein chemistry of nutrition	8	10	18
Nucleoproteins and nucleic acids	4	10	14
Enzymes and coenzymes	8	10	18
Vitamins	6	-	6
Hormones	6	-	6
Putrefaction and detoxication	3	5	8
Biological oxidation	3	-	3
Carbohydrate metabolism	9	5	14
Lipid metabolism	9	5	14
Protein metabolism	9	5	14
Mineral metabolism.	6	-	6
Chemistry of blood	4	10	14
The urine	6	16	22
Total	96	96	192

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming
- * **Practical sessions:** Practical demonstration of chemical reactions, Visiting the Central Laboratory
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about poultry or dairy operations
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchro

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	At the end of academic year	At the end of academic year	At the end of academic year
7.c grads	50	25	25

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b2		d4
Practical exams			c1 to c2	d2, d3
Oral exams	a1 to a5	b1 to b2		d1
Student activities	a1, a4			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

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8-2: Recmonded books

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- Basic biochemistry : by J. Edelman and J. M. Chapman Heinemann Educational Books; London, 1978 .Trends in Biochemical Sciences, 9(5), p252-253
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- Neuropathology, endocrinology and biochemistry; brain mechanisms and consciousness: a book review. The American journal of psychiatry
- Vitamins and Nutrition, Litwack, Gerald, PhD. Human Biochemistry.

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- Biochemical Pharmacology
- Biochimica et Biophysica Acta - Bioenergetics
- Biochimie Open
- Journal of Neurochemistry
- Journal of Nutritional Biochemistry
- Biochemistry
- Cellular and Molecular Biology Letters

- Journal of Animal Science and Biotechnology
- Journal of Biomolecular NMR
- Molecular Genetics and Metabolism
- Molecular and Cellular Endocrinology
- Journal of Biochemistry
- International Journal of Biochemistry and Cell Biology
- Cancer Genomics and Proteomics
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- Pharmacology Biochemistry and Behavior
- Journal of Biochemistry

Scientific websites

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<http://www.indstate.edu/thcme/mwking/enzyme-kinetics.html>

<http://www-biol.paisley.ac.uk/kinetics/contents.html>

[bcs.whfreeman.com/biochem5](https://www.whfreeman.com/biochem5)

www.annualreviews.org

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding					Intellectual Skills		Practical & Professional Skills		General & Transferable Skills			
		1	2	3	4	5	1	2	1	2	1	2	3	4
Carbohydrates chemistry of nutrition	18	✓	✓				✓		✓		✓	✓	✓	✓
Lipids chemistry of nutrition	17	✓	✓				✓		✓		✓	✓	✓	✓
Protein chemistry of nutrition	18	✓	✓				✓		✓		✓	✓	✓	✓
Nucleoproteins and nucleic acids	14	✓	✓				✓		✓		✓	✓	✓	✓
Enzymes and coenzymes	18		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Vitamins	6		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Hormones	6	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Putrefaction and detoxication	8					✓		✓		✓	✓	✓	✓	✓
Biological oxidation	3					✓	✓	✓	✓		✓	✓	✓	✓
Carbohydrate metabolism	14		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Lipid metabolism	14		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Protein metabolism	14		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓

Mineral metabolism.	6		✓	✓	✓		✓		✓	✓	✓	✓	✓	✓
Chemistry of blood	14			✓		✓				✓	✓	✓	✓	✓
The urine	22			✓		✓				✓	✓	✓	✓	✓

Course Coordinator:

Prof. Dr. Azza m Elkattawy

Head of Department:

Prof. Dr. Samir Ahmed Elshazly

DEPARTMENT OF BIOCHEMISTRY
Course specification
(2021 / 2022)

1 - Basic Information:

Code number: 139/2

Course title: Clinical Biochemistry.

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 192 hrs

Lectures: 96 hr (48 weeks 2hour/week)

Practical: 96hr (48 weeks 2hour/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, students should be able to

- 1- gains first the experience in collecting information from different sources,
- 2- develop research skills, competency in modern laboratory technology
- 3- provide the students with skills in interpretation of published literature to prepare them to incorporate and integrate new developments into research and clinical activities.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Demonstrate advanced knowledge and understanding clinical biochemical topic
- a.2. Know the clinical biochemistry
- a.3. Illustrate the impact of congenital anomalies associated with inborn error affecting growth and development.
- a.4. Recognize the importance and impact of scientific topics of chemistry and metabolism.
- a.5. Describe biochemical metabolic pathway in mammals.
- a.6. Understand the way in which the cell degrades nutrients in small steps to allow the energy to be trapped and converted to a useful form
- a.7. Appreciate the way in which clinical enzymology connects liver and kidney functions tests

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Explore and interpret the basic principles of clinical biochemistry necessary for the practice of medicine and for the understanding of other pre-clinical disciplines.
- b.2. Formulate appropriate mechanisms of biochemical reactions involved in energy production, biosynthesis, and degradation, with attention being given to their role in disease.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Apply of modern techniques to the characterization of biomolecules, with an emphasis on liver and kidney functions tests
- c.2. Performe the most appropriate method for identification of unknown biochemical samples of blood, serum
- c.3. Detect appropriate measures for colorimetric and spectrophotometer estimation of different metabolites

3- D: GENERAL SKILLS:

- d.1. Coach and work in team
- d.2. classify different duties
- d.3. utilize computer and internet skills

d.4. Develop the ethical behaviors between students and staff members as well as among the students themselves...

4 - COURSE CONTENTS:

Topic	No. of hours /week		
	Lecture	Lab.	Total
Clinical enzymology	13	15	28
Liver functions	6	11	17
Kidney functions	6	10	16
Enzymes and coenzymes	8	10	18
Vitamins	6	-	6
Hormones	6	-	6
Biological oxidation	2	-	2
Carbohydrate metabolism	9	8	17
Lipid metabolism	9	8	17
Protein metabolism	9	8	17
Mineral metabolism.	5	-	5
Clinical study of blood	7	10	17
The urine	10	16	26
Total	96	96	192

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming
- * **Practical sessions:** Practical demonstration of chemical reactions, Visiting the Central Laboratory
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about poultry or dairy operations
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchro

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	At the end of academic year	At the end of academic year	At the end of academic year
7.c grads	50	25	25

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b2		d4
Practical exams			c1 to c3	d2, d3

Oral exams	a1 to a7	b1 to b2		d1
Student activities	a1, a3,a4,a5,a7			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Biochemistry with clinical correlations(Thomas.M.Devlin).
- Practical.biochemistry and techniquel(Wilson & Walker).
- Clinical chemistry(Wiliam.J.Marshall)
- Practical.clinical.biochemistry(Alan.H.Gowealock)

8-2: Recmended books

- LA Moran, HR Horton, KG Scrimgeour, MD Perry .2012 Principles of biochemistry 4th Edit
- B Harrow - Textbook of biochemistry., 1946 Textbook of biochemistry
- RH Garrett, CM Grisham - 2010 Biochemistry4th Edit
- NP Omelyanenko - 2019 -Connective tissue: histophysiology, biochemistry, molecular biology
- GD Fasman - 2018 CRC Handbook of Biochemistry and Molecular Biology: Physical and Chemical Data3rd Edition <https://doi.org/10.1201/9781351072427>

8-3: Egyptian Knowledge Bank:

- Modern Biochemistry (Third Edition): by C Y Lim-Sylianco. pp 626. Aurum Technical Books. Philippines. 1987 .Biochemical Education
- Biochemistry in clinical practice: edited by D. L. Williams and V. Marks, William Heinemann Medical Books, 1983. Trends in Biochemical Sciences, 9(5), p252-253
- Basic biochemistry : by J. Edelman and J. M. Chapman Heinemann Educational Books; London, 1978 .Trends in Biochemical Sciences, 9(5), p252-253
- Atractyloside Chemistry, Biochemistry and Toxicology : Edited by R. Santi and S. Luciani Piccin Medical Books; Padova, 1978.FEBS Letters, 105(2), p391.Elsevier: ScienceDirect
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- Text book of biochemistry in Russia Biokhimiia (Moscow, Russia), 15(2), p191-6
- Neuropathology, endocrinology and biochemistry; brain mechanisms and consciousness: a book review. The American journal of psychiatry
- Vitamins and Nutrition, Litwack, Gerald, PhD. Human Biochemistry.

Scientific Journals

- Journal of Lipid Research
- Free Radical Biology and Medicine
- Biochemical Journal
- Proteins: Structure, Function and Genetics
Journal of Proteome Research
- Cell Communication and Signaling
- Biochemical Pharmacology
- Biochimica et Biophysica Acta - Bioenergetics
- Biochimie Open

- Journal of Neurochemistry
- Journal of Nutritional Biochemistry
- Biochemistry
- Cellular and Molecular Biology Letters
- Journal of Animal Science and Biotechnology
- Journal of Biomolecular NMR
- Molecular Genetics and Metabolism
- Molecular and Cellular Endocrinology
- Journal of Biochemistry
- International Journal of Biochemistry and Cell Biology
- Cancer Genomics and Proteomics
- Biochimica et Biophysica Acta - General Subjects
- Pharmacology Biochemistry and Behavior
- Journal of Biochemistr

Scientific websites

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<http://www.labtestsonline.org>
<http://www.indstate.edu/thcme/mwking/enzyme-kinetics.html>
<http://www-biol.paisley.ac.uk/kinetics/contents.html>
[bcs.whfreeman.com/biochem5](https://www.bcs.whfreeman.com/biochem5)
www.annualreviews.org

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intellectual Skills		Practical & Professional Skills			General & Transferable Skills			
		1	2	3	4	5	6	7	1	2	1	2	3	1	2	3	4
Clinical enzymology	28	✓	✓	✓	✓	✓	✓	✓	✓		✓			✓	✓	✓	✓
Liver functions	17	✓	✓					✓	✓		✓			✓	✓	✓	✓
Kidney functions	16	✓	✓					✓	✓		✓			✓	✓	✓	✓
Enzymes and coenzymes	18	✓	✓	✓				✓	✓		✓		✓	✓	✓	✓	✓
Vitamins	6	✓	✓			✓			✓	✓	✓		✓	✓	✓	✓	✓
Hormones	6		✓			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Biological oxidation	2	✓	✓			✓	✓		✓	✓	✓			✓	✓	✓	✓
Carbohydrate metabolism	17	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓
Lipid metabolism	17	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓
Protein metabolism	17	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓
Mineral metabolism.	5	✓	✓	✓	✓	✓	✓			✓		✓	✓	✓	✓	✓	✓
Clinical study of blood	17		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
The urine	26		✓	✓	✓	✓			✓		✓	✓	✓	✓	✓	✓	✓

Course Coordinator:
Dr. Tarek Kamal Abouzed

Head of Department:
Prof. Dr. Samir Ahmed Elshazly

DEPARTMENT OF BIOCHEMISTRY
Course specification
(2021/ 2022)

1 - Basic Information:

Code number: 140/2

Course title: : Biochemistry of Poultry

Academic Year: PhD Veterinary Medicine Program

Total teaching hours:192 hrs

Lectures:96 hr (48 weeks 2hour/week)

Practical: 96hr (48 weeks 2hour/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, students should be able to deep understand the principles and topics of biochemistryof poultry and their experimental basis.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1.Demonstrate advanced knowledge and understanding biochemical topics of poultry
- a.2.Describe biochemical metabolic pathway in of poultry.
- a.3.Illustrate the impact of congenital anomalies associated with inborn error affecting growth and development.
- a.4.Recognize the importance and impact of scientific topics of chemistry and metabolism.
- a.5.Understand the way in which the cell degrades nutrients in small steps to allow the energy to be trapped and converted to a useful form
- a.6. A comprehensive examination of metabolism of carbohydrates, lipids, proteins and nucleic acids in poultry .

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1.Explore and interpret the basic principles of poultry biochemistry necessary for the practice of medicine and for the understanding of other pre-clinical disciplines.
- b.2.Formulate appropriate mechanisms of biochemical reactions involved in energy production, biosynthesis, and degradation, with attention being given to their role in disease.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1.Apply of modern techniques to the characterization of biomolecules, with an emphasis on blood ,plasma
- c.2.Perform the most appropriate method for identification of unknown biochemical samples .
- c.3. Detectappropriate measures for colorimetric and spectrophotometer estimation of different metabolites

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Coach and work in team
- d.2. classify different duties
- d.3. utilize computer and internet skills.
- d.4. Develop the ethical behaviors between students and staff members as well as among the students themselves

4 - COURSE CONTENTS:

Topic	No. of hours /week		
	Lecture	Lab.	Total
Enzymes and coenzymes	12	13	25
Vitamins	8	13	21
Hormones	10	13	23
Animal pigments	4	10	14
Putrefaction and detoxication	4	8	12
Biological oxidation	6	-	6
Carbohydrate metabolism in poultry	12	10	22
Lipid metabolism in poultry	12	10	22
Protein metabolism in poultry	12	10	22
Mineral metabolism.	8	-	8
blood	8	9	17
Total	96	96	192

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming
- * **Practical sessions:** Practical demonstration of chemical reactions, Visiting the Central Laboratory
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about poultry or dairy operations
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchro

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	At the end of academic year	At the end of academic year	At the end of academic year
<u>7.c grads</u>	50	25	25

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b2		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a6	b1 to b2		d1
Student activities	a1, a2,a3			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

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- Practical.biochemistry and techniquel(Wilson & Walker).
- Clinical chemistry(Wiliam.J.Marshall)
- Practical.clinical.biochemistry(Alan.H.Gowealock)

8-2: Recmonded books

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8-3: Egyptian Knowledge Bank

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- Basic biochemistry: a visual approach for college and university students: by J. Edelman and J. M. Chapman, Heinemann Educational Books, London and Edinburgh, 1978. Trends in Biochemical Sciences, 4(10), pn258
- Text book of biochemistry in Russia Biokhimiia (Moscow, Russia), 15(2), p191-6
- Neuropathology, endocrinology and biochemistry; brain mechanisms and consciousness: a book review. The American journal of psychiatry
- Vitamins and Nutrition, Litwack, Gerald, PhD. Human Biochemistry.

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- Journal of Nutritional Biochemistry
- Biochemistry

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- Journal of Biomolecular NMR
- Molecular Genetics and Metabolism
- Molecular and Cellular Endocrinology
- Journal of Biochemistry
- International Journal of Biochemistry and Cell Biology
- Cancer Genomics and Proteomics
- Biochimica et Biophysica Acta - General Subjects
- Pharmacology Biochemistry and Behavior
- Journal of Biochemistry

Scientific websites

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<http://www.indstate.edu/thcme/mwking/enzyme-kinetics.html>
<http://www-biol.paisley.ac.uk/kinetics/contents.html>
[bcs.whfreeman.com/biochem5](https://www.whfreeman.com/biochem5)
www.annualreviews.org

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding						Intellectual Skills		Practical & Professional Skills			General & Transferable Skills				
		1	2	3	4	5	6	1	2	1	2	3	1	2	3	4	
Enzymes and coenzymes	25	✓	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
Vitamins	21	✓		✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Hormones	23	✓	✓			✓		✓		✓	✓	✓	✓	✓	✓	✓	✓
Animal pigments	14	✓					✓	✓		✓	✓		✓	✓	✓	✓	✓
Putrefaction and detoxication	12	✓	✓			✓			✓	✓		✓	✓	✓	✓	✓	✓
Biological oxidation	6	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Carbohydrate metabolism in poultry	22	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Lipid metabolism in poultry	22	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Protein metabolism in poultry	22	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Mineral metabolism.	8	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
blood	17		✓	✓			✓		✓		✓	✓	✓	✓	✓	✓	✓

Course Coordinator:
Dr. Tarek Kamal Abouzed

Head of Department:
Prof. Dr. Samir Ahmed Elshazly

DEPARTMENT OF BIOCHEMISTRY
Course specification
(2021 / 2022)

1 - Basic Information:

Code number: 141/1

Course title: BIOCHEMISTRY OF MICROORGANISMS.

Academic Year: Master Degree of Veterinary Medical Sciences

Total teaching hours: 192 hrs

Lectures: 96 hr (48 weeks 2hour/week)

Practical: 96hr (48 weeks 2hour/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, students should be able to deep understand the principles and topics of biochemistry of microorganisms and their experimental basis.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Demonstrate advanced knowledge and understanding biochemical topics of microorganisms.
- a.2. Illustrate the impact of congenital anomalies associated with inborn error affecting growth and development.
- a.3. Recognize the importance and impact of scientific topics of chemistry and metabolism of microorganisms
- a.4. Understand the way in which the cell degrades nutrients in small steps to allow the energy to be trapped and converted to a useful form
- a.5. A comprehensive examination of metabolism of carbohydrates, lipids, proteins and nucleic acids; the molecular biology of DNA, RNA and protein synthesis and regulation

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Explore and interpret the principles of biochemistry microorganisms necessary for the practice of medicine and for the understanding of other pre-clinical disciplines.
- b.2. Formulate appropriate mechanisms of biochemical reactions involved in energy production, biosynthesis, and degradation, with attention being given to their role in disease.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Perform the most appropriate method for identification of unknown biochemical samples .
- c.2. Detect appropriate measures for colorimetric and spectrophotometer estimation of different metabolites.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Coach and work in team
- d.2. classify different duties
- d.3. utilize computer and internet skills
- d.4. Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS

Topic	No. of hours /week		
	Lecture	Lab.	Total
Carbohydrates chemistry	6	10	16

Lipids chemistry	6	10	16
Protein chemistry	6	10	16
Nucleoproteins and nucleic acids and molecular biology	6	15	21
Enzymes and coenzymes	7	6	13
Vitamins	5	-	5
Hormones	6	-	6
Biological oxidation	3	-	3
Carbohydrate metabolism in microorganisms	10	5	15
Lipid metabolism in microorganisms	10	5	15
Protein metabolism in microorganisms	10	10	20
Mineral metabolism.	6	-	6
Chemistry of blood	5	10	15
The urine	10	15	25
Total	96	96	192

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming
- * **Practical sessions:** Practical demonstration of chemical reactions, Visiting the Central Laboratory
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about poultry or dairy operations
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchro

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	At the end of academic year	At the end of academic year	At the end of academic year
7.c grads	50	25	25

7. Student Assessment				
Intended Learning Outcomes Covered				
6.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b2		d4
Practical exams			c1 to c2	d2, d3
Oral exams	a1 to a5	b1 to b2		d1
Student activities	a1, a3			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Biochemistry with clinical correlations(Thomas.M.Devlin).
- Practical.biochemistry and technique(Wilson & Walker).
- Clinical chemistry(Wiliam.J.Marshall)
- Practical.clinical.biochemistry(Alan.H.Gowealock)

8-2: Recmonded books

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- RH Garrett, CM Grisham - 2010 Biochemistry4th Edit
- NP Omelyanenko - 2019 -Connective tissue: histophysiology, biochemistry, molecular biology
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8-3: Egyptian Knowledge Bank

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- Vitamins and Nutrition, Litwack, Gerald, PhD. Human Biochemistry.

Scientific Journals

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- Cell Communication and Signaling
- Biochemical Pharmacology
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- Biochimie Open
- Journal of Neurochemistry
- Journal of Nutritional Biochemistry

- Biochemistry
- Cellular and Molecular Biology Letters
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- Journal of Biomolecular NMR
- Molecular Genetics and Metabolism
- Molecular and Cellular Endocrinology
- Journal of Biochemistry
- International Journal of Biochemistry and Cell Biology
- Cancer Genomics and Proteomics
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- Pharmacology Biochemistry and Behavior
- Journal of Biochemistr

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<http://www.labtestsonline.org>
<http://www.indstate.edu/thcme/mwking/enzyme-kinetics.html>
<http://www-biol.paisley.ac.uk/kinetics/contents.html>
[bcs.whfreeman.com/biochem5](https://www.bcs.whfreeman.com/biochem5)
www.annualreviews.org

Course Matrix for achievement of Intended Learning Outcome

Topics	Hours	Knowledge & Understanding					Intell ectual Skills		Practical & Professi onal Skills		General & Transferable Skills			
		1	2	3	4	5	1	2	1	2	1	2	3	4
Carbohydrates chemistry	16	✓		✓		✓	✓		✓	✓	✓	✓	✓	✓
Lipids chemistry	16	✓	✓	✓			✓		✓	✓	✓	✓	✓	✓
Protein chemistry	16	✓	✓	✓			✓		✓		✓	✓	✓	✓
Nucleoproteins and nucleic acids and molecular biology	21	✓		✓			✓	✓	✓		✓	✓	✓	✓
Enzymes and coenzymes	13	✓	✓			✓		✓	✓		✓	✓	✓	✓
Vitamins	5	✓	✓		✓			✓	✓	✓	✓	✓	✓	✓
Hormones	6	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Biological oxidation	3				✓		✓	✓	✓	✓	✓	✓	✓	✓
Carbohydrate metabolism in microorganisms	15	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lipid metabolism in microorganisms	15	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Protein metabolism in microorganisms	20	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓
Mineral metabolism.	6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Chemistry of blood	15			✓				✓		✓	✓	✓	✓	✓
The urine	25			✓				✓		✓	✓	✓	✓	✓

Course Coordinator:
Dr. Tarek Kamal Abouzed

Head of Department:
Prof. Dr. Samir Ahmed Elshazly

DEPARTMENT OF BIOCHEMISTRY

Course specification

(2021/ 2022)

1 - Basic Information:

Code number:142/2

Course title:. Biochemistry of Isotopes.

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours:144 hrs

Lectures:48hr (48 weeks 1hour/week)

Practical: 96hr (48 weeks 2hour/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, students should be able to deep understand the principles and topics of biochemistry of isotopes and their experimental basis

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1.Demonstrate advanced knowledge and understanding biochemical topics of isotopes
- a.2.Illustrate the impact of congenital anomalies associated with inborn error affecting growth and development.
- a.3.Recognize the importance and impact of scientific topics of chemistry and metabolism

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1.Explore and interpret the principles of biochemistry of isotopes necessary for the practice of medicine and for the understanding of other pre-clinical disciplines.
- b.2Formulate appropriate mechanisms of biochemical reactions involved in energy production, biosynthesis, and degradation, with attention being given to their role in disease.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1.AppLY the of modern techniques to the characterization of biomolecules, with an emphasis on blood ,serum
- c.2.Performthe most appropriate method for diagnostic uses of radioactivity and isotopes .
- c.3.-Detect appropriate measures for colorimetric and spectrophotometer estimation of different metabolites

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Coach and work in team
- d.2. classify different duties
- d.3. utilize computer and internet skills
- d.4. Develop the ethical behaviors between students and staff members as well as among the students themselves

4 - COURSE CONTENTS:

Topic	No. of hours /week		
	Lecture	Lab.	Total
Physical chemistry	4	10	14
Radioactivity and isotopes	4	10	14

Diagnostic uses of radioactivity and isotopes	5	10	15
Therapeutic uses of radioactivity and isotopes	5	10	15
Hormones	5	10	15
Enzymes and coenzymes	5	6	11
Biological oxidation	3	-	3
Notes in metabolism	6	10	16
Mineral metabolism.	4	-	4
Chemistry of blood	3	10	13
The urine	4	20	24
Total	48	96	144

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming
- * **Practical sessions:** Practical demonstration of chemical reactions, Visiting the Central Laboratory
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about poultry or dairy operations
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchro

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	At the end of academic year	At the end of academic year	At the end of academic year
7.c grads	50	20	30

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a3	b1 to b2		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a3	b1 to b2		d1
Student activities	a2, a3			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Biochemistry with clinical correlations(Thomas.M.Devlin).
- Practical.biochemistry and techniquel(Wilson & Walker).
- Clinical chemistry(Wiliam.J.Marshall)
- Practical.clinical.biochemistry(Alan.H.Gowealock)

8-2: Recmended books

- LA Moran, HR Horton, KG Scrimgeour, MD Perry .2012 Principles of biochemistry 4th Edit
- B Harrow - Textbook of biochemistry., 1946 Textbook of biochemistry
- RH Garrett, CM Grisham - 2010 Biochemistry4th Edit
- NP Omelyanenko - 2019 -Connective tissue: histophysiology, biochemistry, molecular biology
- GD Fasman - 2018 CRC Handbook of Biochemistry and Molecular Biology: Physical and Chemical Data3rd Edition <https://doi.org/10.1201/9781351072427>

8-3: Egyptian Knowledge Bank:

- Modern Biochemistry (Third Edition): by C Y Lim-Sylianco. pp 626. Aurum Technical Books. Philippines. 1987 .Biochemical Education
- Biochemistry in clinical practice: edited by D. L. Williams and V. Marks, William Heinemann Medical Books, 1983. Trends in Biochemical Sciences, 9(5), p252-253
- Basic biochemistry : by J. Edelman and J. M. Chapman Heinemann Educational Books; London, 1978 .Trends in Biochemical Sciences, 9(5), p252-253
- Atractyloside Chemistry, Biochemistry and Toxicology : Edited by R. Santi and S. Luciani Piccin Medical Books; Padova, 1978.FEBS Letters, 105(2), p391.Elsevier: ScienceDirect
- Basic biochemistry: a visual approach for college and university students: by J. Edelman and J. M. Chapman, Heinemann Educational Books, London and Edinburgh, 1978. Trends in Biochemical Sciences, 4(10), pn258
- Text book of biochemistry in Russia Biokhimiia (Moscow, Russia), 15(2), p191-6
- Neuropathology, endocrinology and biochemistry; brain mechanisms and consciousness: a book review. The American journal of psychiatry
- Vitamins and Nutrition, Litwack, Gerald, PhD. Human Biochemistry.

Scientific Journals

- Journal of Lipid Research
- Free Radical Biology and Medicine
- Biochemical Journal
- Proteins: Structure, Function and Genetics
Journal of Proteome Research
- Cell Communication and Signaling
- Biochemical Pharmacology
- Biochimica et Biophysica Acta - Bioenergetics
- Biochimie Open
- Journal of Neurochemistry
- Journal of Nutritional Biochemistry
- Biochemistry
- Cellular and Molecular Biology Letters
- Journal of Animal Science and Biotechnology
- Journal of Biomolecular NMR
- Molecular Genetics and Metabolism
- Molecular and Cellular Endocrinology
- Journal of Biochemistry
- International Journal of Biochemistry and Cell Biology
- Cancer Genomics and Proteomics

- Biochimica et Biophysica Acta - General Subjects
- Pharmacology Biochemistry and Behavior
- Journal of Biochemistry

Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <http://www.labtestsonline.org>
- <http://www.indstate.edu/thcme/mwking/enzyme-kinetics.html>
- <http://www-biol.paisley.ac.uk/kinetics/contents.html>
- bcs.whfreeman.com/biochem5
- www.annualreviews.org

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding			Intellectual Skills			Practical & Professional Skills			General & Transferable Skills			
		1	2	3	1	2		1	2	3	1	2	3	4
Physical chemistry	14	✓		✓	✓			✓			✓	✓	✓	✓
Radioactivity and isotopes	14	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
Diagnostic uses of radioactivity and isotopes	15	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Therapeutic uses of radioactivity and isotopes	15		✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Hormones	15	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Enzymes and coenzymes	11	✓	✓	✓		✓				✓	✓	✓	✓	✓
Biological oxidation	3	✓		✓		✓	✓				✓	✓	✓	✓
Notes in metabolism	16	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Mineral metabolism.	4	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Chemistry of blood	13	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓
The urine	24	✓		✓		✓				✓	✓	✓	✓	✓

Course Coordinator:
Dr. Tarek Kamal Abouzed

Head of Department:
Prof. Dr. Samir Ahmed Elshazly

DEPARTMENT OF BIOCHEMISTRY

Course specification

(2021 / 2022)

1 - Basic Information:

Code number:143 /2

Course title: Biochemistry of FISH.

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours:192 hrs

Lectures:96 hr (48 weeks 2hour/week)

Practical: 96hr (48 weeks 2hour/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of the course, students should be able deep understand the principles and topics of biochemistry of fish and their experimental basis and he has ability to laboratory diagnosis of Fish disease and so improvement the fish production

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

a.1.Demonstrate advanced knowledge and understanding biochemistry of fish topics

a.2.Describe biochemical metabolic pathway in fish.

a.3.Illustrate the impact of congenital anomalies associated with inborn error affecting growth and development.

a.4.Recognize the importance and impact of scientific topics of chemistry and metabolism.

a.5.Understand the way in which the cell degrades nutrients in small steps to allow the energy to be trapped and converted to a useful form

a.6.Appreciate the way in which biochemistry of fish metabolism connects catabolism and anabolism

a.7.A comprehensive examination of metabolism of carbohydrates, lipids, proteins and nucleic acids.

a.8.Appreciate the principles of mitochondrial oxidative function and understand lipid structure and the pathways of fatty acid oxidation and synthesis

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

b.1.Explore and interpret the basic principles of fish biochemistry necessary for the practice of medicine and for the understanding of other pre-clinical disciplines.

b.2.Formulate appropriate mechanisms of biochemical reactions involved in energy production, biosynthesis, and degradation, with attention being given to their role in disease.

b.3.Principles of The biochemical roles of the major organs of the fishes are studied together with an overview of the metabolic interplay between organs. The mechanisms by which major pathways are regulated are examined in depth

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

c.1.Apply of modern techniques to the characterization of biomolecules.

c.2.Perform the most appropriate method for identification of unknown biochemical samples of fish.

c.3.Detect the appropriate methods for PCR.

c.4.Detect the appropriate measures for colorimetric and spectrophotometer estimation of different metabolites

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

d.1. Coach and work in team

d.2. classify different duties

d.3. utilize computer and internet skills

d.4. Develop the ethical behaviors between students and staff members as well as among the students themselves

4 - COURSE CONTENTS:

Topic	No. of hours /week		
	Lecture	Lab.	Total
Carbohydrates chemistry	6	10	16
Lipids chemistry	6	10	16
Protein chemistry	6	10	16
Nucleoproteins and nucleic acids and molecular biology	6	15	21
Enzymes and coenzymes	7	6	13
Vitamins	5	-	5
Hormones	6	-	6
Biological oxidation	3	-	3
Carbohydrate metabolism in microorganisms	10	5	15
Lipid metabolism in microorganisms	10	5	15
Protein metabolism in microorganisms	10	10	20
Mineral metabolism.	6	-	6
Chemistry of blood	5	10	15
The urine	10	15	25
Total	96	96	192

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming
- * **Practical sessions:** Practical demonstration of chemical reactions, Visiting the Central Laboratory
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about poultry or dairy operations
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchro

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	At the end of academic year	At the end of academic year	At the end of academic year
7.c grads	50	20	30

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a8	b1 to b3		d4
Practical exams			c1 to c4	d2, d3
Oral exams	a1 to a8	b1 to b3		d1
Student activities	a2, a3			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

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- B Harrow - Textbook of biochemistry., 1946 Textbook of biochemistry
- RH Garrett, CM Grisham - 2010 Biochemistry4th Edit
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- Atractyloside Chemistry, Biochemistry and Toxicology : Edited by R. Santi and S. Luciani Piccin Medical Books; Padova, 1978.FEBS Letters, 105(2), p391.Elsevier: ScienceDirect
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- Text book of biochemistry in Russia Biokhimiia (Moscow, Russia), 15(2), p191-6
- Neuropathology, endocrinology and biochemistry; brain mechanisms and consciousness: a book review. The American journal of psychiatry
- Vitamins and Nutrition, Litwack, Gerald, PhD. Human Biochemistry.

Scientific Journals

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- Free Radical Biology and Medicine
- Biochemical Journal
- Proteins: Structure, Function and Genetics
Journal of Proteome Research
- Cell Communication and Signaling
- Biochemical Pharmacology
- Biochimica et Biophysica Acta - Bioenergetics
- Biochimie Open
- Journal of Neurochemistry
- Journal of Nutritional Biochemistry
- Biochemistry
- Cellular and Molecular Biology Letters
- Journal of Animal Science and Biotechnology

- Journal of Biomolecular NMR
- Molecular Genetics and Metabolism
- Molecular and Cellular Endocrinology
- Journal of Biochemistry
- International Journal of Biochemistry and Cell Biology
- Cancer Genomics and Proteomics
- Biochimica et Biophysica Acta - General Subjects
- Pharmacology Biochemistry and Behavior
- Journal of Biochemistry

Scientific websites

The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>

<http://www.labtestsonline.org>

<http://www.indstate.edu/thcme/mwking/enzyme-kinetics.html>

<http://www-biol.paisley.ac.uk/kinetics/contents.html>

[bcs.whfreeman.com/biochem5](https://www.whfreeman.com/biochem5)

www.annualreviews.org

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding								Intellectual Skills			Practical & Professional Skills				General & Transferable Skills			
		1	2	3	4	5	6	7	8	1	2	3	1	2	3	4	1	2	3	4
Carbohydrates chemistry	16	✓			✓					✓			✓	✓			✓	✓	✓	✓
Lipids chemistry	16	✓			✓					✓			✓	✓			✓	✓	✓	✓
Protein chemistry	16	✓			✓					✓			✓		✓		✓	✓	✓	✓
Nucleoproteins and nucleic acids and molecular biology	21	✓			✓					✓	✓		✓		✓	✓	✓	✓	✓	✓
Enzymes and coenzymes	13	✓	✓	✓		✓					✓		✓	✓			✓	✓	✓	✓
Vitamins	5	✓	✓		✓						✓		✓	✓			✓	✓	✓	✓
Hormones	6	✓	✓		✓	✓			✓	✓	✓		✓	✓			✓	✓	✓	✓
Biological oxidation	3				✓				✓	✓	✓		✓	✓			✓	✓	✓	✓
Carbohydrate metabolism in microorganisms	15	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lipid metabolism in microorganisms	15	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Protein metabolism in microorganisms	20	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓
Mineral metabolism.	6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Chemistry of blood	15	✓	✓	✓			✓				✓	✓		✓	✓	✓	✓	✓	✓	✓
The urine	25	✓	✓	✓			✓				✓	✓		✓	✓	✓	✓	✓	✓	✓

Course Coordinator:
Dr. Tarek Kamal Abouzed

Head of Department:
Prof. Dr. Samir Ahmed Elshazly



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Cytology and Histology

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy

(Cytology and Histology)

Kafr El-Sheikh University

Faculty of Veterinary Medicine

Department of Cytology and Histology

Program Specification for PhD Degree

(2016-2017)

A- Administrative information:

- 1- Awarding Body:** Kafrelsheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Cytology and Histology
- 4- Program Title:** PhD Degree in Veterinary Medicine (Cytology and Histology)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years
- 7- Program Coordinator:** Prof.
- 8- External evaluator:** Prof. Dr.
- 9- Date of revision:**
- 10- Date of approval:**

B- Professional information:

1- Aims of the Program:

- Develop communication skills, recent techniques and diagnostic tools in the field of Cytology and Histology and to experience of scientific research skills.
- Achieve capability in modern laboratory technology to develop practical research project.
- Supply the PhD students with the most recent knowledge in science and

technological applications of Cytology and Histology.

- Demonstrate an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and present their own research data for the protection and promotion of the animal health.
- Have the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Continuous working for increasing his knowledge in the field of cytology and histology and to be able to achieve continuous self-learning and experience transfer.
- Guarantee of veterinary professional practice regulations and ethics in the field of Cytology and Histology.

2- Academic standards:

**Academic reference standards (ARS) adopted by the faculty committee No(1)
14/9/2014**

3-Graduate attributes:

Upon successful completion of the program, the graduate has the ability for:

- 1) Mastering the basics and methodologies of scientific research in cytology and histology with using of different tools
- 2) Performing continuous effort to acquire and add knowledge relevant to laboratory of histology regarding methods and instruments through reading, writing reports and assays or making presentations.
- 3) Critisization of information in the laboratory of cytology and histology and related fields including biochemistry, anatomy, physiology, veterinary medicine etc.
- 4) Integrating the laboratory findings with the histologic structure, clinical anatomy and physiology of various organs and extrapolate their interrelationship to obtain correct diagnosis.
- 5) Showing deep awareness with the ongoing problems and modern theories in the field of histological techniques.
- 6) Identifying the problems in the cytology and histology laboratory and

- select appropriate techniques and methods.
- 7) Mastering of taking different kinds of samples from different species and offer instruction on specimens.
 - 8) Develop and introduce new methods and tools into laboratory medicine with their application, validation and diagnostic limitation.
 - 9) Using appropriate technological laboratory means to get quick and accurate interpretation of laboratory data and thus correct identification to the histological structure of the studied organ.
 - 10) Communicating effectively histologists, students and colleagues and lead laboratory work team.
 - 11) Making decision in different professional situations based on laboratory data.
 - 12) Using of the available resources efficiently in the development of new techniques and work to find new resources.
 - 13) Being aware with the role laboratory medicine in maintenance of animal and human health and thus the society development and community preservation.
 - 14) Acting with integrity and credibility according the ethical rules of laboratory work.
 - 15) Realizing the importance of self and life-long learning and progress.

4-Programme outcomes [intended learning outcomes (ILOs)]

a. Knowledge and understanding:

By the end of this program the graduate should be able to:

- a.1. Recognize recent theories, principles and knowledge in the field of cytology and histology, histochemistry and immune histochemistry in identifying the specific structure of the organ and tissue.
- a.2. Realize the basics principles methodologies and ethics of scientific research regarding laboratory medicine.
- a.3. Realize principles, methodologies and the basics of quality assurance in the cytology and histology laboratory such as instrumentation, automation and calibration.
- a.4. Realize Legal and ethical principles of cytology and histology, laboratory regulations and safety (hazards, precautions, protective instruments).

- a.5. Recognize Principles and the basics of quality assurance in laboratory examination of the normal structure of the organ
- a.6. Apply their knowledge and understanding in cytology and histology for enhancing animal health and production
- a.7. Recognize the effect of formalin on the preservation of the tissue from decaying.

b. Intellectual skills:

By the end of this program the graduate should be able to:

- b.1. Analyze and evaluate laboratory findings and integrate results with other clinical information to elicit proper interpretation.
- b.2. Plan scientific research studies in the field of histology laboratory diagnosis including new approaches, methods and applications that can manage problems through laboratory diagnosis
- b.3. Solve diagnostic problems based on available laboratory data
- b.4. Formulate scientific papers efficiently through collecting, analyzing and interpreting data and developing evidence based learning and practice
- b.5. Plan to improve performance in cytology and histology laboratory work.
- b.6. Discuss the laboratory results and lead scientific open discussion in relation to cytology and histology based on evidences and proofs.
- b.7. Assess risks in the laboratory work regarding improper use of some instruments or handling samples of tissues
- b.8. Share and lead scientific open discussion in the field of cytology and histology based on evidences and proofs.
- b.9. Show innovative and creative skills in clinical laboratory practice, professional learning and scientific endeavor.

c. Practical and professional skills:

By the end of this program the graduate should be able to:

- c.1. Master basic and modern laboratory skills in the taking samples and application of appropriate methods and techniques in the field of cytology and histology
- c.2. Writ laboratory report including the normal histologic structure of the studied organ
- c.3. Evaluate and modernize methods and instruments in cytology and

- histology laboratory to ensure quick and accurate interpretation.
- c.4. Utilize different laboratory techniques properly and analyze laboratory reports in algorithm manner to get correct diagnosis.
 - c.5. Use modern technological means to serve professional practice.
 - c.6. Plan for the improvement of veterinary medicine by applying recent molecular techniques in Cytology and Histology.

d. General and transferable skills:

At the end of the program, graduate must be able to:

- d.1. Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology.
- d.2. Utilize information technology to serve professional practice.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements
- d.5. Lead team under different professional circumstances.
- d.6. Correlate the different sources for obtaining information and knowledge.
- d.7. Manage scientific meetings with the ability to manage time efficiently.

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, field visits and seminars.

6-Assessments:

The program depends on different assessment ways:

a. Course assessment:

1. **Final written exam:** to assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
2. **Practical exam:** to assess abilities of recognition and recall as well as the student's acquired practical and professional skills.

3. Oral exam: to assess skills of intellectual analysis and discussion beside the basic scientific knowledge.

b. Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work

c. PhD Thesis assessment

- Annual reports adopted by the Faculty.
- Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
- Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1,4; b1,2,3
Oral	a1,4; b1,2,3
Practical	c1-3
Qualifying Exam	a2-7; b1-12
Thesis	a2-7; b1-12; c1-5; d1-7

7. Program structure

a. Program duration (years):

PhD degree duration at least 3 years and it should not exceed a period of 5 years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law (article 18).

b. Program courses:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council should include at least 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. These courses must not be previously studied in the Mater program. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c- Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d- Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion.

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in cytology and histology includes:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical

				Lab
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of urogenital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
122/2	22- Fish histology	1	2	

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab

Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32– Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and	2	2

		reproduction		
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(2	2

		advanced)		
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2

Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
81- Advanced immunology			2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2

	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1
Hygiene and control of milk and dairy products	208/2	108- Hygienic control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry,	1	2

		fish and their products		
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/2	134- Stress diseases during animals transport.		
Infectious diseases	235/2	135- Infectious diseases of cattle	2	2
	236/2	136- Infectious diseases of sheep and goat	2	2
	237/2	137- Infectious diseases camel	2	2
	238/2	138 Infectious diseases of equine	2	2
	239/2	139- Infectious diseases of pet animals	2	2
	240/2	140- Infectious diseases lab animals	1	2
	241/2	141- Infectious diseases of udder and newly born animals	2	2
	242/2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		

Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2

	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in polutry	2	2
275/2	175- Laboratory diagnosis of poultry diseases.			
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2

	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial	2	2

		insemination in poultry and rabbits.		
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary medicine (Cytology and Histology) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medicine lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate

& research committee taking into account the provisions of the universities regulation law.

3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.

4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.

5. The applicant should pass written, practical and oral exams successfully in all courses.

6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.

7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.

8. The applicant should submit a seminar (Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).

9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met: Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.

10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and in case of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.

11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards it to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.

12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade	Percentage
Excellent	> 90
Very good	>80
Good	>70

Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
1	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

Program Coordinator

Prof. Dr.

Head of Department

Prof. Dr.



Matching program ILOs with ARS - Matrix

Program ILOs	ARS																											
	K&U (a)					I.S. (b)									P.P. (c)					G.T. (d)								
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7		
K&U	1	2	4	3,5	6,7																							
I.S.						1	2	3	4	5	6	7	8	9														
P.P.															1	2	3	4	5	6								
G.T.																				1	2	3	4	5	6	7		



Program Specification Matrix

PhD in Veterinary Medicine (Cytology and Histology)

Courses		Total Contact hours/course	No. of hours / week			K.U (a)							I.S (b)							P.P (c)						G.T (d)																
Code	Name		Lect.	Lab.	Total	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	1	2	3	4	5	6	7								
Predocloral courses (10-12 theoretical and practical hours weekly for 12 months)						x	x						x	x	x									x	x	x										x	x	x	x	x	x	x
Qualification exam								x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Thesis								x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

DEPARTMENT OF **CYTOLOGY AND HISTOLOGY**

Course specification
(2021 / 2022)

1 - Basic Information:

Code number : 111/2

Course title: **Cytology and cell biology**

Academic Year: *PhD. V. Sc. programs*

Total teaching hours: 144hrs hrs

Lectures: **48 hrs**

Practical:96 hrs

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to

Structure of cells under different microscopes with molecular characterization. . The major topics covered are membranous and non-membranous organelles, Nucleus and cell cycle,

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of this course the graduates should be able to:

A1-Describe the Principles , theories, and immunohistochemistry in the membranous organelles.

A2-Memorize types of non-membranous organelles. molecular biology

A3- Explain different structure of nucleus with molecular structure, immunohistochemistry and cell cycle.

A4- Have an experience to explain the records obtained from slides of immunohistochemistry and electron micrographs..

A5- Discuss the ultrastructure, immunohistochemistry and molecular biology of cell with its function.

3-B: INTELLECTUAL SKILLS:

By the end of this course, the student should be able to:

B1- Interpret ultrastructure finding in case of EM micrographs and immunohistochemistry in membranous organelles.

B2 - Choose the proper approach with different non-membranous organelles and cell inclusion.

B3- Discriminate structure and function relationship of nuclei envelop, chromatin and nucleolus.

B4-Comment accurately upon the obtained results on each cellular organelles.

B5-Determine area where further research is necessary in nucleus .

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of this course the graduates should be able to:

C1- Examine any structure of the cells in case mitochondria, ER, golgi and lysosomes .

C2- Use available information in designing and implementing appropriate techniques in nuclear structure.

- C3- Apply sound techniques to differentiate between different structure of cytoskeleton.
 C4- Construct essential laboratory skills that underpin techniques associate with cytoplasm and its molecular biology

3- D: GENERAL SKILLS:

By the end of this course the graduates should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
1. Introduction and Course description	7	4	3
2. Membranous organelles	47	14	33
3. Non membranous organelles and inclusions	42	14	28
4. Nucleus and cell cycle	48	16	32
Total	144	48	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
 Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about cytology and cytochemistry .

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d4
Practical sessions		b1 to b5	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.A: ASSESSMENT Methods:

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

Assessment ILOs Matrix:

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b5		d4
Practical exams			c1 to c4	d2, d3
Oral exams	a1 to a5	b1 to b5		d1
Student activities	a1, a5,			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Overhead projections, Microscopes, TV closed center, slides and computer presentations used during teaching.
- John Bancroft (2013) Bancroft's Theory and Practice of Histological Techniques. Seventh Edition.
- A. J. MARSHALL (1960) Biology and Comparative Physiology of BIRDS. ACADEMIC PRESS
- Kuehnel, (2003) Color Atlas of Cytology, Histology, and Microscopic Anatomy .
- JOANN EURELL (2010) Dellman's Comparative veterinary histology. Six Edition.
- FRANCK GENTEN et al (2009) ATLAS OF FISH HISTOLOGY. Science Publishers

8-2: Recmended books:

- Hans-Georg Liebich. (2019): Veterinary Histology of Domestic Mammals and Birds.
- Anthony L. Mescher (2018): Junqueira's Basic Histology: Text and Atlas 16th Edition.
- Leslie P. Gartner (2018) : BRS Cell Biology and Histology.
- Eroschenko PhD, Victor P.(2017) : Atlas of Histology with Functional Correlations.

- -Anthony L. Mescher(2013) Junqueira's Basic Histology T E X T AND AT LAS, 13th edition, McGraw-Hill Education New York Chicago San Francisco Lisbon London Madrid Mexico City Milan New Delhi San Juan Seoul Singapore Sydney Toronto.
- Bloom and Fawcett(1994) A text book of Histology, Twelfth Edition, Chapman and Hall, New York and London.
- Jo Ann C. Eurell (2004) VETERINARY HISTOLOGY

8-3: Egyptian Knowledge Bank:

- Jennings R, Premanandan C. Veterinary histology. Ohio State University; 2017 Aug 22.
- Eurell JA, Frappier BL, editors. Dellmann's textbook of veterinary histology. John Wiley & Sons; 2013 Mar 19.
- Bacha Jr WJ, Bacha LM. Color atlas of veterinary histology. John Wiley & Sons; 2012 Jan 19.
- Aughey E, Frye FL. Comparative veterinary histology with clinical correlates. CRC Press; 2001 Feb 15.
- Eurell JA. Histology. Teton NewMedia; 2004 Mar 15.

8.4: web sites and jouranls

- WWW.PubMed.com
- Intrnational of veterinary information services (IVIS)
- www.Vet.net.com
- journal of molecular histology
- Anatomia histologia embryologia journal
- Journal of veterinary anatomy.
- Journal of veterinary anatomy.
- Journal of Acta Histochemica
- Journal of Microscopy and Microanalysis
- Journal of microscopy and research

Course content ILOs Matrex:

Topics	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills				General & Transferable Skills			
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	1	2	3	4
. Introduction and Course description	X														X	X	X	X
Membranous organelles	X			X		X			X		X			X	X	X	X	X
Non membranous organelles and inclusions		X		X	X			X	X				X	X	X	X	X	X
Nucleus and cell cycle			X	X				X		X		X			X	X	X	X

Course Coordinator:

Head of Department:

Dr Khalil Abu Easa

KAFR ELSHEIKH UNIVERSITY

FACULTY OF VETERINARY MEDICINE

DEPARTMENT OF CYTOLOGY AND HISTOLOGY

Course specification **(2021 / 2022)**

1 - Basic Information:

Code number: 112/2

Course title: general Histology

Academic Year: *PhD. V. Sc. programs*

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

By the end of this course the graduates should be able to

By the end of this course, the student should acquire the concepts, principles and skills related to

Animal, poultry and fish general histology. . The major topics covered epithelium, connective tissue, muscular tissue in different animals, birds and fish .

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of this course the graduates should be able to:

A1-Recognize the Principles and theories and immunohischemistry in the junction of epithelial sheet as well as glands.

A2- Memorize cells types and its construction with molecular structure and immunohistochemistry of connective tissue.

A3- Explain different histological structure by immunohistochemistry and molecular biology of different types of muscles and nervous tissue.

A4- Have an experience to explain the records obtained from slides of immunohistochemistry and electronmicrographs.

A5- Discuss the histological structure arised from epithelial, CT, muscle and nervous tissues .

3-B: INTELLECTUAL SKILLS:

By the end of this course, the student should be able to:

B1- Interpret ultrastructure finding in case of EM micrographs, immunohistochemistry photos in connective tissue cells

B2.Demonstrate the cellular difference among the four primary tissues by immunohistochemistry molecular biology.

- B3.Evaluate the role of various cells lined or covers the forming organs.
 B4-Comment accurately upon the obtained results on different tissues.
 B5.Relate the structure-function relationship in different types of muscle as well as nervous tissue.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of this course the graduates should be able to:

- C1. Apply the practical histological course instructions for preparation of histological sections by immunohistochemistry and EM in epithelium and nervous tissues.
 C2.Detect the microscopic differences by different techniques of epithelial tissues, their specialization and distribution in animal body.
 C3.Identify the microscopic and molecular characterization of connective tissue cells and nervous tissue.
 C4.Detect the differences between cartilages and bone types as well as different types of muscles.

3-d: General and transferable skill

By the end of this course, the student should be able to:

- d.1.Communicate effectively with his professors, and collages.
 d.2. Utilize different sources of knowledge and information
 d.3. Use information technology to serve the professional practice.
 d.4. Manage time efficiently.

4 - COURSE CONTENT

TOPIC	Total hours	Hours for lecture	Hours for practical
1. Introduction and Course description	7	4	3
2.Epithelium	40	20	20
3.C.T proper	37	18	19
4.Supportive connective tissue	36	18	18
5.Muscular tissue	36	18	18
6.Nervous tissue	36	18	18
Total	192	96	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about histology and histochemistry of cytology, tissues and systems.

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d4
Practical sessions		b1 to b5	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.A: ASSESSMENT Methods:

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year
7.c grads	50	20	20	10

Assessment ILOs Matrix:

Methods	I.L.O.S Evaluation
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	Knowledge	Intellectual	Practical	general
Written examination	A1.A2.A3.A4.A5.	B1.B2		D2
Oral examination	A1.A2.A3.A4.A5.	B1.B2.B3. B4.B5		D4
Practical examination		B1.B2	C1.C2.C3.	D1,D3

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Overhead projections, Microscopes, TV closed center, slides and computer presentations used during teaching.
- John Bancroft (2013) Bancroft's Theory and Practice of Histological Techniques. Seventh Edition.
- A. J. MARSHALL (1960) Biology and Comparative Physiology of BIRDS. ACADEMIC PRESS
- Kuehnel, (2003) Color Atlas of Cytology, Histology, and Microscopic Anatomy .
- JOANN EURELL (2010) Dellman's Comparative veterinary histology. Six Edition.
- FRANCK GENTEN et al (2009) ATLAS OF FISH HISTOLOGY. Science Publishers

8-2: Recmended books:

- Hans-Georg Liebich. (2019): Veterinary Histology of Domestic Mammals and Birds.
- Anthony L. Mescher (2018): Junqueira's Basic Histology: Text and Atlas 16th Edition.
- Leslie P. Gartner (2018) : BRS Cell Biology and Histology.
- Eroschenko PhD, Victor P.(2017) : Atlas of Histology with Functional Correlations.
- -Anthony L. Mescher(2013) Junqueira's Basic Histolog T E X T AND AT LAS, 13th edition, McGraw-Hill Education New York Chicago San Francisco Lisbon London Madrid Mexico City Milan New Delhi San Juan Seoul Singapore Sydney Toronto.
- Bloom and Fawcett(1994) A text book of Histology, Twelfth Edition, Chapman and Hall, New York and London.
- Jo Ann C. Eurell (2004) VETERINARY HISTOLOGY

8-3: Egyptian Knowledge Bank:

- Jennings R, Premanandan C. Veterinary histology. Ohio State University; 2017 Aug 22.
- Eurell JA, Frappier BL, editors. Dellmann's textbook of veterinary histology. John Wiley & Sons; 2013 Mar 19.
- Bacha Jr WJ, Bacha LM. Color atlas of veterinary histology. John Wiley & Sons; 2012 Jan 19.
- Aughey E, Frye FL. Comparative veterinary histology with clinical correlates. CRC Press; 2001 Feb 15.
- Eurell JA. Histology. Teton NewMedia; 2004 Mar 15.

8.4: web sites and jouranls

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- www.Vet.net.com

- journal of molecular histology
- Anatomia histologia embryologia journal
- Journal of veterinary anatomy.
- Journal of veterinary anatomy.
- Journal of Acta Histochemica
- Journal of Microscopy and Microanalysis
- Journal of microscopy and research

Course content ILOs Matrex:

Topics	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills				General & Transferable Skills			
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	1	2	3	4
. Introduction and Course description	X														X	X	X	X
Epithelium	X				X		X	X			X	X			X	X	X	X
C.T proper		X			X	X	X		X				X		X	X	X	X
Supportive connective tissue		X			X		X		X				X		X	X	X	X
Muscular tissue			X	X			X			X				X	X	X	X	X
Nervous tissue			X	X					X	X	X			X	X	X	X	X

Course Coordinator:

Dr Mona Ali

Head of Department:

Dr Mohamed Kassab

DEPARTMENT OF **CYTOLOGY AND HISTOLOGY**

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 113/2

Course title: Histological and histochemical structure of comparative blood and lymphatic system.

Academic Year: *PhD. V. Sc. Programs*

Total teaching hours: 96hrs hrs

Lectures: 48 hrs

Practical:48 hrs

2 - OVERALL AIMS OF THE COURSE:

By the end of this course the graduates should be able to

By the end of this course, the student should acquire the concepts, principles and skills related to

Animal, poultry and fish blood, bone marrow and lymphatic organs. . The major topics covered blood cells, bone marrow and hematopoietic cells and lymphatic organs in different animals, birds and fish .

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of this course the graduates should be able to:

A1-Recognize the Principles and theories of immunohistochemistry and molecular biology in the blood cells.

A2- Memorize cells immunohistochemistry finding and its construction on the structure of blood.

A3- Explain different histological structure by immunohistochemistry of different types of lymphatic organs.

A4- Have an experience to explain the records obtained from immunohistochemistry slides and electron micrographs.

A5- Discuss the histological structure arised from bone marrow and hematopoietic tissue

3-B: INTELLECTUAL SKILLS:

By the end of this course, the student should be able to:

B1- Interpret light and electron microscopic finding obtained by immunohistochemistry in case blood cells

B2.Demonstrate the molecular difference among the hematopoietic cells line.

B3.Evaluate the role of various molecular structure in cells of lymphatic organs

- B4-Comment accurately upon the obtained results on different structures.
 B5.Relate the structure-function relationship in different molecular structure of blood cells.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of this course, the student should be able to:

- C1.Apply the practical histological course instructions for preparation of immnohistochemical histological sections in lymphatic organs.
 C2.Detect the immunohistochemical differences of blood cells, their specialization and their percentage between different species.
 C3.Identify the molecular characterization of blood and lymph vessels as well as bone marrow.
 C4.Differentiate between the immunohistochemistry of early and late developing blood cells.

3- D GENERAL AND TRANSFERABLE SKILL

By the end of this course, the student should be able to:

- d.1.Communicate effectively with his professors, and collages.
 d.2. Utilize different sources of knowledge and information
 d.3. Use information technology to serve the professional practice.
 d.4. Manage time efficiently.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
1. Introduction and Course description	7	4	3
2.Structure of the blood cells and marrow	32	16	16
3.Study of hemopieosis and, stem cells	18	9	9
4.Lymphatic organs	39	19	20
Total	96	48	48

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming
- * **Practical sessions:**
- * **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about histology and histochemistry of blood and lymphatic organs

*** Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d4
Practical sessions		b1 to b5	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.A: ASSESSMENT Methods:

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

Assessment ILOs Matrix:

Methods	I.L.O.S Evaluation			
	Knowledge	Intellectual	Practical	general
Written examination	A1.A2.A3.A4.A5.	B1.B2.B4. B5		
Oral examination	A1.A2.A3.	B1.B2		D1-D2
Practical		B1.B2.B3	C1.C2.C3.C4.	D2-D4

examination				
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8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Overhead projections, Microscopes, TV closed center, slides and computer presentations used during teaching.
- John Bancroft (2013) Bancroft's Theory and Practice of Histological Techniques. Seventh Edition.
- A. J. MARSHALL (1960) Biology and Comparative Physiology of BIRDS. ACADEMIC PRESS
- Kuehnel, (2003) Color Atlas of Cytology, Histology, and Microscopic Anatomy .
- JOANN EURELL (2010) Dellman's Comparative veterinary histology. Six Edition.
- FRANCK GENTEN et al (2009) ATLAS OF FISH HISTOLOGY. Science Publishers

8-2: Recommended books:

- Hans-Georg Liebich. (2019): Veterinary Histology of Domestic Mammals and Birds.
- Anthony L. Mescher (2018): Junqueira's Basic Histology: Text and Atlas 16th Edition.
- Leslie P. Gartner (2018) : BRS Cell Biology and Histology.
- Eroschenko PhD, Victor P.(2017) : Atlas of Histology with Functional Correlations.
- -Anthony L. Mescher(2013) Junqueira's Basic Histology T E X T AND AT LAS, 13th edition, McGraw-Hill Education New York Chicago San Francisco Lisbon London Madrid Mexico City Milan New Delhi San Juan Seoul Singapore Sydney Toronto.
- Bloom and Fawcett(1994) A text book of Histology, Twelfth Edition, Chapman and Hall, New York and London.
- Jo Ann C. Eurell (2004) VETERINARY HISTOLOGY

8-3: Egyptian Knowledge Bank:

- Jennings R, Premanandan C. Veterinary histology. Ohio State University; 2017 Aug 22.
- Eurell JA, Frappier BL, editors. Dellmann's textbook of veterinary histology. John Wiley & Sons; 2013 Mar 19.
- Bacha Jr WJ, Bacha LM. Color atlas of veterinary histology. John Wiley & Sons; 2012 Jan 19.
- Aughey E, Frye FL. Comparative veterinary histology with clinical correlates. CRC Press; 2001 Feb 15.
- Eurell JA. Histology. Teton NewMedia; 2004 Mar 15.

8.4: web sites and journals

- WWW.PubMed.com
- International of veterinary information services (IVIS)
- www.Vet.net.com
- journal of molecular histology
- Anatomia histologia embryologia journal
- Journal of veterinary anatomy.
- Journal of veterinary anatomy.
- Journal of Acta Histochemica

- Journal of Microscopy and Microanalysis
- Journal of microscopy and research

Course content ILOs Matrex:

Topics	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills				General & Transferable Skills			
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	1	2	3	4
. Introduction and Course description	X														X	X	X	X
Structure of the blood cells and marrow	X	X			X	X				X		X			X	X	X	X
Study of hemopieosis , stem cells and gene therapy			X				X		X				X	X	X		X	X
Lymphatic organs				X				X	X		X				X		X	X

Course Coordinator:

Dr Farouk Abdelmohdy

Head of Department:

Dr Mohamed Kassab

DEPARTMENT OF **CYTOLOGY AND HISTOLOGY**

Course specification
(2021 / 2022)

1 - Basic Information:

Code number: 114/2

Course title: : Histological and histochemical structure of comparative muscles and cardiovascular system

Academic Year: *PhD. V. Sc. programs*

Total teaching hours: 96 hrs

Lectures: 48 hrs

Practical:48 hrs

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to

Animal, poultry and fish muscle and cardiovascular system. . The major topics covered types of muscle. Heart and blood vessels in different animals, birds and fish .

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of this course the graduates should be able to:

A1-Recognize the Principles and theories and immunohistochemistry in the types of muscles.

A2- Memorize cells molecular structure types and its construction on the structure of blood vessels

A3- Explain different immunohistochemistry in the structure of myocardium and endocardium.

A4- Have an experience to explain the records obtained from immunohistochemical slides and electron micrographs.

A5- Discuss the histological structure of arised from cardiac, smooth and skeletal muscles.

3-B: INTELLECTUAL SKILLS:

By the end of this course, the student should be able to

B1- Interpret immunohistochemistry and electron microscopic finding in muscle types.

B2.Demonstrate the cellular molecular structure difference in muscle fibers.

B3.Evaluate the role of various tissues molecular difference in blood vessels

B4-Comment accurately upon the obtained results on different immunohistochemical structures of muscle, heart and blood vessels.

B5.Relate the molecular structure-function relationship in layers of heart

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of this course, the student should be able to:

- C1. Apply the practical histological course instructions for preparation of immunohistochemical sections and molecular biology of endocardium and myocardium.
- C2. Write correctly the report of the different types of blood vessels.
- C3. Identify the molecular characterization of different organelles in muscle fibers.
- C4. Differentiate between the immunohistochemistry of all types of blood vessels.

3- D: GENERAL and transferable SKILLS:

By the end of this course, the student should be able to:

- d.1. Communicate effectively with his professors, and colleagues.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
1. Introduction and Course description	7	4	3
2. Structure of the muscles	39	19	20
3. Structure of heart	20	10	10
4. Structure of blood vessels	30	15	15
Total	96	48	48

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about histology and histochemistry of muscles and cardiovascular system.

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to

weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d4
Practical sessions		b1 to b5	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.A: ASSESSMENT Methods:

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

Assessment ILOs Matrix:

Methods	I.L.O.S Evaluation			
	Knowledge	Intellectual	Practical	general
Written examination	A1.A2.A3.A4.A5.	B1.B2.B4. B5		
Oral examination	A1.A2.A3.	B1.B2		D1-D2
Practical examination		B1.B2.B3	C1.C2.C3.C4.	D2-D4

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Overhead projections, Microscopes, TV closed center, slides and computer presentations used during teaching.
- John Bancroft (2013) Bancroft's Theory and Practice of Histological Techniques. Seventh Edition.
- A. J. MARSHALL (1960) Biology and Comparative Physiology of BIRDS. ACADEMIC PRESS
- Kuehnel, (2003) Color Atlas of Cytology, Histology, and Microscopic Anatomy .
- JOANN EURELL (2010) Dellman's Comparative veterinary histology. Six Edition.
- FRANCK GENTEN et al (2009) ATLAS OF FISH HISTOLOGY. Science Publishers

8-2: Recmended books:

- Hans-Georg Liebich. (2019): Veterinary Histology of Domestic Mammals and Birds.
- Anthony L. Mescher (2018): Junqueira's Basic Histology: Text and Atlas 16th Edition.
- Leslie P. Gartner (2018) : BRS Cell Biology and Histology.
- Eroschenko PhD, Victor P.(2017) : Atlas of Histology with Functional Correlations.
- -Anthony L. Mescher(2013) Junqueira's Basic Histolog T E X T AND AT LAS, 13th edition, McGraw-Hill Education New York Chicago San Francisco Lisbon London Madrid Mexico City Milan New Delhi San Juan Seoul Singapore Sydney Toronto.
- Bloom and Fawcett(1994) A text book of Histology, Twelfth Edition, Chapman and Hall, New York and London.
- Jo Ann C. Eurell (2004) VETERINARY HISTOLOGY

8-3: Egyptian Knowledge Bank:

- Jennings R, Premanandan C. Veterinary histology. Ohio State University; 2017 Aug 22.
- Eurell JA, Frappier BL, editors. Dellmann's textbook of veterinary histology. John Wiley & Sons; 2013 Mar 19.
- Bacha Jr WJ, Bacha LM. Color atlas of veterinary histology. John Wiley & Sons; 2012 Jan 19.
- Aughey E, Frye FL. Comparative veterinary histology with clinical correlates. CRC Press; 2001 Feb 15.
- Eurell JA. Histology. Teton NewMedia; 2004 Mar 15.

8.4: web sites and jouranls

- WWW.PubMed.com
- Intrnational of veterinary information services (IVIS)
- www.Vet.net.com
- journal of molecular histology
- Anatomia histologia embryologia journal
- Journal of veterinary anatomy.
- Journal of veterinary anatomy.
- Journal of Acta Histochemica
- Journal of Microscopy and Microanalysis
- Journal of microscopy and research

Course content ILOs Matrex:

Topics	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills				General & Transferable Skills			
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	1	2	3	4
Introduction and Course description	X														X	X	X	X
Structure of the muscles	X			X	X	X	X						X		X	X	X	X
Structure of heart			X	X					X	X	X				X	X	X	X
Structure of blood vessels		X		X				X	X			X		X	X	X	X	X

Course Coordinator:

**Dr Khalil Abu Easa
Kassab**

Head of Department:

Dr Mohamed

DEPARTMENT OF **CYTOLOGY AND HISTOLOGY**

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 115/2

Course title: Histological and histochemical structure of comparative respiratory system

Academic Year: *PhD. V. Sc. programs*

Total teaching hours: 96 hrs

Lectures: 48 hrs

Practical:48 hrs

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to

Animal, poultry and fish respiratory system . The major topics covered histology and histochemistry of nasal cavity, larynx, trachea and lung in different animals, birds and fish .

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of this course the graduates should be able to:

A1-Recognize the Principles , theories and immunohistochemistry in the cells of nasal cavity.

A2- Memorize molecular structures of cells types and its construction on the structure of air passages.

A3- Explain different molecular and immunohistochemical structure of blood air barriers.

A4- Have an experience to explain the records obtained from immunohistochemical slides and electron micrographs.

A5- Discuss the immunohistochemical structure arised from nasal cavity, conducting portion and lung.

3-B: INTELLECTUAL SKILLS:

By the end of this course, the student should be able to:

B1- Interpret immunohistochemical and electron microscopic finding in nasal cavity and its structure.

B2.Demonstrate the molecular difference among cells of the respiratory passages.

B3.Evaluate the role of various bronchioles in the accommodation of air.

B4-Comment accurately upon the obtained results on different immunohistochemical structures of lung.

B5.Relate the molecular structure-function relationship in layers of respiratory passages and lung

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of this course, the student should be able to

- C1. Apply the practical histological course instructions for preparation of immunohistochemical sections and molecular structure of nasal cavity and olfactory mucosa.
- C2. Write correctively the report of the different types of conducting portion of respiratory system.
- C3. Identify the molecular characterization of respiratory bronchioles and alveoli.
- C4. Differentiate between the all types of cells lined the respiratory passages.

3- D: GENERAL AND TRANSFERABLE SKILL

By the end of this course, the student should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
1. Introduction and Course description	7	4	3
2. Structure of the nasal cavity	31	15	16
3. Structure of larynx ,trachea and external bronchi	28	14	14
4. Lung	30	15	15
Total	96	48	48

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about histology and histochemistry of respiratory system .

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to

weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d4
Practical sessions		b1 to b5	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.A: ASSESSMENT Methods:

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

Assessment ILOs Matrix:

Methods	I.L.O.S Evaluation			
	Knowledge	Intellectual	Practical	general
Written examination	A1.A2.A3.A4.A5.	B1.B2.B4. B5		
Oral examination	A1.A2.A3.	B1.B2		D1-D2
Practical examination		B1.B2.B3	C1.C2.C3.C4.	D2-D4

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Overhead projections, Microscopes, TV closed center, slides and computer presentations used during teaching.
- John Bancroft (2013) Bancroft's Theory and Practice of Histological Techniques. Seventh Edition.
- A. J. MARSHALL (1960) Biology and Comparative Physiology of BIRDS. ACADEMIC PRESS
- Kuehnel, (2003) Color Atlas of Cytology, Histology, and Microscopic Anatomy .
- JOANN EURELL (2010) Dellman's Comparative veterinary histology. Six Edition.
- FRANCK GENTEN et al (2009) ATLAS OF FISH HISTOLOGY. Science Publishers

8-2: Recommended books:

- Hans-Georg Liebich. (2019): Veterinary Histology of Domestic Mammals and Birds.
- Anthony L. Mescher (2018): Junqueira's Basic Histology: Text and Atlas 16th Edition.
- Leslie P. Gartner (2018) : BRS Cell Biology and Histology.
- Eroschenko PhD, Victor P.(2017) : Atlas of Histology with Functional Correlations.
- -Anthony L. Mescher(2013) Junqueira's Basic Histology T E X T AND AT LAS, 13th edition, McGraw-Hill Education New York Chicago San Francisco Lisbon London Madrid Mexico City Milan New Delhi San Juan Seoul Singapore Sydney Toronto.
- Bloom and Fawcett(1994) A text book of Histology, Twelfth Edition, Chapman and Hall, New York and London.
- Jo Ann C. Eurell (2004) VETERINARY HISTOLOGY

8-3: Egyptian Knowledge Bank:

- Jennings R, Premanandan C. Veterinary histology. Ohio State University; 2017 Aug 22.
- Eurell JA, Frappier BL, editors. Dellmann's textbook of veterinary histology. John Wiley & Sons; 2013 Mar 19.
- Bacha Jr WJ, Bacha LM. Color atlas of veterinary histology. John Wiley & Sons; 2012 Jan 19.
- Aughey E, Frye FL. Comparative veterinary histology with clinical correlates. CRC Press; 2001 Feb 15.
- Eurell JA. Histology. Teton NewMedia; 2004 Mar 15.

8.4: web sites and journals

- WWW.PubMed.com
- International of veterinary information services (IVIS)
- www.Vet.net.com
- journal of molecular histology
- Anatomia histologia embryologia journal
- Journal of veterinary anatomy.
- Journal of veterinary anatomy.
- Journal of Acta Histochemica
- Journal of Microscopy and Microanalysis
- Journal of microscopy and research

Course content ILOs Matrex:

Topics	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills				General & Transferable Skills			
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	1	2	3	4
. Introduction and Course description	X														X	X	X	X
Structure of the nasal cavity	X	X		X		X				X	X			X	X	X	X	X
Structure of larynx ,trachea and external bronchi		X		X	X		X			X		X		X	X	X	X	X
Lung			X	X	X			X	X				X		X	X	X	X

Course Coordinator:

Dr Mona Ali

Head of Department:

Dr Mohamed Kassab

DEPARTMENT OF **CYTOLOGY AND HISTOLOGY**

Course specification

(2021 / 2022)

1 - Basic Information:

Code number: 116/2

Course title: Histological and histochemical structure of comparative digestive system

Academic Year: *PhD. V. Sc. programs*

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to

Animal, poultry and fish digestive system . The major topics covered histology and histochemistry of oral cavity, esophagus, stomach, intestine, liver, pancreas and salivary glands in different animals, birds and fish.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of this course the graduates should be able to:

A1-Recognize the Principles , theories and immunohistochemistry in the types of cells in upper digestive system.

A2- Memorize molecular structure of cells types and its construction on the structure of digestive tube.

A3- Explain different immunohistochemical structure liver , pancreas and salivary glands.

A4- Have an experience to explain the records obtained from immunohistochemical slides and electron micrographs.

A5- Discuss the molecular structure arised from stomach, intestine and liver.

3-B: INTELLECTUAL SKILLS:

By the end of this course, the student should be able to

B1- Interpret immunohistochemistry and electron microscopic finding in case upper digestive.

B2.Demonstrate the cellular difference among the digestive tube.

B3.Evaluate the role of various immunohistochemical finding in tunics of digestive tube.

B4-Comment accurately upon the obtained results on molecular structure of liver, pancreas and salivary glands.

B5.Relate the molecular structure-function relationship in tunica mucosa of digestive tube.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of this course, the student should be able to

C1.Apply the practical histological course instructions for preparation of immunohistochemical sections and molecular biology of oral cavity and esophagus.

C2. Write correctively the report of the different types of cells in stomach and intestine.

C3.Identify the immunohistochemical characterization of liver, pancreas and salivary glands.

C4.Differentiate between the all types of immunohistochemistry of organs in digestive tube in different animals.

3- D: GENERAL AND TRANSFERABLE SKILLS:

By the end of this course, the student should be able to:

d.1.Communicate effectively with his professors, and collages.

d.2. Utilize different sources of knowledge and information

d.3. Use information technology to serve the professional practice.

d.4. Manage time efficiently

TOPIC	Total hours	Hours for lecture	Hours for practical
1. Introduction and Course description	7	4	3
2.Oral cavity and esophagus	64	32	32
3.Stomach and intestine	57	28	29
4.Liver,pancreas and salivary gland	64	32	32
Total	192	96	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about histology and histochemistry of digestive system .

*** Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d4
Practical sessions		b1 to b5	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session

7. STUDENT ASSESSMENT:-

7.A: ASSESSMENT Methods:

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

Assessment ILOs Matrix:

Methods	I.L.O.S Evaluation			
	Knowledge	Intellectual	Practical	general
Written examination	A1.A2.A3.A4.A5.	B1.B2.B4. B5		
Oral examination	A1.A2.A3.	B1.B2		D1-D2
Practical examination		B1.B2.B3	C1.C2.C3.C4.	D2-D4

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Overhead projections, Microscopes, TV closed center, slides and computer presentations used during teaching.
- John Bancroft (2013) Bancroft's Theory and Practice of Histological Techniques. Seventh Edition.
- A. J. MARSHALL (1960) Biology and Comparative Physiology of BIRDS. ACADEMIC PRESS
- Kuehnel, (2003) Color Atlas of Cytology, Histology, and Microscopic Anatomy .
- JOANN EURELL (2010) Dellman's Comparative veterinary histology. Six Edition.
- FRANCK GENTEN et al (2009) ATLAS OF FISH HISTOLOGY. Science Publishers

8-2: Recmended books:

- Hans-Georg Liebich. (2019): Veterinary Histology of Domestic Mammals and Birds.
- Anthony L. Mescher (2018): Junqueira's Basic Histology: Text and Atlas 16th Edition.
- Leslie P. Gartner (2018) : BRS Cell Biology and Histology.
- Eroschenko PhD, Victor P.(2017) : Atlas of Histology with Functional Correlations.
- -Anthony L. Mescher(2013) Junqueira's Basic Histolog T E X T AND AT LAS, 13th edition, McGraw-Hill Education New York Chicago San Francisco Lisbon London Madrid Mexico City Milan New Delhi San Juan Seoul Singapore Sydney Toronto.
- Bloom and Fawcett(1994) A text book of Histology, Twelfth Edition, Chapman and Hall, New York and London.
- Jo Ann C. Eurell (2004) VETERINARY HISTOLOGY

8-3: Egyptian Knowledge Bank:

- Jennings R, Premanandan C. Veterinary histology. Ohio State University; 2017 Aug 22.
- Eurell JA, Frappier BL, editors. Dellmann's textbook of veterinary histology. John Wiley & Sons; 2013 Mar 19.
- Bacha Jr WJ, Bacha LM. Color atlas of veterinary histology. John Wiley & Sons; 2012 Jan 19.
- Aughey E, Frye FL. Comparative veterinary histology with clinical correlates. CRC Press; 2001 Feb 15.
- Eurell JA. Histology. Teton NewMedia; 2004 Mar 15.

8.4: web sites and jouranls

- WWW.PubMed.com
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- journal of molecular histology
- Anatomia histologia embryologia journal
- Journal of veterinary anatomy.
- Journal of veterinary anatomy.
- Journal of Acta Histochemica
- Journal of Microscopy and Microanalysis
- Journal of microscopy and research

Course content ILOs Matrex:

Topics	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills				General & Transferable Skills			
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	1	2	3	4
. Introduction and Course description	X														X	X	X	X
Oral cavity and esophagus	X	X		X		X	X				X			X	X	X	X	X
Stomach and intestine		X		X	X		X	X		X		X		X	X	X	X	X
Liver,pancreas and salivary gland			X	X	X				X				X		X	X	X	X

Course Coordinator:

Dr Mohamed Kassab

Head of Department:

Dr Mohamed Kassab

DEPARTMENT OF **CYTOLOGY AND HISTOLOGY**

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 117/2

Course title: **Histological and histochemical structure of comparative urogenital system**

Academic Year: *PhD. V. Sc. programs*

Total teaching hours:192 hrs

Lectures: 96 hrs

Practical:96 hrs

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to

Animal, poultry and fish urogenital systems . The major topics covered histology and histochemistry of urinary system, female genital system and male genital system in different animals, birds and fish.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of this course the graduates should be able to:

- A1-Recognize the Principles , theories and immunohistochemistry in the cells in urinary organs.
- A2- Memorize molecular structure of cells types and its construction on the structure of ovary, utrine tube and uterus.
- A3- Explain different immunohistochemical structure in testes, epidydms and male accessory glands.
- A4- Have an experience to explain the records obtained from immunohistochemical slides and electron micrographs in urogenital organs.
- A5- Discuss the molecular structure arised from kidney, ovary, uterus, testes and male accessory glands.

3-B: INTELLECTUAL SKILLS:

By the end of this course the graduates should be able to:

- B1- Interpret immunohistochemistry and electron microscopic finding in case kidney.
- B2.Demonstrate the difference in molecular structure of cells among the ovary, uterine tube and uterus.
- B3.Evaluate the role of various cells in different organs in male genital system.
- B4-Comment accurately upon the obtained immunohistochemical results on conducting portion in urinary, male and female genital systems.
- B5.Relate the molecular structure-function relationship in kidney, ovary, uterus and testes.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of this course the graduates should be able to:

- C1. Apply the practical histological course instructions for preparation of immunohistochemical sections and molecular biology of urinary organs.
- C2. Write correctively the report of the different types of organs in female genital .
- C3. Identify the molecular characterization of cells in male genital organs.
- C4. Differentiate between the all types of molecular structure of cells producing hormones in different organs in all systems.

3- D: GENERAL SKILLS:

By the end of this course, the student should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
1. Introduction and Course description	7	4	3
2. Urinary organs	49	24	25
3. Female genital organs	68	34	34
4. Male genital organs	68	34	34
Total	192	96	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about histology and histochemistry of urogenital systems .

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d4
Practical sessions		b1 to b5	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session

7. STUDENT ASSESSMENT:-

7.A: ASSESSMENT Methods:

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

Assessment ILOs Matrix:

Methods	Knowledge	I.L.O.S Evaluation		
		Intellectual	Practical	general
Written examination	A1.A2.A3.A4.A5.	B1.B2.B4. B5		
Oral examination	A1.A2.A3.	B1.B2		D1-D2
Practical examination		B1.B2.B3	C1.C2.C3.C4.	D2-D4

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Overhead projections, Microscopes, TV closed center, slides and computer presentations used during teaching.
- John Bancroft (2013) Bancroft's Theory and Practice of Histological Techniques. Seventh Edition.
- A. J. MARSHALL (1960) Biology and Comparative Physiology of BIRDS. ACADEMIC PRESS
- Kuehnel, (2003) Color Atlas of Cytology, Histology, and Microscopic Anatomy .
- JOANN EURELL (2010) Dellman's Comparative veterinary histology. Six Edition.
- FRANCK GENTEN et al (2009) ATLAS OF FISH HISTOLOGY. Science Publishers

8-2: Recmended books:

- Hans-Georg Liebich. (2019): Veterinary Histology of Domestic Mammals and Birds.
- Anthony L. Mescher (2018): Junqueira's Basic Histology: Text and Atlas 16th Edition.
- Leslie P. Gartner (2018) : BRS Cell Biology and Histology.
- Eroschenko PhD, Victor P.(2017) : Atlas of Histology with Functional Correlations.
- -Anthony L. Mescher(2013) Junqueira's Basic Histolog T E X T AND AT LAS, 13th edition, McGraw-Hill Education New York Chicago San Francisco Lisbon London Madrid Mexico City Milan New Delhi San Juan Seoul Singapore Sydney Toronto.
- Bloom and Fawcett(1994) A text book of Histology, Twelfth Edition, Chapman and Hall, New York and London.
- Jo Ann C. Eurell (2004) VETERINARY HISTOLOGY

8-3: Egyptian Knowledge Bank:

- Jennings R, Premanandan C. Veterinary histology. Ohio State University; 2017 Aug 22.
- Eurell JA, Frappier BL, editors. Dellmann's textbook of veterinary histology. John Wiley & Sons; 2013 Mar 19.
- Bacha Jr WJ, Bacha LM. Color atlas of veterinary histology. John Wiley & Sons; 2012 Jan 19.
- Aughey E, Frye FL. Comparative veterinary histology with clinical correlates. CRC Press; 2001 Feb 15.
- Eurell JA. Histology. Teton NewMedia; 2004 Mar 15.

8.4: web sites and jounrals

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- www.Vet.net.com
- journal of molecular histology
- Anatomia histologia embryologia journal
- Journal of veterinary anatomy.
- Journal of veterinary anatomy.
- Journal of Acta Histochemica
- Journal of Microscopy and Microanalysis
- Journal of microscopy and research

Course content ILOs Matrex:

Topics	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills				General & Transferable Skills			
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	1	2	3	4
introduction	X														X	X	X	X
Urinary organs	X			X	X	X			X	X	X			X	X	X	X	X
Female genital organs		X		X	X		X		X	X		X		X	X	X	X	X
Male genital organs			X	X	X			X	X	X			X	X	X	X	X	X

Course Coordinator:

Dr Mona Ali

Head of Department:

Dr Mohamed Kassab

DEPARTMENT OF **CYTOLOGY AND HISTOLOGY**

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 118/2

Course title: Histological and histochemical structure of comparative nervous and endocrine system

Academic Year: *PhD. V. Sc. programs*

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to

Animal, poultry and fish of nervous and endocrine systems. The major topics covered histology and histochemistry of CNS, PNS and endocrine systems in different animals, birds and fish.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of this course the graduates should be able to:

A1-Recognize the Principles, theories and immunohistochemistry in the cells in CNS.

A2- Memorize molecular structure of cells types and its construction on the structure of endocrine organs.

A3- Explain different immunohistochemical structure on ganglia and nerve trunk.

A4- Have an experience to explain the records obtained from immunohistochemical slides and electron micrographs of nervous and endocrine systems.

A5- Discuss the molecular structure arising from relation between CNS and different endocrine organs.

3-B: INTELLECTUAL SKILLS:

By the end of this course, the student should be able to

B1- Interpret molecular and electron microscopic finding in organs of CNS.

B2. Demonstrate the molecular structure of cells difference among the endocrine organs.

B3. Evaluate the role of various immunohistochemical structure of PNS.

B4- Comment accurately upon the obtained results on controlling systems by PNS.

B5. Relate the molecular structure-function relationship in CNS and endocrine organs.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of this course the graduates should be able to:

- C1. Apply the practical histological course instructions for preparation of immunohistochemical sections and molecular structure of central nervous system.
- C2. Write correctly the report of the different immunohistochemistry of organs in endocrine systems .
- C3. Identify the immunohistochemical characterization of peripheral nervous system.
- C4. Differentiate between the all types of cells molecular structure producing hormones in different organs

3- D: GENERAL SKILLS:

By the end of this course, the student should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
1. Introduction and Course description	7	4	3
2. Central nervous system	51	25	26
3. Peripheral nervous system	38	19	19
4. Endocrine glands	96	48	48
Total	192	96	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about histology and histochemistry of nervous and endocrine systems

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d4
Practical sessions		b1 to b5	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session

7. STUDENT ASSESSMENT:-

.A: ASSESSMENT Methods:

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

Assessment ILOs Matrix:

Methods	I.L.O.S Evaluation			
	Knowledge	Intellectual	Practical	general
Written examination	A1.A2.A3.A4.A5.	B1.B2.B4. B5		
Oral examination	A1.A2.A3.	B1.B2		D1-D2
Practical examination		B1.B2.B3	C1.C2.C3.C4.	D2-D4

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Overhead projections, Microscopes, TV closed center, slides and computer presentations used during teaching.

- John Bancroft (2013) Bancroft's Theory and Practice of Histological Techniques. Seventh Edition.
- A. J. MARSHALL (1960) Biology and Comparative Physiology of BIRDS. ACADEMIC PRESS
- Kuehnel, (2003) Color Atlas of Cytology, Histology, and Microscopic Anatomy .
- JOANN EURELL (2010) Dellman's Comparative veterinary histology. Six Edition.
- FRANCK GENTEN et al (2009) ATLAS OF FISH HISTOLOGY. Science Publishers

8-2: Recommended books:

- Hans-Georg Liebich. (2019): Veterinary Histology of Domestic Mammals and Birds.
- Anthony L. Mescher (2018): Junqueira's Basic Histology: Text and Atlas 16th Edition.
- Leslie P. Gartner (2018) : BRS Cell Biology and Histology.
- Eroschenko PhD, Victor P.(2017) : Atlas of Histology with Functional Correlations.
- -Anthony L. Mescher(2013) Junqueira's Basic Histology T E X T AND AT LAS, 13th edition, McGraw-Hill Education New York Chicago San Francisco Lisbon London Madrid Mexico City Milan New Delhi San Juan Seoul Singapore Sydney Toronto.
- Bloom and Fawcett(1994) A text book of Histology, Twelfth Edition, Chapman and Hall, New York and London.
- Jo Ann C. Eurell (2004) VETERINARY HISTOLOGY

8-3: Egyptian Knowledge Bank:

- Jennings R, Premanandan C. Veterinary histology. Ohio State University; 2017 Aug 22.
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- Aughey E, Frye FL. Comparative veterinary histology with clinical correlates. CRC Press; 2001 Feb 15.
- Eurell JA. Histology. Teton NewMedia; 2004 Mar 15.

8.4: web sites and journals

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- www.Vet.net.com
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- Anatomia histologia embryologia journal
- Journal of veterinary anatomy.
- Journal of veterinary anatomy.
- Journal of Acta Histochemica
- Journal of Microscopy and Microanalysis
- Journal of microscopy and research

Course content ILOs Matrex:

Topics	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills				General & Transferable Skills			
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	1	2	3	4
introduction	X														X	X	X	X
Central nervous system	X			X	X	X				X	X			X	X	X	X	X
Peripheral nervous system			X	X				X	X				X		X	X	X	X
Endocrine glands		X		X	X	X				X	X			X	X	X	X	X

Course Coordinator:

Dr farouk Abdelmohdy

Head of Department:

Dr Mohamed kassab

DEPARTMENT OF **CYTOLOGY AND HISTOLOGY**

Course specification
(2021 / 2022)

1 - Basic Information:

Code number: 119/2

Course title: **Histological and histochemical structure of the sense organs**

Academic Year: *PhD. V. Sc. programs*

Total teaching hours:144 hrs

Lectures:48hrs

Practical:96 hrs

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to

Animal, poultry and fish of sense organs . The major topics covered histology and histochemistry of eye, ear,taste bud and olfactory mucosa in different animals, birds and fish.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of this course the graduates should be able to:

- A1-Recognize the Principles , theories and immunohistochemistry in the cells of eye.
- A2- Memorize molecular structure of cell types and its construction on the structure of ear.
- A3- Explain different immunohistochemical structure on taste bud and olfactory mucosa.
- A4- Have an experience to explain the records obtained from immunohistochemical slides and electron micrographs of all layers of eye.
- A5- Discuss the molecular structure arised from relation between structure of eye and ear with vision and hear.

3-B: INTELLECTUAL SKILLS:

By the end of this course the graduates should be able to:

- B1- Interpret molecular and electron microscopic finding in organs of ear.
- B2.Demonstrate the difference of molecular structure in cells among the retina.
- B3.Evaluate the role of various immunohistochemical structure of eye in different animals.
- B4-Comment accurately upon the obtained results on different parts of ear.
- B5.Relate the molecular structure-function relationship in taste buds and olfactory mucosa.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of this course the graduates should be able to:

- C1. Apply the practical histological course instructions for preparation of immunohistochemical sections and molecular structure of eye.
- C2. Write correctively the report of the molecular structure of cells in different parts of ear .
- C3. Identify the immunohistochemical characterization of different layers eye in different animals, birds and fish.
- C4. Differentiate between the all types of molecular structure of cells on taste buds and olfactory mucosa.

3- D: GENERAL and transferable SKILLS:

By the end of this course, the student should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
1. Introduction and Course description	7	4	3
2. Structure of the eye	62	22	40
3. Structure of the ear	53	16	37
4. structure of taste bud and olfactory epithelium	22	6	16
Total	144	48	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about histology and histochemistry of sense organs .

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

	Intended Learning Outcomes Covered
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Teaching and Learning Methods	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d4
Practical sessions		b1 to b5	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session

7. STUDENT ASSESSMENT:-

.A: ASSESSMENT Methods:

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

Assessment ILOs Matrix:

Methods	I.L.O.S Evaluation			
	Knowledge	Intellectual	Practical	general
Written examination	A1.A2.A3.A4.A5.	B1.B2.B4. B5		
Oral examination	A1.A2.A3.	B1.B2		D1-D2
Practical examination		B1.B2.B3	C1.C2.C3.C4.	D2-D4

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Overhead projections, Microscopes, TV closed center, slides and computer presentations used during teaching.
- John Bancroft (2013) Bancroft's Theory and Practice of Histological Techniques. Seventh Edition.
- A. J. MARSHALL (1960) Biology and Comparative Physiology of BIRDS. ACADEMIC PRESS
- Kuehnel, (2003) Color Atlas of Cytology, Histology, and Microscopic Anatomy .
- JOANN EURELL (2010) Dellman's Comparative veterinary histology. Six Edition.
- FRANCK GENTEN et al (2009) ATLAS OF FISH HISTOLOGY. Science Publishers

8-2: Recmended books:

- Hans-Georg Liebich. (2019): Veterinary Histology of Domestic Mammals and Birds.
- Anthony L. Mescher (2018): Junqueira's Basic Histology: Text and Atlas 16th Edition.
- Leslie P. Gartner (2018) : BRS Cell Biology and Histology.
- Eroschenko PhD, Victor P.(2017) : Atlas of Histology with Functional Correlations.
- -Anthony L. Mescher(2013) Junqueira's Basic Histolog T E X T AND AT LAS, 13th edition, McGraw-Hill Education New York Chicago San Francisco Lisbon London Madrid Mexico City Milan New Delhi San Juan Seoul Singapore Sydney Toronto.
- Bloom and Fawcett(1994) A text book of Histology, Twelfth Edition, Chapman and Hall, New York and London.
- Jo Ann C. Eurell (2004) VETERINARY HISTOLOGY

8-3: Egyptian Knowledge Bank:

- Jennings R, Premanandan C. Veterinary histology. Ohio State University; 2017 Aug 22.
- Eurell JA, Frappier BL, editors. Dellmann's textbook of veterinary histology. John Wiley & Sons; 2013 Mar 19.
- Bacha Jr WJ, Bacha LM. Color atlas of veterinary histology. John Wiley & Sons; 2012 Jan 19.
- Aughey E, Frye FL. Comparative veterinary histology with clinical correlates. CRC Press; 2001 Feb 15.
- Eurell JA. Histology. Teton NewMedia; 2004 Mar 15.

8.4: web sites and jounrns

- WWW.PubMed.com
- Intrnational of veterinary information services (IVIS)
- www.Vet.net.com
- journal of molecular histology
- Anatomia histologia embryologia journal
- Journal of veterinary anatomy.
- Journal of veterinary anatomy.
- Journal of Acta Histochemica
- Journal of Microscopy and Microanalysis
- Journal of microscopy and research

Course content ILOs Matrex:

Topics	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills				General & Transferable Skills			
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	1	2	3	4
introduction	X														X	X	X	X
Structure of the eye	X			X	X	X	X				X		X		X	X	X	X
Structure of the ear		X			X	X			X			X			X	X	X	X
structure of taste bud and olfactory epithelium			X							X				X	X	X	X	X

Course Coordinator:

**Dr Khalil Abu Easa
Kassab**

Head of Department:

Dr Mohamed

DEPARTMENT OF **CYTOLOGY AND HISTOLOGY**

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 120/2

Course title: Histological and histochemical structure of the skin, Hoofs and Nails

Academic Year: *PhD. V. Sc. programs*

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to

Animal, poultry and fish of skin, hoofs and nails. The major topics covered histology and histochemistry skin, hoofs, claw and nails in different animals.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of this course the graduates should be able to:

A1- Recognize the Principles, theories and immunohistochemistry in the cells of skin.

A2- Memorize molecular structure of cells types and its construction on the structure of hoof.

A3- Explain different immunohistochemical structure on claw and nails.

A4- Have an experience to explain the records obtained from immunohistochemical slides and electron micrographs of all layers of hoof.

A5- Discuss the immunohistochemical structure arising from relation between structure of skin glands as defense.

3-B: INTELLECTUAL SKILLS:

By the end of this course the graduates should be able to:

B1- Interpret molecular and electron microscopic finding in skin layers.

B2. Demonstrate the difference in molecular structure of cells among the skin glands and hair.

B3. Evaluate the role of various immunohistochemical structure of hoof in different animals.

B4- Comment accurately upon the obtained results on different parts of claw and nails.

B5. Relate the molecular structure-function relationship in hoof, claw and nails.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of this course the graduates should be able to:

- C1. Apply the practical histological course instructions for preparation of immunohistochemical sections of skin.
- C2. Write correctively the report of the different cells in different parts of hoof .
- C3. Identify the immunohistochemical characterization of different layers of claw and nails in different animals,
- C4. Differentiate between the molecular structure of all types of cells on skin glands and hair.

GENERAL AND TRANSFERABLE SKILL

By the end of this course, the student should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
1. Introduction and Course description	7	4	3
2. Skin	85	42	43
3. Hoofs	50	25	25
4. Claw and nails	50	25	25
Total	192	96	96

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming
- * **Practical sessions:**
- * **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about histology and histochemistry of skin and its appendege .
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to

weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d4
Practical sessions		b1 to b5	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session

7. STUDENT ASSESSMENT:-

.A: ASSESSMENT Methods:

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

Assessment ILOs Matrix:

Methods	I.L.O.S Evaluation			
	Knowledge	Intellectual	Practical	general
Written examination	A1.A2.A3.A4.A5.	B1.B2.B4. B5		
Oral examination	A1.A2.A3.	B1.B2		D1-D2
Practical examination		B1.B2.B3	C1.C2.C3.C4.	D2-D4

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Overhead projections, Microscopes, TV closed center, slides and computer presentations used during teaching.
- John Bancroft (2013) Bancroft's Theory and Practice of Histological Techniques. Seventh Edition.
- A. J. MARSHALL (1960) Biology and Comparative Physiology of BIRDS. ACADEMIC PRESS
- Kuehnel, (2003) Color Atlas of Cytology, Histology, and Microscopic Anatomy .
- JOANN EURELL (2010) Dellman's Comparative veterinary histology. Six Edition.
- FRANCK GENTEN et al (2009) ATLAS OF FISH HISTOLOGY. Science Publishers

8-2: Recmended books:

- Hans-Georg Liebich. (2019): Veterinary Histology of Domestic Mammals and Birds.
- Anthony L. Mescher (2018): Junqueira's Basic Histology: Text and Atlas 16th Edition.
- Leslie P. Gartner (2018) : BRS Cell Biology and Histology.
- Eroschenko PhD, Victor P.(2017) : Atlas of Histology with Functional Correlations.
- -Anthony L. Mescher(2013) Junqueira's Basic Histolog T E X T AND AT LAS, 13th edition, McGraw-Hill Education New York Chicago San Francisco Lisbon London Madrid Mexico City Milan New Delhi San Juan Seoul Singapore Sydney Toronto.
- Bloom and Fawcett(1994) A text book of Histology, Twelfth Edition, Chapman and Hall, New York and London.
- Jo Ann C. Eurell (2004) VETERINARY HISTOLOGY

8-3: Egyptian Knowledge Bank:

- Jennings R, Premanandan C. Veterinary histology. Ohio State University; 2017 Aug 22.
- Eurell JA, Frappier BL, editors. Dellmann's textbook of veterinary histology. John Wiley & Sons; 2013 Mar 19.
- Bacha Jr WJ, Bacha LM. Color atlas of veterinary histology. John Wiley & Sons; 2012 Jan 19.
- Aughey E, Frye FL. Comparative veterinary histology with clinical correlates. CRC Press; 2001 Feb 15.
- Eurell JA. Histology. Teton NewMedia; 2004 Mar 15.

8.4: web sites and jouranls

- WWW.PubMed.com
- Intrnational of veterinary information services (IVIS)
- www.Vet.net.com
- journal of molecular histology
- Anatomia histologia embryologia journal
- Journal of veterinary anatomy.
- Journal of veterinary anatomy.
- Journal of Acta Histochemica
- Journal of Microscopy and Microanalysis
- Journal of microscopy and research

Course content ILOs Matrex:

Topics	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills				General & Transferable Skills			
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	1	2	3	4
introduction	X														X	X	X	X
skin	X				X	X	X				X			X	X	X	X	X
Hoofs		X		X				X		X			X		X	X	X	X
Claw and nails			X						X				X		X	X	X	X

Course Coordinator:

Head of Department:

Dr Mona Ali

Dr Mohamed kassab

DEPARTMENT OF **CYTOLOGY AND HISTOLOGY**

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 121/2

Course title: Fowl Histology

Academic Year: *PhD. V. Sc. programs*

Total teaching hours: 192hrs hrs

Lectures: 96 hrs

Practical:96 hrs

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to

Fowel histology . The major topics covered histology and histochemistry digestive, respiratory, urogenital, lymphatic, endocrine and nervous systems as well as blood and skin.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of this course the graduates should be able to:

A1-Recognize the Principles , theories and immunohistochemistry in the cells digestive and respiratory organs.

A2- Memorize molecular structure of cells types and its construction on the structure of urogenital organs.

A3- Explain different immunohistochemical structure on blood and lymphatic system.

A4- Have an experience to explain the records obtained from immunohistochemical and electron micrographs of all layers of skin and feathers.

A5- Discuss the molecular structure of cells arised from relation between structure of endocrine and nervous system.

3-B: INTELLECTUAL SKILLS:

By the end of this course the graduates should be able to:

B1- Interpret molecular and electron microscopic finding in cells of digestive and respiratory systems.

B2.Demonstrate the difference molecular structure of cells among the oviduct.

B3.Evaluate the role of various histological structure of urogenital organs.

B4-Comment accurately upon the obtained results on different parts and cells of blood and lymphatic system.

B5.Relate the molecular structure-function relationship in endocrine, nervous systems and skin.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of this course the graduates should be able to:

- C1. Apply the practical histological course instructions for preparation of immunohistochemical sections of digestive and respiratory systems
- C2. Write correctively the report of the different cells in all parts of urogenital system .
- C3. Identify the immunohistochemical characterization of different layers and cells of blood and lymphatic system in different birds.
- C4. Differentiate between the molecular structure of cells in endocrine , nervous systems and skin.

3-D-GENERAL AND TRANSFERABLE SKILL

By the end of this course, the student should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
1. Introduction and Course description	7	4	3
2. Digestive system	37	18	19
3. Respiratory system	20	10	10
4. Urogenital system	50	25	25
5. Blood and lymphatic system	38	19	19
6. Endocrine system, nervous system, skin	40	20	20
Total	192	96	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making individual reports about histology and histochemistry of fowel histology .

*** Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d4
Practical sessions		b1 to b5	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session

7. STUDENT ASSESSMENT:-

.A: ASSESSMENT Methods:

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

Assessment ILOs Matrix:

Methods	I.L.O.S Evaluation			
	Knowledge	Intellectual	Practical	general
Written examination	A1.A2.A3.A4.A5.	B1.B2.B4. B5		
Oral examination	A1.A2.A3.	B1.B2		D1-D2
Practical examination		B1.B2.B3	C1.C2.C3.C4.	D2-D4

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Overhead projections, Microscopes, TV closed center, slides and computer presentations used during teaching.
- John Bancroft (2013) Bancroft's Theory and Practice of Histological Techniques. Seventh Edition.
- A. J. MARSHALL (1960) Biology and Comparative Physiology of BIRDS. ACADEMIC PRESS
- Kuehnel, (2003) Color Atlas of Cytology, Histology, and Microscopic Anatomy .
- JOANN EURELL (2010) Dellman's Comparative veterinary histology. Six Edition.
- FRANCK GENTEN et al (2009) ATLAS OF FISH HISTOLOGY. Science Publishers

8-2: Recmended books:

- Hans-Georg Liebich. (2019): Veterinary Histology of Domestic Mammals and Birds.
- Anthony L. Mescher (2018): Junqueira's Basic Histology: Text and Atlas 16th Edition.
- Leslie P. Gartner (2018) : BRS Cell Biology and Histology.
- Eroschenko PhD, Victor P.(2017) : Atlas of Histology with Functional Correlations.
- -Anthony L. Mescher(2013) Junqueira's Basic Histolog T E X T AND AT LAS, 13th edition, McGraw-Hill Education New York Chicago San Francisco Lisbon London Madrid Mexico City Milan New Delhi San Juan Seoul Singapore Sydney Toronto.
- Bloom and Fawcett(1994) A text book of Histology, Twelfth Edition, Chapman and Hall, New York and London.
- Jo Ann C. Eurell (2004) VETERINARY HISTOLOGY

8-3: Egyptian Knowledge Bank:

- Jennings R, Premanandan C. Veterinary histology. Ohio State University; 2017 Aug 22.
- Eurell JA, Frappier BL, editors. Dellmann's textbook of veterinary histology. John Wiley & Sons; 2013 Mar 19.
- Bacha Jr WJ, Bacha LM. Color atlas of veterinary histology. John Wiley & Sons; 2012 Jan 19.
- Aughey E, Frye FL. Comparative veterinary histology with clinical correlates. CRC Press; 2001 Feb 15.
- Eurell JA. Histology. Teton NewMedia; 2004 Mar 15.

8.4: web sites and jouranls

- WWW.PubMed.com
- Intrnational of veterinary information services (IVIS)
- www.Vet.net.com
- journal of molecular histology
- Anatomia histologia embryologia journal
- Journal of veterinary anatomy.
- Journal of veterinary anatomy.
- Journal of Acta Histochemica
- Journal of Microscopy and Microanalysis
- Journal of microscopy and research

Course content ILOs Matrex:

Topics	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills				General & Transferable Skills			
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	1	2	3	4
introduction	X														X	X	X	X
Digestive system	X					X					X				X	X	X	X
Respiratory system	X					X					X				X	X	X	X
Urogenital system		X					X	X				X			X	X	X	X
Blood and lymphatic system			X						X				X		X	X	X	X
Endocrine system, nervous system, skin				X	X					X				X	X	X	X	X

Course Coordinator:

**Dr Mona Ali
Kassab**

Head of Department:

Dr Mohamed

DEPARTMENT OF **CYTOLOGY AND HISTOLOGY**

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 122/2

Course title: Fish Histology

Academic Year: *PhD. V. Sc. programs*

Total teaching hours: 144hrs hrs

Lectures: 48 hrs

Practical:96 hrs

2 - OVERALL AIMS OF THE COURSE:

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

By the end of this course, the student should acquire the concepts, principles and skills related to

fish histology . The major topics covered histology and histochemistry digestive, respiratory, urogenital, immune, and endocrine systems as well as eye and skin.

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of this course the graduates should be able to:

A1-Recognize the Principles, theories and immunohistochemistry in the cells of digestive organs.

A2- Memorize molecular structure of cells and its construction on the structure of urogenital organs.

A3- Explain different immunohistochemical structure on respiratory system.

A4- Have an experience to explain the records obtained from slides and electron micrographs of all layers of immune system.

A5- Discuss the histological structure arised from relation between structure of eye and skin.

3-B: INTELLECTUAL SKILLS:

By the end of this course the graduates should be able to:

B1- Interpret molecular and electron microscopic finding in cells of digestive system.

B2.Demonstrate the difference of molecular structure of cells among the respiratory system.

B3.Evaluate the role of various immunohistochemical structure of urogenital organs.

B4-Comment accurately upon the obtained results on different parts and cells of immune system.

B5.Relate the molecular structure-function relationship in eye and skin.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of this course the graduates should be able to:

C1.Apply the practical histological course instructions for preparation of immunohistochemical sections of digestive and respiratory systems of fish.

- C2. Write correctively the report of the different cells of all parts of urogenital system .
 C3. Identify the immunohistochemical characterization of different layers and cells of immune system.
 C4. Differentiate between the molecular structure in all types of cells on eye and skin.

3-D-GENERAL AND TRANSFERABLE SKILL

By the end of this course, the student should be able to:

- d.1. Communicate effectively with his professors, and collages.
 d.2. Utilize different sources of knowledge and information
 d.3. Use information technology to serve the professional practice.
 d.4. Manage time efficiently

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
1. Introduction and Course description	7	4	3
2. Digestive system	33	11	22
3. Respiratory system	17	4	13
4. Urogenitalgenital system	30	10	20
5. Immune system	27	9	18
6. eye, skin	30	10	20
Total	144	48	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
 Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
 Making individual reports about histology and histochemistry of fish histology .

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

	Intended Learning Outcomes Covered
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Teaching and Learning Methods	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b5		d1, d4
Practical sessions		b1 to b5	c1 to c4	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b5	c1 to c4	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session

7. STUDENT ASSESSMENT:-

.A: ASSESSMENT Methods:

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

Assessment ILOs Matrix:

Methods	I.L.O.S Evaluation			
	Knowledge	Intellectual	Practical	general
Written examination	A1.A2.A3.A4.A5.	B1.B2.B4. B5		
Oral examination	A1.A2.A3.	B1.B2		D1-D2
Practical examination		B1.B2.B3	C1.C2.C3.C4.	D2-D4

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Overhead projections, Microscopes, TV closed center, slides and computer presentations used during teaching.

- John Bancroft (2013) Bancroft's Theory and Practice of Histological Techniques. Seventh Edition.
- A. J. MARSHALL (1960) Biology and Comparative Physiology of BIRDS. ACADEMIC PRESS
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- JOANN EURELL (2010) Dellman's Comparative veterinary histology. Six Edition.
- FRANCK GENTEN et al (2009) ATLAS OF FISH HISTOLOGY. Science Publishers

8-2: Recommended books:

- Hans-Georg Liebich. (2019): Veterinary Histology of Domestic Mammals and Birds.
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- Eroschenko PhD, Victor P.(2017) : Atlas of Histology with Functional Correlations.
- -Anthony L. Mescher(2013) Junqueira's Basic Histology T E X T AND AT LAS, 13th edition, McGraw-Hill Education New York Chicago San Francisco Lisbon London Madrid Mexico City Milan New Delhi San Juan Seoul Singapore Sydney Toronto.
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8-3: Egyptian Knowledge Bank:

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- Bacha Jr WJ, Bacha LM. Color atlas of veterinary histology. John Wiley & Sons; 2012 Jan 19.
- Aughey E, Frye FL. Comparative veterinary histology with clinical correlates. CRC Press; 2001 Feb 15.
- Eurell JA. Histology. Teton NewMedia; 2004 Mar 15.

8.4: web sites and journals

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- www.Vet.net.com
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- Anatomia histologia embryologia journal
- Journal of veterinary anatomy.
- Journal of veterinary anatomy.
- Journal of Acta Histochemica
- Journal of Microscopy and Microanalysis
- Journal of microscopy and research

Course content ILOs Matrex:

Topics	Knowledge & Understanding					Intellectual Skills					Practical & Professional Skills				General & Transferable Skills			
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	1	2	3	4
introduction	X														X	X	X	X
Digestive system	X					X					X				X	X	X	X
Respiratory system			X				X				X				X	X	X	X
Urogenital system		X						X				X			X	X	X	X
Immune system				X					X				X		X	X	X	X
eye, skin					X					X				X	X	X	X	X

Course Coordinator:

Dr Mona Ali

Head of Department:

Dr Mohamed Kassab

كلية الطب البيطري

وحدة ضمان الجودة

Program Spc. For Ph.D in Animal and Poultry Hygiene



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Hygiene and Preventive Medicine

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy

(Animal and Poultry Hygiene)



Kafr El-Sheikh University

Faculty of Veterinary Medicine

Department of Hygiene and Preventive Medicine

Program Specification for PhD Degree

(2021-2022)

A- Administrative information:

- 1- Awarding Body:** Kafrelsheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Hygiene and Preventive Medicine Department
- 4- Program Title:** PhD Degree in Veterinary Science (Animal and Poultry Hygiene)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years
- 7- Program Coordinator:** Prof. Dr.
- 8- External evaluator:** Prof. Dr. **Kamal kamal metwally**

B- Professional information:

1- Aim of the Program:

- Allow graduate to create new knowledge and understanding Animal and Poultry Hygiene through the process of research and inquiry.
- Enable graduate to achieve competency in modern technology
- Provide the graduate with the opportunity to develop communication skills, recent techniques and tools in the field of Animal and Poultry Hygiene and experience of scientific research skills.
- Giving the graduate the ability to be creative to advance in the field Animal and Poultry Hygiene through new scientific research.



- Achievement of capability in modern laboratory technology to develop practical research project.
- Demonstrating an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and present their own research data for the protection and promotion of the animal health.
- Giving the student the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibiting awareness about current field Animal and Poultry Hygiene problems and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of Animal and Poultry Hygiene.

2- Academic standards:

**Academic reference standards (ARS) adopted by the faculty committee No(1)
14/9/2014**

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Mastering the basics and methodologies of scientific research in advanced **Animal and Poultry Hygiene** branches for better dealing with hygienic and environmental problems professionally and hence the better understanding of the specific solution for each case.
- 2) Performing continuous effort to add knowledge about detection of causes of most hygienic and environmental causes of animal diseases and validating of new methods of isolation and identification including introducing new techniques.
- 3) Analysis and characterization of information in fields related to **Animal and Poultry Hygiene**.
- 4) Showing deep awareness with the ongoing hygienic problems and modern theories in controlling animal diseases.
- 5) Mastering of a wide range of professional skills in laboratory



- investigation.
- 6) Using appropriate technological means including molecular biology to serve professional practice.
 - 7) Communicating effectively with students and colleagues and leading work team through professional scale.
 - 8) Making decision in different professional situations especially under field conditions to deal with the hygienic and environmental cause of animal death or less productivity.
 - 9) Using of the available resources efficiently in the development of new techniques and work to find new resources.
 - 10) Being aware with his role in society development and community preservation from the contamination of the environment.
 - 11) Acting with integrity, credibility and according to the rules of profession.
 - 12) Realizing the importance of self and life-long learning and progress.

4-Programme Intended Learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

By the end of this program the graduate should be able to:

- a.1. Recognize theories, principles, and the recent data in the field of **Animal and Poultry Hygiene**
- a.2. Define principle of ethical and law and of professional practice in the field of Animal, poultry and Environmental Hygiene.
- a.3. Realize Applying the basics and ethics of veterinary practice concerning **Animal and Poultry Hygiene**.
- a.4. Identify the Principles and the basics of quality assurance in laboratory examination of pathogens and pollutants.
- a.5. Study the effect of pathogens and pollutants on the animal wealth and methods for enhancing animal hygiene.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1. Analyze information about epidemic diseases, outbreaks, contagious



diseases or problems of environmental pollution.

- b.2. Minimize epidemic diseases using suitable quarantine measure, disinfectants and other measures.
- b.3. Maximize scientific research studies that can give significant impact on the role of hygiene in prevention of diseases.
- b.4. Layout scientific papers in animal hygiene.
- b.5. Detect risks of environmental pollution by pathogens and toxicants.
- b.6. Maximize the performance of the diagnosis of farm animal problems.
- b.7. Minimize the disease in man by selecting the ideal method of treating hygienic problems under field condition.
- b.8. Characterize new methods for disinfection of animal enclosures.
- b.9. Manage open discussions in Animal and Environment Hygiene based on disease evidences and proofs

c. Practical and professional skills:

By the end of this program the graduate should be able to:

- c.1. Apply basic and modern professional skills in investigation of causes of infectious diseases including viral, bacterial, fungal and parasitic pathogens using advanced techniques
- c.2. Process professional reports involving the harmful effect of pathogens on different animals and man.
- c.3. Modify methods and tools in animal hygiene testing in addition to molecular methods of diagnosis.
- c.4. Use modern technological means to serve protection of animals and man against pathogens.
- c.5. Apply recent molecular techniques in animal hygiene and developing performance of others.

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1. Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology in the improvement of professional practice.
- d.2. Utilize information technology to serve professional practice.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements



- d.5. Lead team under different professional circumstances.
- d.6. Use of different sources for obtaining information and knowledge.
- d.7. Manage scientific meetings with the ability to manage time efficiently.

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, and seminars.

6-Assessments:

The program depends on different assessment ways:

- a. Course assessment:
 - 1. Final written exam
 - To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
 - 2. Practical exam
 - To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
 - 3. Oral exam
 - To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.
- b. Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work
- c. PhD Thesis assessment
 - Annual reports adopted by the Faculty.
 - Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
 - Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes



Tool or method	ILOs
Written	a1-2; b2,3
Oral	a1-2; b2,3
Practical	c1-3
Qualifying Exam	a1-5; b1-9
Thesis	a4-5; b1-9; c4-5; d1-7

7. Program structure

a. Program duration (years):

PhD degree duration at least 3 years and it should not exceed a period of 5 years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law (article 18).

b. Program courses:

Predocctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council should include at least 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. These courses must not be previously studied in the Mater program. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c-Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d-Scientific thesis

1. The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the



supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met.

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Animal and Poultry Hygiene include:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Animal and Poultry Hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-

2. Subsidiary courses:-



According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-	2	2



		genital system		
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2



	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2



	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2



	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
		81- Advanced immunology	2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1



Hygiene and control of milk and dairy products	208/2	108- Hygienic control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3



	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/ 2	134- Stress diseases during animals transport.		
Infectious diseases	235/ 2	135- Infectious diseases of cattle	2	2
	236/ 2	136- Infectious diseases of sheep and goat	2	2
	237/ 2	137- Infectious diseases camel	2	2
	238/ 2	138 Infectious diseases of equine	2	2
	239/ 2	139- Infectious diseases of pet animals	2	2
	240/ 2	140- Infectious diseases lab animals	1	2
	241/ 2	141- Infectious diseases of udder and newly born animals	2	2
	242/ 2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2



	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2



	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in polutry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production	2	2



		(advanced).		
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (Animal and Poultry Hygiene) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medical science lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.
3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.
5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.
7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.



8. The applicant should submit a seminar (Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).
9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met: Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.
10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and in case of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.
11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards it to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.
12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.
13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his

study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade	Percentage
-------	------------



Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
I	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

program Co-ordinator:

Prof. Dr. Prof. Dr. Fatema Aboelenein

Head of Department:

Prof. Dr. Tarek Balabel

Matching program ILOs with ARS - Matrix

Program ILOs	ARS																											
	K&U (a)					I.S. (b)									P.P. (c)					G.T. (d)								
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7		
K&U	1	2	3	4	5																							
I.S.						1	2	3	4	5	6	7	8	9														
P.P.															1	2	3	4	5									
G.T.																				1	2	3	4	5	6	7		

ARS for PhD in Veterinary Medical Sciences (Animal and Poultry Hygiene)

1) Graduate attributes

The graduate should have the ability for:

- 13) Mastering the basics and methodologies of scientific research in Animal and Environment Hygiene for better dealing with hygienic problems professionally.
- 14) Performing continuous effort to add knowledge about detection of causes and control of diseases.
- 15) Analysis and characterization of information in Animal and Environment Hygiene and fields related to Hygiene including Parasitology, Virology, Bacteriology and Zoonoses.
- 16) Integrating data collected from the field with related laboratory findings to reach the correct diagnosis cause of infective agent.
- 17) Showing deep awareness with the ongoing hygienic problems and modern theories in handling animals to control the disease.
- 18) Identifying the main causes of infection and suggesting the appropriate methods of animal and human protection.
- 19) Mastering of a wide range of professional skills in Animal Hygiene, laboratory investigation of trace evidences and modern techniques performed for diagnosis.
- 20) Acquiring trends towards developing modern methods and tools in disinfection procedures.
- 21) Using appropriate technological means including molecular biology, immunoaffinity chromatography to serve professional practice.
- 22) Communicating effectively with veterinarians, pathologists, students and colleagues and leading work team through professional scale.
- 23) Making decision in different professional situations especially under field conditions to deal with hygienic problems.
- 24) Using of the available resources efficiently in the development of new techniques and work to find new resources.
- 25) Being aware with his role in society development and community awareness of Animal Hygiene and pollution of the environment.
- 26) Acting with integrity, credibility and according to the rules of profession.
- 27) Realizing the importance of self and life-long learning and progress.

A) Knowledge and understanding

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Recent theories, principles and knowledge in recognizing the cause of infectious diseases in addition		Recent theories, principles and knowledge in the field of specialization and related

	to control of epidemic diseases.	areas
2)	Principles methodologies and ethics of scientific research and its tools including using laboratory animals and virulent pathogens in research	Basics, methodologies and ethics of scientific research and its different tools
3)	Legal and ethical principles of dealing with animals, owners and colleagues.	Legal and ethical principles of professional practice in the area of specialization
4)	Principles and the basics of quality assurance in laboratory examination of pathogens and pollutants.	Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Awareness with the effect of pathogens and pollutants on the animal wealth and methods for enhancing animal hygiene.	Awareness with the effect of professional practice on the environment and methods of its maintain and development

B) Intellectual skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analyzing and evaluating information about epidemic diseases, outbreaks, contagious diseases or problems of environmental pollution	Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Combating epidemic diseases using suitable quarantine measure, disinfectants and other measures	Solving professional problems using available data
3)	Performing scientific research studies that can give significant impact on the role of hygiene in prevention of diseases.	Conducting scientific research studies that add to knowledge
4)	Formulating scientific papers in animal hygiene.	Formulating scientific papers
5)	Risk-assessment of environmental pollution by pathogens and toxicants	Risk-assessment in the field of specialization
6)	Planning to enhance the performance in the laboratory diagnosis of farm animal problems.	Planning to enhance the performance in field of specialization
7)	Making professional decisions for selecting the ideal method of treating animals under field condition to minimize the disease in man.	Making professional decisions under different professional contexts
8)	Trying new methods for disinfection of animal enclosures.	Creation and innovative in the area of specialization
9)	Open discussions in Animal and Environment Hygiene based on disease evidences and proofs	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills in investigation of causes of infectious diseases including viral, bacterial, fungal and parasitic pathogens using advanced techniques		Mastering basic and modern professional skills in the area of specialization
2)	Writing and evaluating professional reports involving the harmful effect of pathogens on different animals and man.		Writing and evaluating professional reports
3)	Evaluating and modernizing methods and tools in animal hygiene testing in addition to molecular methods of diagnosis.		Evaluating and modernizing methods and tools in the area of specialization
4)	Using modern technological means to serve protection of animals and man against pathogens.		Using modern technological means to serve professional practice
5)	Planning for the improvement of veterinary medicine by applying recent molecular techniques in animal hygiene and developing performance of others.		Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Communicating effectively with physicians, other health professionals, and health related agencies.		Effective communication
2)	Using the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.		Utilizing information technology to serve development of professional practice
3)	Presenting information clearly in written, electronic and oral forms		Teaching others and evaluating their performance
4)	Establishment of life-long self-learning required for continuous professional development.		Self-assessment and continuous learning

5)	Using different resources to obtain knowledge and information	Using different resources to obtain knowledge and information
6)	Team working and leading a team in familiar professional contexts	Team working and leading a team in familiar professional contexts
7)	Management of time and open discussions in the professional field	Management of scientific meetings with the ability to manage time efficiently

ثالثاً: برامج الدكتوراه

١- مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادراً على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطاً و مطوراً للعلاقات البيئية بينها
٥. إظهار وعياً عميقاً بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حلولاً مبتكرة لها
٧. إتقان نطاقاً واسعاً من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تنميتها والعمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢- المعايير القياسية العامة

المعرفة و الفهم:

بإنتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً علي الفهم والدرابة بكل من:
أ- النظريات و الأساسيات والحديث من المعارف في مجال التخصص والمجالات ذات العلاقة

- ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
- ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
- ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
- ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و طرق تنمية البيئة وصيانتها

المهارات الذهنية

بإنتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً على:

- أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
- ب- حل المشاكل المتخصصة استناداً علي المعطيات المتاحة
- ج- إجراء دراسات بحثية تضيف إلى المعارف
- د- صياغة أوراق علمية
- هـ- تقييم المخاطر في الممارسات المهنية

- و- التخطيط لتطوير الأداء في مجال التخصص
- ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة
- ح- الابتكار/ الإبداع
- ط- الحوار والنقاش المبني علي البراهين والأدلة

المهارات المهنية

- بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
 - ب- كتابة و تقييم التقارير المهنية
 - ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
 - د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
 - هـ- التخطيط لتطوير الممارسة المهنية و تنمية أداء الآخرين

المهارات العامة و المنتقلة

- بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- التواصل الفعال بأنواعه المختلفة
 - ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية
 - ت- تعليم الآخرين و تقييم أداءهم
 - ث- التقييم الذاتي و التعلم المستمر
 - ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
 - ح- العمل في فريق و قيادة فرق العمل
 - خ- إدارة اللقاءات العلمية و القدرة علي إدارة الوقت

Course specification (2021/ 2022)

1 - Basic Information:

Code number: 276 (2)

Course title: "Farm animals' hygiene (advanced). (متقدم) صحة حيوانات المزرعة

Academic Year: *pre doctor of PhD. Programme*

Total teaching hours: .192. hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

To provide students with advanced knowledge, techniques, and skills concerning farm animal's hygiene to improve their health and productivity. Identification of the role of the environment around the animals (air, water and soil) in transmission of diseases and maintenance of infection.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1 State the principles of farm animals and environmental hygiene.
- A2 Recognise the role of the environment around the animals (air, water and soil) in transmission of diseases and maintenance of infection.
- A3 Select the appropriate methods for management of animal wastes and control of hostile environmental conditions
- A4 Record the role of hygiene in prevention of spread of disease in farm animals.
- A5 List appropriate hygienic tools in farm animals to help disease prevention and improve animal production.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1 Evaluate the principles and concepts of hygiene for solving health problems of farm animals.
- B2 Recommend scientific techniques to collect and analyze data about occurrence, distribution and possible risk factors of environment-related diseases.
- B3 Recommend strategies for prevention, control and eradication of infectious diseases.
- B4 labeling the appropriate method of management of animal wastes.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1 Solving the hygienic problems in farm animals
- C2 Organize and execute safely a series of experiments related to farm animals hygiene
- C3 Analyze different environmental samples (water, air, soil, bedding) from animal farms
- C4 Prepare a technical report in the field of study.
- C5 Organize a technical presentation and effectively use scientific literature.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1 Show how to work effectively as a member of a team in the delivery of services to community.
- D2 Support effective communication with the public, colleagues and appropriate authorities.
- D3 Apply communicating skills, have access to the internet and retrieve information
- D4 Write reports in a form that is satisfactory and understandable.
- D5 point out primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

TOPIC	No. of hours		
	Lectures	Practical	Total
1-Stress in Cattle, Buffalo, Sheep ,Goat and equine	12	-	12
2-Air and Water Pollution in Cattle, Buffalo, Sheep ,Goat and equine farms	24	48	72
3- Housing hygiene in Cattle, Buffalo, Sheep ,Goat and equine.	36	-	36
4- Waste Management	12	-	12
5- Combating of animal diseases	12	48	60
Total	96	96	192

5- TEACHING & LEARNING METHODS:

*Lectures

(using data show, white board, overhead projector, brain storming, online lectures)

*Practical and small group sessions:

1: Practical training.

(Practical demonstrations, practice of skills, and discussions)

* Site visits

Two visits (one each term) to the dairy farm in the first term and to the dairy plant in the second term for practical application

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

* Audiovisual

Video show.

***Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b4	c 1 to c 5	d1, d4
Self-Learning activities		b1 to b4	c 1 to c 5	d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b4	c 1 to c 5	d1 to d5

*Lectures may be offered face to face or via distance teaching and learning.

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

6. . METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are: -
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT: -

7.a Used methods	Written examination	Oral examination	Practical examination
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7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year
7.c grads	50	20	30

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b4		d4
Practical exams	-----	-----	- c 1 to c 5	-----
Oral exams	a1 to a5	b1 to b4		d1

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential books:

- Livestock Housing: Modern Management to Ensure Optimal Health and Welfare of farm animals (2013); Andres Aland, Thomas Banhazi, Wageningen Academic Publisher, Netherland.
- Veterinary Epidemiology (2013); [Michael Thrusfield](#) ; Butterworth-Heinemann

8-2: Recommended books:

- Animal Health. Sainsbury. D (2003)
- Herd Health. Food Animal Production Medicine. Radostits et al. (1994)
- Managing Livestock Wastes to Preserve Environment (2000): Miner, J.R. et al. Iowa, Iowa State University Press.
- Farm animals and the environment. Phillips and Piggins (1992)
- Livestock health and housing. Sainsbury. D (1988)
- Environmental Contaminants: Assessment and Control (2004):Vallero, D.A. Amsterdam, Elsevier
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8-3: Egyptian Knowledge Bank:

- How to measure biosecurity and the hygiene status of farms. (2019)
Author: Dewulf, J. • Postma, M. • Immerseel, F. van • Vanbeselaere, B. • Luyckx, K.

Scientific Journals

- *Agriculture*
- **Journal of food protection**
- **Journal of Occupational and Environmental Hygiene**

- **Animals**
- **Journal of Dairy Science,**

web sites

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- **WWW.PubMed.com**
- **<https://www.gov.uk/guidance/controlling-disease-in-farm-animals>**www.Vet.net.com****
- **<https://www.gov.uk/guidance/keeping-livestock-healthy-disease-controls-and-prevention>**
- **<http://www.journals.elsevier.com/international-journal-of-veterinary-science-and-medicine/>**
- **<http://www.springer.com/environment/journal/11356>**

Course Coordinator:
Dr. Fatma Ali Abouelenien
Dr. Nagham Elsaidy

Head of Department:
Professor Dr. Tarek Moussa Blabel

Course Matrix for achievement of Intended Learning Outcomes

Topic	Hours	Knowledge & Understanding					Intellectual Skills				Practical & Professional Skills					General & Transferable Skills				
		1	2	3	4	5	1	2	3	4	1	2	3	4	5	1	2	3	4	5
1. Stress in Cattle, Buffalo, Sheep ,Goat and equine	12	✓					✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓
2. Air and Water Pollution in Cattle, Buffalo, Sheep ,Goat and equine farms	72	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3. Housing giene in Cattle, ffalo, Sheep oat and equine.	36	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
4. Waste Management	12	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5. Combating of animal diseases	60				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓						

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 277(2)

Course title: " Poultry hygiene (advanced)) صحة دواجن متقدم

Academic Year: *pre doctor of PhD. Programme*

Total teaching hours: .192. hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

Advanced knowledge on appropriate hygienic measures in poultry farms and to identify hygienic problems of poultry farms and how to solve them according to hygienic principles. An advanced education in the field of poultry housing and hygienic measures to provide poultry with their maximum. requirements for efficient production under different field and environmental conditions. Highlight the importance of biosecurity of the farms and general principles for efficient ventilation of poultry building.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1. Recognize the relations between poultry hygiene and environmental hygiene
- A2. Locate the appropriate hygienic measures in poultry farms.
- A3. State the role of the environment around the poultry (air, water and soil) in transmission of diseases and maintenance of infection.
- A4. Stating appropriate management of poultry wastes and control of hostile environmental conditions.
- A5. Recite the role of biosecurity in disease prevention in poultry farms
- A6. Describe and illustrate different types of poultry housing.
- A7. Elucidate different ventilation systems used for different types of poultry building.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1. Judge the principles and concepts of hygiene in solving hygienic problems in poultry farms.

- B2. Ability to use modern techniques in collecting and analyzing data about occurrence, distribution and possible risk factors of poultry diseases.
- B3. Recommend measures to prevent, control and eradicate infectious diseases in poultry farms.
- B4. Summarize the appropriate method of management of poultry wastes.
- B5. Judge a general layout of commercial poultry farms.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C.1- Classifying and solving hygienic problems in poultry farms.
- C.2- prepare and execute safely a series of experiments related to poultry farms' hygiene.
- C.3- Ability to analyze different environmental samples (water, air, soil, bedding) from poultry farms.
- C.4- Solving the different housing disorder or environment stress in house poultry house.
- C.5- Preparing a technical report in the field of study.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1 Show how to work effectively as a member of a team in the delivery of services to community.
- D2 Support effective communication with the public, colleagues and appropriate authorities.
- D3 Apply communicating skills, have access to the internet and retrieve information
- D4 Write reports in a form that is satisfactory and understandable.
- D5 point out primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

TOPIC	No. of hours		
	Lectures	Practical	Total
1- Stress in poultry and Methods of stress hormones measurement	6	8	14
2- The environmental requirements for poultry:			
- Water hygiene.	16	32	48
- Air hygiene.			
3- Poultry housing	16	14	30
4- Ventilation	18	-	18

5- The disinfection and disinfectants of poultry houses	22	20	42
6-Insecticides	14	18	32
7- Biosecurity	4	4	8
Total	96	96	192

5- TEACHING & LEARNING METHODS:

*Lectures

(using data show, white board, overhead projector, brain storming and online lectures)

*Practical and small group sessions:

1: Practical training.

(Practical demonstrations, practice of skills, and discussions)

* Site visits

Two visits (one each term) to the dairy farm in the first term and to the dairy plant in the second term for practical application

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

* Audiovisual

Video show.

6. *Distance Teaching and Learning: Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a7	b1 to b5	c 1 to c 5	d1, d5
Self-Learning activities		b1 to b5	c 1 to c 5	d2, d3, d4
Distance Teaching and Learning	a1 to a7	b1 to b5	c 1 to c 5	d1 to d5

*Lectures may be offered face to face or via distance teaching and learning.

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT: -

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year
7.c grads	50	20	30

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b5		D5
Practical exams	-----	-----	- c 1 to c 5	-----
Oral exams	a1 to a7	b1 to b5		d1

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential books:

- **Livestock Housing: Modern Management to Ensure Optimal Health and Welfare of farm animals (2013); Andres Aland, Thomas Banhazi, Wageningen Academic Publisher, Netherland.**

- **Veterinary Epidemiology (2013); [Michael Thrusfield](#) ; Butterworth-Heinemann**

8-2: Recommended books:

- **Poultry Housing and Management 2019 DOI: [10.5772/intechopen.83811](https://doi.org/10.5772/intechopen.83811)**
- **Processing of Poultry G. C. Mead (1995)**
- **Managing Livestock Wastes to Preserve Environment (2000): Miner, J.R. et al. Iowa, Iowa State University Press.**
- **Farm animals and the environment. Phillips and Piggins (1992)**
- **Livestock health and housing. Sainsbury. D (1988)**
- **Environmental Contaminants: Assessment and Control (2004): Vallero, D.A. Amsterdam, Elsevier**

8-3: Egyptian Knowledge Bank:

- How to measure biosecurity and the hygiene status of farms. (2019)

Author: Dewulf, J. • Postma, M. • Immerseel, F. van • Vanbeselaere, B. • Luyckx, K.

Scientific Journals

- Poultry Science
- Preventive Veterinary Medicine
- *Agriculture*
- Journal of food protection
- Journal of Occupational and Environmental Hygiene
- Animals

web sites

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- WWW.PubMed.com
- <https://www.gov.uk/guidance/controlling-disease-in-farm-animals>www.Vet.net.com
- <https://www.gov.uk/guidance/keeping-livestock-healthy-disease-controls-and-prevention>
- <http://www.journals.elsevier.com/international-journal-of-veterinary-science-and-medicine/>
- <http://www.springer.com/environment/journal/11356>

Course Coordinator:

Dr. Fatma Ali Abouelenien

Dr. Nagham Elsaidy

Head of Department:

Professor Dr. Tarek Moussa Blabel

Course Matrix for achievement of Intended Learning Outcomes

Topic	Hours	Knowledge & Understanding							Intellectual Skills					Practical & Professional Skills					General & Transferable Skills					
		1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
1- Stress in poultry and Methods of stress hormones measurement	14			✓					✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓
2- The environmental requirements for poultry: Water hygiene. Air hygiene.	48	✓	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3-Poultry housing	30	✓				✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4- Ventilation	18						✓	✓	✓	✓	✓	✓	✓						✓	✓	✓	✓	✓	✓
5- The disinfection and disinfectants of poultry houses	42	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6-Insecticides	32	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7- Biosecurity	8	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 278 (2)

Course title: " Environmental Hygiene and Pollution الصحة البيئية والتلوث

Academic Year: *pre doctor of PhD. Programme*

Total teaching hours: .192. hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

Advanced knowledge on environmental hygiene with special reference to environment-related hygienic problems in animals and poultry farms. Air and water pollution as stress factors leading to health problems and economic losses in farm animals and poultry. Basic knowledge about environmental analysis.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Labeling the principles of environmental hygiene and pollution.

A2- Reciting the role of air pollution and water pollution in induction of health problems.

A3- Identifying the appropriate management of animal wastes and control of hostile environmental conditions.

A4- Stating the role of hygiene in prevention of environment-related diseases in farm animals and poultry

A5- Locating the role of environmental elements in transmission of diseases and maintenance of infection.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1. Summarize the principles and concepts of environmental hygiene in solving hygienic problems in animal farms.

- B2. Ability to analyze data about occurrence, distribution and possible risk factors of environment-related diseases.
- B3. Criticizing strategies for prevention, control and eradication of infectious diseases.
- B4. Recommend the appropriate method of management of animal wastes.
- B5. Judge different types of pollutants in air inside and outside the animal building.
- B6. Evaluating different types of pollutants in drinking water inside and outside the animal building
- B7. Summarizedifferent types of pollutants in drinking water inside and outside the animal building

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C.1. Showing the hygienic problems in animals and poultry farms.
- C2. Point out and execute safely a series of experiments related to environmental hygiene and pollution.
- C3. Ability to analyze different environmental samples (water, air, soil, bedding) from animal farms.
- C4. Prepare a technical report in the field of study.
- C5. Producing a technical presentation

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1 Show how to work effectively as a member of a team in the delivery of services to community.
- D2 Support effective communication with the public, colleagues and appropriate authorities.
- D3 Apply communicating skills, have access to the internet and retrieve information
- D4 Write reports in a form that is satisfactory and understandable.
- D5 point out primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

TOPIC	No. of hours		
	Lectures	Practical	Total
1- Water pollution	18	28	46
2- Air pollution	18	28	46
3- Stress	6	8	14

4- Epidemiology	18	26	44
5- Animal housing Hygiene	24	36	60
6- Waste and carcass disposal management.	12	18	30
Total	96	144	240

5- TEACHING & LEARNING METHODS:

*Lectures

(using data show, white board, overhead projector, brain storming and online lectures)

*Practical and small group sessions:

1: Practical training.

(Practical demonstrations, practice of skills, and discussions)

* Site visits

Two visits (one each term) to the dairy farm in the first term and to the dairy plant in the second term for practical application

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

* Audiovisual

Video show.

***Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b7	c 1 to c 5	d1, d5
Self-Learning activities		b1 to b7	c 1 to c 5	d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b7	c 1 to c 5	d1 to d5

*Lectures may be offered face to face or via distance teaching and learning.

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are;
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT: -

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year
7.c grads	50	20	30

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b7		D5
Practical exams	-----	-----	- c 1 to c 5	-----
Oral exams	a1 to a6	b1 to b7		D1

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential books:

- **Environmental Pollution and Health**, The Energy and Resources Institute, TERI (2014)
- **Environmental Hygiene** B. Thriene, K.-H. Weege and S. Schulz (1990)

8-2: Recommended books:

- **Environmental Contaminants: Assessment and Control (2004):** Vallero, D.A. Amsterdam, Elsevier
- **Poultry Housing and Management** 2019 DOI: [10.5772/intechopen.83811](https://doi.org/10.5772/intechopen.83811)
- **Processing of Poultry** G. C. Mead (1995)
- **Managing Livestock Wastes to Preserve Environment (2000):** Miner, J.R. et al. Iowa, Iowa State University Press.
- **Farm animals and the environment.** Phillips and Piggins (1992)
- **Livestock health and housing.** Sainsbury. D (1988)

8-3: Egyptian Knowledge Bank:

- **Pollutants, Human Health and the Environment: A Risk Based Approach 2012**

- **How to measure biosecurity and the hygiene status of farms. (2019)**

Author: Dewulf, J. • Postma, M. • Immerseel, F. van • Vanbeselaere, B. • Luyckx, K.

Scientific Journals

- *Environmental Pollution*
- **Journal of Air Pollution and Health**
- **Journal of Occupational and Environmental Hygiene**

web sites

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- WWW.PubMed.com
- <https://www.gov.uk/guidance/controlling-disease-in-farm-animals>www.Vet.net.com
- <https://www.gov.uk/guidance/keeping-livestock-healthy-disease-controls-and-prevention>
- <http://www.journals.elsevier.com/international-journal-of-veterinary-science-and-medicine/>
- <http://www.springer.com/environment/journal/11356>

Course Coordinator:

Dr. Fatma Ali Abouelenien

Dr. Nagham Elsaidy

Head of Department:

Professor Dr. Tarek Moussa Blabel

Course Matrix for achievement of Intended Learning Outcomes

Topic	Hours	Knowledge & Understanding					Intellectual Skills							Practical & Professional Skills					General & Transferable Skills				
		1	2	3	4	5	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	5
1- Water pollution	46	✓	✓			✓	✓	✓	✓	✓	✓					✓		✓	✓	✓	✓	✓	✓
2- Air pollution.	46	✓	✓			✓	✓	✓	✓	✓			✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
3- Stress	14			✓	✓		✓	✓	✓	✓			✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
4- Epidemiology	44	✓									✓	✓						✓	✓	✓	✓	✓	✓
5- Animal housing Hygiene	60			✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
6- Waste and carcass disposal management.	30	✓				✓	✓	✓	✓	✓			✓	✓	✓	✓		✓	✓	✓	✓	✓	✓

Course specification (2021/ 2022)

1 - Basic Information:

Code number: 279 (2)

Course title: **Combating of infectious diseases** مكافحة الأمراض الوبائية

Academic Year: *pre doctor of PhD. Programme*

Total teaching hours: .192. hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

Provide detailed and advanced knowledge on appropriate hygienic measures for prevention and control of infectious diseases. Application of modern methods for eradication of disease causing agents from the surrounding environment of animals using suitable hygienic measures.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Recognizing the principles of infectious diseases combating.
- A2- Describe appropriate hygienic measures for combating of infectious diseases.
- A3- Identifying the role of the environment around the animals (air, water and soil) in transmission of diseases and maintenance of infection.
- A4- Reciting how and why outbreaks of infectious animal diseases occur and spread and how they can be prevented and controlled.
- A5- labeling the role of hygiene in disease prevention in farm animals

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Recommend principles and concepts of hygiene in controlling infectious diseases problems in farm animals.
- B2- Evaluate different techniques used in collecting and analyzing data about occurrence, distribution and possible risk factors of infectious diseases.
- B3- Evaluating the strategy for prevention, control and eradication of infectious diseases.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Solving hygienic problems in animal farms.
- C2- Prepare and execute safely a series of experiments related to environmental hygiene and pollution.
- C3- Analyze different environmental samples (water, air, soil, bedding) from animal farms.
- C4- Prepare a technical report in the field of study.
- C5- Producing a technical presentation.
- C6- choose and point out scientific literature.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1 Show how to work effectively as a member of a team in the delivery of services to community.
- D2 Support effective communication with the public, colleagues and appropriate authorities.
- D3 Apply communicating skills, have access to the internet and retrieve information
- D4 Write reports in a form that is satisfactory and understandable.
- D5 point out primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

TOPIC	No. of hours		
	Lectures	Practical	Total
1- Introduction	4	-	4
2- Sources of infection	12	-	12
3- Spread of infectious diseases	12	12	24
Methods of spread of infectious diseases			
4- Control of infectious diseases	18	10	28
5- Eradication of skin parasites Eradication of mange	16	16	32
6- Snail control	6	6	12
7- Collection and analysis of environmental samples			
(Air, water and soil)	4	12	16
8- Disinfection Test of disinfectants	12	20	32
9- Disinfestations Test of insecticides	12	20	32

Total	96	96	192
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5- TEACHING & LEARNING METHODS:

*Lectures

(using data show, white board, overhead projector, brain storming and online learning)

*Practical and small group sessions:

1: Practical training.

(Practical demonstrations, practice of skills, and discussions)

* Site visits

Two visits (one each term) to the dairy farm in the first term and to the dairy plant in the second term for practical application

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

* Audiovisual

Video show.

***Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b3	c 1 to c 6	d1, d5
Self-Learning activities		b1 to b3	c 1 to c 6	d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b3	c 1 to c 6	d1 to d5

*Lectures may be offered face to face or via distance teaching and learning.

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are: -
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT: -

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year
7.c grads	50	20	30

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b3		D5
Practical exams	-----	-----	- c 1 to c 6	-----
Oral exams	a1 to a5	b1 to b3		D1

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential books:

- **Infectious Disease Management in Animal Shelters Wiley-Blackwell; 2nd edition (2021)**
- **Environmental Pollution and Health, The Energy and Resources Institute, TERI (2014)**
- **Environmental Hygiene B. Thriene, K.-H. Weege and S. Schulz (1990)**

8-2: Recommended books:

- **Environmental Contaminants: Assessment and Control (2004): Vallero, D.A. Amsterdam, Elsevier**
- **Poultry Housing and Management 2019 DOI: [10.5772/intechopen.83811](https://doi.org/10.5772/intechopen.83811)**
- **Processing of Poultry G. C. Mead (1995)**
- **Managing Livestock Wastes to Preserve Environment (2000): Miner, J.R. et al. Iowa, Iowa State University Press.**
- **Farm animals and the environment. Phillips and Piggins (1992)**
- **Livestock health and housing. Sainsbury. D (1988)**

8-3: Egyptian Knowledge Bank:

- **Pollutants, Human Health and the Environment: A Risk Based Approach 2012**
- **How to measure biosecurity and the hygiene status of farms. (2019)**
Author: Dewulf, J. • Postma, M. • Immerseel, F. van • Vanbeselaere, B. • Luyckx, K.

Scientific Journals

- **Animal Diseases**
- **Veterinary Infectious Diseases**
- ***Environmental Pollution***
- **Journal of Air Pollution and Health**
- **Journal of Occupational and Environmental Hygiene**

web sites

-
- WWW.PubMed.com
- <https://www.gov.uk/guidance/controlling-disease-in-farm-animals>www.Vet.net.com
- <https://www.gov.uk/guidance/keeping-livestock-healthy-disease-controls-and-prevention>
- <http://www.journals.elsevier.com/international-journal-of-veterinary-science-and-medicine/>
- <http://www.springer.com/environment/journal/11356>

Course Coordinator:
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Course Matrix for achievement of Intended Learning Outcomes

Topic	Hours	Knowledge & Understanding					Intellectual Skills			Practical & Professional Skills						General & Transferable Skills				
		1	2	3	4	5	1	2	3	1	2	3	4	5	6	1	2	3	4	5
1- Introduction	4	✓					✓	✓	✓							✓	✓	✓	✓	✓
2- Sources of infection	12	✓	✓				✓	✓	✓							✓	✓	✓	✓	✓
3- Spread of infectious diseases Methods of spread of infectious diseases	24			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
4- Control of infectious diseases	28	✓					✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓
5- Eradication of skin parasites Eradication of mange	32						✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
6- Snail control	12	✓					✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
7- Collection and analysis of environmental samples (Air, water and soil)	16						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
8- Disinfection Test of disinfectants	32						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
9- Disinfestations Test of insecticides	32						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 280 (2)

Course title: **Combating of rodents and disease transmitters.** مكافحة القوارض وناقلات الامراض

Academic Year: pre-doctor (PhD).

Total teaching hours: .192. hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

To provide students with basic knowledge on damage that can be caused by rodents, as well as rodents as source of diseases for human and animals. Provide knowledge on behaviour and breeding of rodents. Additionally identify signs of presence of rodents in animal facility and identify appropriate hygienic measures for control of rodents.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A.1- Memorize the advanced knowledge on damage that can be caused by rodents.
- A2- Locate the more advanced principles of rodents combating.
- A3- Describe appropriate hygienic measures for rodent combating.
- A.4- Identify appropriate management of animal facilities for control of rodents.
- A.5- Recognize rodents and their control measures.
- A6- Identify the most suitable rodenticide.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Weigh the hygienic problems associated with spread of rodents in animals and poultry farms.
- B2- Evaluate the possible risk factors for presence of rodents in animals and poultry farms.
- B3- Consider principles and concepts of hygiene in solving hygienic problems associated with spread of rodents.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Analyze and collect data about the occurrence and distribution of rodents in animals and poultry farms. C2- Solve hygienic problems associated with rodents occurrence in animal and poultry farms.
- C3- Apply plans and execute safely a series of experiments related to farm animals' hygiene and rodent combating.
- C4- Prepare a professional technical reports in the field of study.
- C5- Give a professional technical presentation.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1- Coach and work in group.
- D2- Classify different duties.
- D3- Utilize computer and internet skills
- D4- .work under pressure and or / contradictory conditions.
- D5- communicate verbally and non verbally with lectures and class-mates.
- D6- conduct research papers and project.

4 - COURSE CONTENTS:

4: Semester topics:-

TOPIC	No. of hours		
	Lectures	Practical	Total
1- Introduction	6	2	8
2- Why Control Rodents?	10	2	12
3- Understanding Rodents	10	2	12
4- Does Your Farm Have a Problem	12	-	12
5- Rodent Control (The Principles)	12	12	24
6- Rodent Proofing Farm Buildings	6	6	12
7- Control of Existing Population	6	6	12
8- Rodenticides (Toxic Baits)	6	6	12
9- Methods of rodent s control	6	10	16
10- Mode of action of rodenticides	4	20	24
11- Method of protection of the farms	4	20	24
12- Choosing appropriate rodenticide	14	10	24
Total	96	96	192

5- TEACHING & LEARNING METHODS:

*Lectures

(using data show, white board, overhead projector, brain storming and online lectures)

*Practical and small group sessions:

1: Practical training.

(Practical demonstrations, practice of skills, and discussions)

* Self learning

- Computer researches and faculty library visits to prepare essays and presentations.
- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

* Audiovisual

Video show.

6. *Distance Teaching and Learning: Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a6	b1 to b3	c 1 to c 5	d1, d5
Self-Learning activities		b1 to b3	c 1 to c 5	d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b3	c 1 to c 5	d1 to d6

*Lectures may be offered face to face or via distance teaching and learning.

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are: -
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT: -

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year
<u>7.c grads</u>	50	20	30

6.1. Methods	7. Student Assessment
	Intended Learning Outcomes Covered

	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b3		D6
Practical exams	-----	-----	- c 1 to c 5	-----
Oral exams	a1 to a6	b1 to b3		D1

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential books:

- **Infectious Diseases of Mice and Rats. National Research Council (US) Committee on Infectious Diseases of Mice and Rats. Washington (DC): National Academies Press (US); 1991**
- **Infectious Disease Management in Animal Shelters Wiley-Blackwell; 2nd edition (2021)**
- **Environmental Pollution and Health, The Energy and Resources Institute, TERI (2014)**
- **Environmental Hygiene B. Thriene, K.-H. Weege and S. Schulz (1990)**

8-2: Recommended books:

- **Environmental Contaminants: Assessment and Control (2004): Vallero, D.A. Amsterdam, Elsevier**
- **Poultry Housing and Management 2019 DOI: [10.5772/intechopen.83811](https://doi.org/10.5772/intechopen.83811)**
- **Processing of Poultry G. C. Mead (1995)**
- **Managing Livestock Wastes to Preserve Environment (2000): Miner, J.R. et al. Iowa, Iowa State University Press.**
- **Farm animals and the environment. Phillips and Piggins (1992)**
- **Livestock health and housing. Sainsbury. D (1988)**

8-3: Egyptian Knowledge Bank:

- **Pollutants, Human Health and the Environment: A Risk Based Approach 2012**
- **How to measure biosecurity and the hygiene status of farms. (2019)**
Author: Dewulf, J. • Postma, M. • Immerseel, F. van • Vanbeselaere, B. • Luyckx, K.

Scientific Journals

- **Animal Diseases**
- **Veterinary Infectious Diseases**
- ***Environmental Pollution***
- **Journal of Air Pollution and Health**
- **Journal of Occupational and Environmental Hygiene**

web sites

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- WWW.PubMed.com
- <https://www.gov.uk/guidance/controlling-disease-in-farm-animals>www.Vet.net.com
- <https://www.gov.uk/guidance/keeping-livestock-healthy-disease-controls-and-prevention>
- <http://www.journals.elsevier.com/international-journal-of-veterinary-science-and-medicine/>
- <http://www.springer.com/environment/journal/11356>

Course Coordinator:
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Head of Department:
Professor Dr. Tarek Moussa Blabel

Course Matrix for achievement of Intended Learning Outcomes

Topic	Hours	Knowledge & Understanding						Intellectual Skills			Practical & Professional Skills					General & Transferable Skills					
		1	2	3	4	5	6	1	2	3	1	2	3	4	5	1	2	3	4	5	6
1- Introduction	8	✓	✓					✓			✓					✓	✓	✓	✓	✓	✓
2- Why Control Rodents?	12		✓					✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3- Understanding Rodents	12	✓						✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4- Does Your Farm Have a Problem	12							✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5- Rodent Control (The Principles)	24		✓	✓	✓			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6- Rodent Proofing Farm Buildings	12				✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7- Control of Existing Population	12	✓	✓	✓	✓				✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
8- Rodenticides (Toxic Baits)	12						✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓
9- Methods of rodents control	16		✓			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
10- Mode of action of rodenticides	24						✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
11- Method of protection of the farms	24		✓	✓	✓					✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
12- Choosing appropriate rodenticide	24						✓			✓	✓	✓			✓	✓	✓	✓	✓	✓	✓

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 281 (2)

Course title: Insecticides and public health (advanced) المبيدات الحشرية والصحة العامة

Academic Year: pre-doctor (PhD).

Total teaching hours: 192. hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

To provide students with advanced knowledge and skills concerning interaction between insecticides & environment, and modern techniques in evaluation of insecticides . Control of skin parasites and prevention of environmental pollution by insecticides.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Identify different kinds of insecticides.
- A2- Describe the impact of skin parasite on animal and public health.
- A3- Explain the more advanced methods for control of skin parasites
- A4- Locate the importance of prevention of environmental pollution.
- A5- Recognize the role of insecticides in control of skin parasites.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

After successful completion of the course, the students should be able to:

- B1- Recommend a modern strategies to control skin parasites .
- B2- Evaluate most suitable conditions for application of insecticides.
- B.3- Consider the prevention of environmental pollution by insecticides.
- B4- Compare between different types of insecticides.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C.1- Show the proper use of insecticides.
- C2- Report the public health hazards of uncontrolled use of insecticides.
- C3- Choose the suitable insecticides.
- C4- Analyze the efficiency of insecticides by modern techniques.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1- Show how to work effectively as a member of a team in the delivery of services to community.
- D2 - Support effective communication with the public, colleagues and appropriate authorities.
- D3 -Apply communicating skills, have access to the internet and retrieve information
- D4 -Write professional reports in a form that is satisfactory and understandable.
- D5 -Point out primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

4: Semester topics: -

TOPIC	No. of hours		
	Lectures	Practical	Total
1- Classification of insecticides	16	8	24
2- Eradication of skin parasites	20	10	30
3- Public health importance	30	12	42
4- Mode of action of insecticide	14	10	24
5- Application of insecticides	10	20	30
6- Test the efficiency of insecticides	6	36	42
Total	96	96	192

5- TEACHING & LEARNING METHODS:

***Lectures**

(using data show, white board, overhead projector, brain storming and online learning)

***Practical and small group sessions:**

1: Practical training.

(Practical demonstrations, practice of skills, and discussions)

*** Self learning**

- Computer researches and faculty library visits to prepare essays and presentations.
- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters

- Preparation of scientific reports.

*** Audiovisual**

Video show.

6. *Distance Teaching and Learning: Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a5	b1 to b4	c 1 to c 4	d1, d5
Self-Learning activities		b1 to b4	c 1 to c 4	d2, d3, d4
Distance Teaching and Learning	a1 to a5	b1 to b4	c 1 to c 4	d1 to d5

*Lectures may be offered face to face or via distance teaching and learning.

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT: -

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year
<u>7.c grads</u>	50	20	30

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a5	b1 to b4		D5
Practical exams	-----	-----	- c 1 to c 4	-----
Oral exams	a1 to a5	b1 to b4		D1

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential books:

- **Infectious Diseases of Mice and Rats. National Research Council (US) Committee on Infectious Diseases of Mice and Rats. Washington (DC): National Academies Press (US); 1991**
- **Infectious Disease Management in Animal Shelters Wiley-Blackwell; 2nd edition (2021)**
- **Environmental Pollution and Health, The Energy and Resources Institute, TERI (2014)**
- **Environmental Hygiene B. Thriene, K.-H. Weege and S. Schulz (1990)**

8-2: Recommended books:

- **Environmental Contaminants: Assessment and Control (2004): Vallero, D.A. Amsterdam, Elsevier**
- **Poultry Housing and Management 2019 DOI: [10.5772/intechopen.83811](https://doi.org/10.5772/intechopen.83811)**
- **Processing of Poultry G. C. Mead (1995)**
- **Managing Livestock Wastes to Preserve Environment (2000): Miner, J.R. et al. Iowa, Iowa State University Press.**
- **Farm animals and the environment. Phillips and Piggins (1992)**
- **Livestock health and housing. Sainsbury. D (1988)**

8-3: Egyptian Knowledge Bank:

- **Pollutants, Human Health and the Environment: A Risk Based Approach 2012**
- **How to measure biosecurity and the hygiene status of farms. (2019)**
Author: Dewulf, J. • Postma, M. • Immerseel, F. van • Vanbeselaere, B. • Luyckx, K.

Scientific Journals

- **Animal Diseases**
- **Veterinary Infectious Diseases**
- ***Environmental Pollution***
- **Journal of Air Pollution and Health**
- **Journal of Occupational and Environmental Hygiene**

web sites

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- **WWW.PubMed.com**
- **<https://www.gov.uk/guidance/controlling-disease-in-farm-animals>www.Vet.net.com**
- **<https://www.gov.uk/guidance/keeping-livestock-healthy-disease-controls-and-prevention>**
- **<http://www.journals.elsevier.com/international-journal-of-veterinary-science-and-medicine/>**
- **<http://www.springer.com/environment/journal/11356>**

Course Coordinator:
Dr. Fatma Ali Abouelenien
Dr. Nagham Elsaidy

Head of Department:
Professor Dr. Tarek Moussa Blabel

Course Matrix for achievement of Intended Learning Outcomes

Topic	Hours	Knowledge & Understanding					Intellectual Skills				Practical & Professional Skills				General & Transferable Skills					
		1	2	3	4	5	1	2	3	4	1	2	3	4	1	2	3	4	5	
1- Classification of insecticides	24	✓								✓		✓			✓	✓			✓	
2- Eradication of skin parasites	30		✓	✓		✓	✓	✓			✓		✓						✓	✓
3- Public health importance	42		✓		✓				✓		✓			✓	✓	✓	✓	✓	✓	✓
4- Mode of action of insecticide	24	✓								✓	✓		✓		✓	✓	✓	✓	✓	✓
5- Application of insecticides	30			✓			✓	✓			✓		✓		✓	✓			✓	✓
6- Test the efficiency of insecticides	42	✓	✓					✓						✓	✓	✓			✓	✓

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 282 (2)

Course title: Animal housing hygiene (advanced)) صحة المساكن الحيوانية

Academic Year: pre-doctor (PhD).

Total teaching hours: 192. hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

To provide students with advanced knowledge and skills concerning design of different livestock houses (indoors and outdoors) and animal establishments and their hygienic significance. Identification of hygienic problems of Livestock houses and how to solve them according to hygienic principles. Gaining detailed knowledge of appropriate ventilation system to reduce energy costs. Monitoring temperature, humidity, and CO₂ concentration in livestock houses.

Understanding the effect of climate and micro-climate on the animal performance. As well as, identify hygienic problems (Diseases related to housing) of farm animals and how to solve them according to hygienic principles.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A.1- Identify the importance of ideal housing design to the animal health and performance.

A.2- Recognize the role of bad housing in favoring disease occurrence.

A.3- Memorize the modern housing systems established of different animals kept for different purposes.

A4- Locate the role of livestock building in environmental pollution.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1- Consider the proper housing of animals with different stocking densities.

B2- Weigh the advanced preventive measures for different air pollutants.

B3- Recommend the corrective measures for minimizing climatic stress.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Distinguish different housing systems used for different purposes and at different stocking densities.
- C2- Examine air for pollution with different hazardous gases by modern techniques.
- C3- Use methods for isolation and identification of different microbes in air.
- C4- Investigate physical, chemical and microbiological examination of air.
- C5- Analyze physical, chemical and bacteriological properties of water to judge its fitness for use for animals and animal products.
- C6- Apply advanced risk analysis studies for diseases originated from bad house.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1 Show how to work effectively as a member of a team in the delivery of services to community.
- D2 Support effective communication with the public, colleagues and appropriate authorities.
- D3 Apply communicating skills, have access to the internet and retrieve information
- D4 Write professional reports in a form that is satisfactory and understandable.
- D5 point out primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

4:semester topics:-

TOPIC	No. of hours		
	Lectures	Practical	Total
1- General housing	6	6	12
2- Horse stables	10	10	20
3- Cattle -house systems (milk house system, calf housing, beef housing and bull pen)	24	24	48
4- Sheep shelters	4	4	8
5- Goat house	4	4	8
6- Poultry house systems	24	24	48
7- Rabbit house	2	2	4
8- Dog house	2	2	4
9- Animal establishment houses (slaughter house, hatchery, feed factories)	20	20	40
Total	96	96	192

5- TEACHING & LEARNING METHODS:

*Lectures

(using data show, white board, overhead projector, brain storming and online lectures)

*Practical and small group sessions:

1: Practical training.

(Practical demonstrations, practice of skills, and discussions)

* Self learning

- Computer researches and faculty library visits to prepare essays and presentations.
- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

* Audiovisual

Video show.

6. *Distance Teaching and Learning: Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b3	c 1 to c 6	d1, d5
Self-Learning activities		b1 to b3	c 1 to c 6	d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b3	c 1 to c 6	d1 to d5

*Lectures may be offered face to face or via distance teaching and learning.

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are: -
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT: -

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year

7.c grads	50	20	30
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6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b3		D5
Practical exams	-----	-----	- c 1 to c 6	-----
Oral exams	a1 to a4	b1 to b3		D1

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential books:

- **Infectious Diseases of Mice and Rats. National Research Council (US) Committee on Infectious Diseases of Mice and Rats. Washington (DC): National Academies Press (US); 1991**
- **Infectious Disease Management in Animal Shelters Wiley-Blackwell; 2nd edition (2021)**
- **Environmental Pollution and Health, The Energy and Resources Institute, TERI (2014)**
- **Environmental Hygiene B. Thriene, K.-H. Weege and S. Schulz (1990)**

8-2: Recommended books:

- **Environmental Contaminants: Assessment and Control (2004): Vallero, D.A. Amsterdam, Elsevier**
- **Poultry Housing and Management 2019 DOI: [10.5772/intechopen.83811](https://doi.org/10.5772/intechopen.83811)**
- **Processing of Poultry G. C. Mead (1995)**
- **Managing Livestock Wastes to Preserve Environment (2000): Miner, J.R. et al. Iowa, Iowa State University Press.**
- **Farm animals and the environment. Phillips and Piggins (1992)**
- **Livestock health and housing. Sainsbury. D (1988)**

8-3: Egyptian Knowledge Bank:

- **Pollutants, Human Health and the Environment: A Risk Based Approach 2012**
- **How to measure biosecurity and the hygiene status of farms. (2019)**
Author: Dewulf, J. • Postma, M. • Immerseel, F. van • Vanbeselaere, B. • Luyckx, K.

Scientific Journals

- **Animal Diseases**
- **Veterinary Infectious Diseases**
- ***Environmental Pollution***
- **Journal of Air Pollution and Health**
- **Journal of Occupational and Environmental Hygiene**

web sites

-
- WWW.PubMed.com
- <https://www.gov.uk/guidance/controlling-disease-in-farm-animals>www.Vet.net.com
- <https://www.gov.uk/guidance/keeping-livestock-healthy-disease-controls-and-prevention>
- <http://www.journals.elsevier.com/international-journal-of-veterinary-science-and-medicine/>
- <http://www.springer.com/environment/journal/11356>

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Course Matrix for achievement of Intended Learning Outcomes

Topic	Hours	Knowledge & Understanding				Intellectual Skills			Practical & Professional Skills						General & Transferable Skills			
		1	2	3	4	1	2	3	1	2	3	4	5	6	1	2	3	4
1- General housing	12	✓				✓			✓									✓
2- Horse stables	20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3- Cattle -house systems (milk house system, calf housing, beef housing and bull pen)	48	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4- Sheep shelters	8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5- Goat house	8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6- Poultry house systems	48	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7- Rabbit house	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
8- Dog house	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
9- Animal establishment houses (slaughter house, hatchery, feed factories)	40	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Course specification (2021 / 2022)

1 - Basic Information:

Code number: 283 (2)

Course title: Disinfectant and disinfection التطهير والمطهرات

Academic Year: pre-doctor (PhD).

Total teaching hours: .192. hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

- OVERALL AIMS OF THE COURSE:

To provide students with advanced knowledge and skills concerning evaluation of disinfectants against bacteria, viruses, fungi and some parasites. Testing the efficiency of disinfection processes in the environment .Gaining detailed knowledge about interaction between disinfectants and environment

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Locate newly disinfectants that established in veterinary field.

A2 - Describe the importance of sanitation and disinfection.

A3- Identify advanced tests used for measuring the efficiency of disinfectants (laboratory and in use tests) .

A4- Estimate the procedures of disinfection processes.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1 Summarize the proper sanitation and disinfection process for animal houses.

B.2- Recommend the suitable disinfectants for use.

B3- Consider the role of livestock building in environmental pollution.

B4- Judge the efficiency of applied disinfectants by modern technique.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

c.1-Apply disinfectants efficiency tests in laboratory (suspension, carrier and surface tests).

c.2- Apply disinfectants efficiency tests in use tests.

c.3- Analyze air ,water and surface microbial pollution.

c.4- Investigate methods for isolation and identification of different microbes in air, water and surfaces.

c.5- Apply suitable disinfectants for different environmental samples.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1 Show how to work effectively as a member of a team in the delivery of services to community.
- D2 Support effective communication with the public, colleagues and appropriate authorities.
- D3 Apply communicating skills, have access to the internet and retrieve information
- D4 Write professional reports in a form that is satisfactory and understandable.
- D5 point out primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

4: Semester topics:-

TOPIC	No. of hours		
	Lectures	Practical	Total
1- Classification of disinfectants	12	12	24
2- Evaluation of disinfectants in laboratory (suspension, carrier and surface tests)	20	20	40
3- Evaluation of disinfectants in use test (Field test)	16	16	32
4- Air disinfection	16	16	32
5- Water disinfection	20	20	40
6- Interaction between disinfectants	12	12	24
Total	96	96	192

5- TEACHING & LEARNING METHODS:

***Lectures**

(using data show, white board, overhead projector, brain storming and online lectures)

***Practical and small group sessions:**

(Practical demonstrations, practice of skills, and discussions)

*** Self learning**

- Computer researches and faculty library visits to prepare essays and presentations.
- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

*** Audiovisual**

Video show.

6. *Distance Teaching and Learning: Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b4	c 1 to c 5	d1, d5
Self-Learning activities		b1 to b4	c 1 to c 5	d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b4	c 1 to c 5	d1 to d5

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT: -

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year
<u>7.c grads</u>	50	20	30

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b4		D5
Practical exams	-----	-----	- c 1 to c 5	-----
Oral exams	a1 to a4	b1 to b4		D1

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential books:

- Disinfectants and Disinfection Robert Angus Smith **TheClassics.us (September 12, 2013) 2013**
- **Infectious Disease Management in Animal Shelters Wiley-Blackwell; 2nd edition (2021)**
- **Environmental Pollution and Health, The Energy and Resources Institute, TERI (2014)**
- **Environmental Hygiene B. Thriene, K.-H. Weege and S. Schulz (1990)**



8-2: Recommended books:

- Environmental Contaminants: Assessment and Control (2004): Vallero, D.A. Amsterdam, Elsevier
- Poultry Housing and Management 2019 DOI: [10.5772/intechopen.83811](https://doi.org/10.5772/intechopen.83811)
- Processing of Poultry G. C. Mead (1995)
- Managing Livestock Wastes to Preserve Environment (2000): Miner, J.R. et al. Iowa, Iowa State University Press.
- Farm animals and the environment. Phillips and Piggins (1992)
- Livestock health and housing. Sainsbury. D (1988)

8-3: Egyptian Knowledge Bank:

- Pollutants, Human Health and the Environment: A Risk Based Approach 2012
 - How to measure biosecurity and the hygiene status of farms. (2019)
- Author: Dewulf, J. • Postma, M. • Immerseel, F. van • Vanbeselaere, B. • Luyckx, K.

Scientific Journals

- Antimicrobial Resistance & Infection Control
- American Journal of Infection Control
- Animal Diseases
- Veterinary Infectious Diseases
- Environmental Pollution
- Journal of Air Pollution and Health
- Journal of Occupational and Environmental Hygiene

web sites

- WWW.PubMed.com
- <https://www.gov.uk/guidance/controlling-disease-in-farm-animals> www.Vet.net.com
- <https://www.gov.uk/guidance/keeping-livestock-healthy-disease-controls-and-prevention>
- <http://www.journals.elsevier.com/international-journal-of-veterinary-science-and-medicine/>
- <http://www.springer.com/environment/journal/11356>

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Course Matrix for achievement of Intended Learning Outcomes

Topic	Hours	Knowledge & Understanding					Intellectual Skills				Practical & Professional Skills					General & Transferable Skills					
		1	2	3	4	5	1	2	3	4	1	2	3	4	5	1	2	3	4	5	
1- Classification of disinfectants	24	✓						✓												✓	✓
2- Evaluation of disinfectants in laboratory (suspension, carrier and surface tests)	40			✓						✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3- Evaluation of disinfectants in use test (Field test)	32			✓						✓		✓	✓	✓	✓			✓	✓	✓	✓
4- Air disinfection	32	✓	✓		✓		✓	✓	✓			✓	✓	✓	✓			✓	✓	✓	✓
5- Water disinfection	40	✓	✓		✓		✓	✓	✓			✓	✓	✓	✓			✓	✓	✓	✓
6- Interaction between disinfectants	24	✓					✓	✓		✓		✓	✓	✓	✓			✓	✓	✓	✓

Course specification (2021/ 2022)

1 - Basic Information:

Code number: 284(2)

Course title: Epidemiology. الوبائيات

Academic Year: pre-doctor (PhD).

Total teaching hours: .192. hrs

Lectures: 96 hrs (48 weeks- 2hrs/week)

Practical: 96 hrs (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

To provide students with advanced knowledge and skills concerning principles of veterinary epidemiology, disease occurrence in population, and key features and applications of descriptive and analytic epidemiology.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1 Memorize the principles of veterinary epidemiology.
- A2- Describe the common measures of diseases frequency and association.
- A3- Recognize the major features, strengths and weakness of common study designs.
- A4- Locate the modern techniques of screening and diagnostic testing
- A5- Define the modern techniques of sampling and surveillance
- A6- Estimate the relationship between the host, the agent and the environment.
- A7- Recognize the role of epidemiology in disease prevention in animals and poultry farms.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1 -Consider the more advanced epidemiological skills in field setting.
- B2- Assess principles and concepts of epidemiology for solving disease, production, and welfare problems in poultry and farm animals
- B3- Collect and analyze data professionally about occurrence, distribution and possible risk factors of diseases
- B4- Recommend complete strategy for prevention, control and eradication of infectious diseases.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Apply epidemiological principles to disease control within animal and human populations.
- C2- Sketch design and implement epidemiological studies and surveillance system.
- C3- Build an epidemiologic data in a professional organized and informative manner.
- C4- Analyze and interpret data from epidemiological studies.
- C5- Prepare a professional technical report in the field of epidemiology.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1 Show how to work effectively as a member of a team in the delivery of services to community.
- D2 Support effective communication with the public, colleagues and appropriate authorities.
- D3 Apply communicating skills, have access to the internet and retrieve information
- D4 Write professional reports in a form that is satisfactory and understandable.
- D5 point out primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

4:Semester topics:-

TOPIC	No. of hours		
	Lectures	Practical	Total
1- Overview of epidemiology	4	0	4
2- Measures of disease frequency	12	12	24
3- Measures of association and effects	12	12	24
4- Epidemiologic study designs	20	20	40
5- Screening and Diagnostic tests	16	12	28
6- Sampling	8	8	16
7- Monitoring and surveillance	20	20	40
8- Outbreak investigation	8	8	16
Total	96	96	192

TOPIC	Total hours (Semester)	Hours for lecture	Hours for practical
Overview of epidemiology	4	4	0
Measures of disease frequency	24	12	12
Measures of association and effects	24	12	12
Epidemiologic study designs	40	20	20
Screening and Diagnostic tests	28	16	12
Sampling	16	8	8
Monitoring and surveillance	40	20	20
Outbreak investigation	16	8	8
Total	192	96	96

5- TEACHING & LEARNING METHODS:

*Lectures

(using data show, white board, overhead projector, brain storming and online lectures)

*Practical and small group sessions:

1: Practical training.

(Practical demonstrations, practice of skills, and discussions)

* Self learning

- Computer researches and faculty library visits to prepare essays and presentations.
- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

* Audiovisual

Video show.

6 Distance Teaching and Learning: Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a7	b1 to b4	c 1 to c 5	d1, d5
Self-Learning activities		b1 to b4	c 1 to c 5	d2, d3, d4
Distance Teaching and Learning	a1 to a7	b1 to b4	c 1 to c 5	d1 to d5

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year
<u>7.c grads</u>	50	20	30

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b4		D5
Practical exams	-----	-----	- c 1 to c 5	-----
Oral exams	a1 to a7	b1 to b4		D1

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential books:

- Veterinary epidemiologic research. Dohoo et al. (2009).
- Veterinary epidemiology - principles and methods. Martin et al. (1987).
- Herd Health. Food Animal Production Medicine. Radostits et al. (1994).
- Application of quantitative methods in veterinary epidemiology. Noordhuizen et al. (1997)
- Infectious Disease Management in Animal Shelters Wiley-Blackwell; 2nd edition (2021)
- Environmental Pollution and Health, The Energy and Resources Institute, TERI (2014)
- Environmental Hygiene B. Thriene, K.-H. Weege and S. Schulz (1990)

8-2: Recommended books:

- Veterinary epidemiology - principles and methods. Martin et al. (1987).
- Herd Health. Food Animal Production Medicine. Radostits et al. (1994).

- Environmental Contaminants: Assessment and Control (2004): Vallero, D.A. Amsterdam, Elsevier
- Poultry Housing and Management 2019 DOI: [10.5772/intechopen.83811](https://doi.org/10.5772/intechopen.83811)
- Processing of Poultry G. C. Mead (1995)
- Managing Livestock Wastes to Preserve Environment (2000): Miner, J.R. et al. Iowa, Iowa State University Press.
- Farm animals and the environment. Phillips and Piggins (1992)
- Livestock health and housing. Sainsbury. D (1988)

8-3: Egyptian Knowledge Bank:

- Pollutants, Human Health and the Environment: A Risk Based Approach 2012
- How to measure biosecurity and the hygiene status of farms. (2019)
Author: Dewulf, J. • Postma, M. • Immerseel, F. van • Vanbeselaere, B. • Luyckx, K.

Scientific Journals

- Journal of Epidemiology and Community Health
- Antimicrobial Resistance & Infection Control
- American Journal of Infection Control
- Animal Diseases
- Veterinary Infectious Diseases
- Journal of Occupational and Environmental Hygiene

web sites

- [WWW.PubMed.com](http://www.PubMed.com)
- <https://www.gov.uk/guidance/controlling-disease-in-farm-animals>www.Vet.net.com
- <https://www.gov.uk/guidance/keeping-livestock-healthy-disease-controls-and-prevention>
- <http://www.journals.elsevier.com/international-journal-of-veterinary-science-and-medicine/>
- <http://www.springer.com/environment/journal/11356>

Course Coordinator:
Dr. Fatma Ali Abouelenien
Dr. Nagham Elsaidy

Head of Department:
Professor Dr. Tarek Moussa Blabel

Course Matrix for achievement of Intended Learning Outcomes

Topic	Hours	Knowledge & Understanding							Intellectual Skills				Practical & Professional Skills					General & Transferable Skills				
		1	2	3	4	5	6	7	1	2	3	4	1	2	3	4	5	1	2	3	4	5
1- Overview of epidemiology	4	✓							✓				✓					✓				
2- Measures of disease frequency	24		✓						✓	✓	✓		✓	✓				✓	✓	✓	✓	✓
3- Measures of association and effects	24			✓					✓	✓	✓		✓	✓	✓			✓	✓	✓	✓	✓
4- Epidemiologic study designs	40			✓	✓				✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5- Screening and Diagnostic tests	28				✓	✓			✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6- Sampling	16								✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7- Monitoring and surveillance	40				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
8- Outbreak investigation	16				✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

كلية الطب البيطري

وحدة ضمان الجودة

Program Spc. For Ph.D in Hygienic control of milk and dairy products



Kafrelshheikh University
Faculty of Veterinary Medicine
Department of Food control

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy
(Hygienic control of milk and dairy
products)



Kafr El-Sheikh University

Faculty of Veterinary Medicine

Department of Food Control

Program Specification for PhD Degree

(2021-2022)

A- Administrative information:

- 1- Awarding Body:** Kafr El-Sheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Food Control
- 4- Program Title:** PhD Degree in Veterinary Science (Hygienic control of milk and dairy products)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years
- 7- Program Coordinator:** Prof. Dr. Ibrahim aman
- 8- External evaluator:** Prof. Dr. Kamal kamal metwally

B- Professional information:

1- Aim of the Program:

- Allow graduate to create new knowledge and understanding in Milk and dairy products hygiene and control through the process of research and inquiry.
- Enable graduate to achieve competency in modern technology in Hygiene and control of milk and dairy products
- Provide the graduate with the opportunity to develop communication skills, recent techniques and tools in the field of in Milk and dairy products hygiene and control and experience of scientific research skills.



- Giving the graduate the ability to be creative to advance in Milk and dairy products hygiene and control through new scientific research.
- Enable graduate to achieve capability in modern technology to develop practical research project.
- Demonstrate an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and present their own research data for the improvement of the in Milk and dairy products hygiene and control.
- Have the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibit awareness about current in Milk and dairy products hygiene and control problems and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of in Milk and dairy products hygiene and control.

2- Academic standards:

Academic reference standards (ARS) adopted by the faculty committee No (1) 14/9/2014

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Mastering the basics and methodologies of scientific research in Milk and dairy products hygiene and control for better dealing with hygienic problems professionally.
- 2) Performing continuous effort to add knowledge about improvement of in



- Milk and dairy products hygiene and control.
- 3) Analysis and craterization of information in in Milk and dairy products hygiene and control and related fields.
 - 4) Integrating data collected from the Milk plants with related experimental findings to reach the correct system for improvement of in Milk and dairy products hygiene and control.
 - 5) Showing deep awareness with the ongoing in Milk and dairy products hygiene and control problems and modern theories in solving hygienic problems.
 - 6) Identifying the main causes of hygienic problems and suggesting the appropriate solutions.
 - 7) Mastering of a wide range of professional skills in experimental design, data collection, analysis, and interpretation of data.
 - 8) Acquiring trends towards developing modern methods and tools in in Milk and dairy products hygiene and control.
 - 9) Using appropriate technological means to serve professional practice.
 - 10) Communicating effectively with dairymen, students and colleagues and leading work team through professional scale.
 - 11) Making decision in different professional situations especially under field conditions to deal with hygiene of milk and milk products,
 - 12) Using of the available resources efficiently in the development of new techniques and work to find new resources.
 - 13) Being aware with his role in society development and community preservation.
 - 14) Acting with integrity, credibility and according to the rules of profession.
 - 15) Realizing the importance of self and life-long learning and progress.

4-Programme Intended Learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

- a.1. Recognize basics, theories and recent concepts in milk, dairy product and egg bacteriology and chemistry
- a.2. Realize the principles and ethics of scientific research methods in the field of Milk Hygiene and Control.



- a.3. Be aware with the legal and professional ethics in examination of milk, dairy products, egg, fat and oils and dealing with problems in Milk plants.
- a.4. Identify principles and basics of quality assurance in production of milk and dairy products by application of HACCP
- a.5. Describe the effect of dairy products, fat and oil wastes on environment and methods of environmental protection.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1. Evaluate scientific information regarding microbiological and chemical examination of milk dairy products and egg.
- b.2. Solve problems in dairy industry through application of HACCP system.
- b.3. Design a scientific research in the field of dairy microbiology and hygiene.
- b.4. Publish scientific article in the field of Milk Hygiene and Control.
- b.5. Assess risk arising from absence of hygienic measures in milk and dairy products.
- b.6. Plan for improvement of professional performance in detection bacterial defects and adulteration of milk, dairy products, fat and oils.
- b.7. Make professional decisions for the ideal methods for controlling hazards in dairy industry.
- b.8. Select new methodology in microbiological and chemical analysis of milk, dairy products, fat and oils.
- b.9. Lead open discussion based on scientific facts in the field of Milk Hygiene and Control.

c. Practical and professional skills:

By the end of this program the graduate should be able to:

- c.1. Apply recent professional skills in examination and processing of milk and dairy products.
- c.2. Write and judge professional reports about analysis of milk, dairy products, fat and oils.



- c.3. Master modern techniques for isolation and identification of different bacterial species in milk, dairy products, fat and oils.
- c.4. Use different modern techniques and laboratory instruments to serve the professional practice.
- c.5. Improve professional practice and develop performance of all hazard analysis and critical (HACCP) team members.

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1. Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology.
- d.2. Utilize information technology to serve professional practice.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements
- d.5. Lead team under different professional circumstances.
- d.6. Use of different sources for obtaining information and knowledge.
- d.7. Manage scientific meetings with the ability to manage time efficiently.

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, field visits and seminars.

6-Assessments:

The program depends on different assessment ways:

- a. Course assessment:
 - 1. Final written exam
 - To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
 - 2. Practical exam
 - To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.



3. Oral exam

- To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.

b. Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work

c. PhD Thesis assessment

- Annual reports adopted by the Faculty.
- Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
- Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1-2; b2,3,7;
Oral	a1-2; b2,3,7
Practical	b1,2,3,7; c1-5
Qualifying Exam	a1-5; b1-9
Thesis	a3-5; b1-9; c1-5; d1-7

7. Program structure

a. Program duration (years):

PhD degree duration at least 3 years and it should not exceed a period of 5 years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law (article 18).

b. Program courses



:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council should include at least 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. These courses must not be previously studied in the Mater program. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c-Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d-Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met.

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Hygienic control of milk and dairy products include:



Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Hygiene and control of milk and dairy products	208/2	108- Hygiene and control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2

.2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2



	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment,	2	2



		adaptation and cell		
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of	2	2



		poultry		
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition				
	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Pathology				
	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2



	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology				
	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology				
	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology				
	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology				
	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
		81- Advanced immunology	2	2
Parasitology				
	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2



	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2



Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/2	134- Stress diseases during animals transport.		
Infectious diseases	235/2	135- Infectious diseases of cattle	2	2
	236/2	136- Infectious diseases of sheep and goat	2	2
	237/2	137- Infectious diseases camel	2	2
	238/2	138 Infectious diseases of equine	2	2
	239/2	139- Infectious diseases of pet animals	2	2
	240/2	140- Infectious diseases lab animals	1	2
	241/2	141- Infectious diseases of udder and newly born animals	2	2
	242/2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2



	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2



Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in poultry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic	2	2



		diseases)		
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and	306/2	206- economics of animals and dairy	2	-



farms management		production		
	307/2	207- economics of poultry farms	2	-
	308/2	208- economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (Hygienic control of milk and dairy products) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medical science lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.
3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.



4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.
5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.
7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.
8. The applicant should submit a seminar (Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).
9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met: Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.
10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and incase of thesis



approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.

11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards bit to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.

12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:



- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade		Percentage
Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes



Code	Evaluator	Tools	Sample
I	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

Program Co-ordinator:

Prof. Dr. Prof. Dr. Ibrahim Aman

Head of Department:

Prof. Dr. Nader Yehia Mostafa

Matching program ILOs with ARS - Matrix

Program ILOs	ARS																											
	K&U (a)					I.S. (b)									P.P. (c)					G.T. (d)								
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7		
K&U	1	2	3	4	5																							
I.S.						1	2	3	4	5	6	7	8	9														
P.P.															1	2	3	4	5									
G.T.																				1	2	3	4	5	6	7		

ARS for PhD in Veterinary Medical Sciences (Hygiene and control of milk and dairy products)

1) Graduate attributes

The graduate should have the ability for:

- 1) Master the basics and methodologies of scientific research in the field of assessment of milk and dairy products quality, and control their quality problems.
- 2) Making continuous effort to add knowledge in microbiology and chemistry of milk, dairy products, edible fat and oil and egg, and their quality problems and defects.
- 3) Application the analytic and criticized methods for examination of milk and dairy products, eggs and oils and assessment of their quality.
- 4) Integrate specialized knowledge about milk and dairy product quality standards with related findings of their examination and interpret these findings with known quality standards.
- 5) Show deep awareness with the ongoing quality problems or manufacturing defects of milk and dairy products and modern theories in controlling them.
- 6) Identify the quality problems involved with milk, dairy products, edible fat and oil and egg and suggest appropriate control strategies for them.
- 7) Master of a wide range of professional skills in examination and analysis of milk, dairy products, edible fat and oil and eggs.
- 8) Acquire trends towards developing modern methods and tools serving dairy hygiene and quality control, and to control the quality problems using quality assurance systems like HACCP and ISO.
- 9) Use appropriate technological means for microbiological and chemical examination of milk, dairy products, edible fat and oil and eggs as infrared spectrophotometry, milk scan and PCR techniques
- 10) Communicate effectively and lead work team of milk and dairy products quality and control specialists and dairy plants owners and milk producers.
- 11) Make decision under different professional situations upon findings of milk inspection and analysis and according to Egyptian and international quality standards especially under field conditions.
- 12) Use of the available resources efficiently in the development of new techniques

and work to find new resources.

- 13) Be aware with his role in society development and community preservation by conserving public health and providing high quality healthy milk and dairy products.
- 14) Act with integrity, credibility and according to the rules of profession.
- 15) Realize the importance of self and life-long learning and progress with transferring of his knowledge and experience to others.

A) Knowledge and understanding

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Basics, theories and recent concepts in microbiology and chemistry of milk and dairy products in addition to methods of preservation and dairy technology and quality control programs.	Recent theories, principles and knowledge in the field of specialization and related areas
2)	The ethics and basics and methodologies of scientific research in in the field of assessment of milk and dairy products quality, and control their quality problems and their different tools as dairy plant inspection and laboratory examination.	Basics, methodologies and ethics of scientific research and its different tools
3)	The legal and professional ethics in examination of milk and dairy products and dealing with problems in dairy farms or dairy plants.	Legal and ethical principles of professional practice in the area of specialization
4)	The principles and basics of quality assurance in sampling, examination, quality control of milk and dairy products	Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Awareness with the effect of milk hygiene and control on the environment by providing safe clean milk and dairy products which reflects on environmental maintenance and development also keep environment clean by hygienic disposal of wastes of dairy lab.	Awareness with the effect of professional practice on the environment and methods of its maintain and development

B) Intellectual skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analyze and interpret scientific data concerning microbiological and chemical examination of milk and dairy products.	Analyzing and evaluating information in the field of specialization and the eliciting from them

2)	Solve professional problems on dairy industry through application of HACCP system and other quality insuring programs.	Solving professional problems using available data
3)	Plan a scientific research that can give significant impact on the field of dairy microbiology and hygiene.	Conducting scientific research studies that add to knowledge
4)	Write scientific article in the field of milk hygiene and control.	Formulating scientific papers
5)	Assess risks facing dairy quality control and finding the way to overcome them.	Risk-assessment in the field of specialization
6)	Plan for improvement of professional performance in detection bacterial defects and adulteration of milk and dairy products.	Planning to enhance the performance in field of specialization
7)	Using appropriate intellectual strategy to deal with laboratory results of different milk quality items complying them with quality standards to make a proper decision.	Making professional decisions under different professional contexts
8)	Creation of new techniques in microbiological and chemical analysis of milk and dairy and assessment and improving their quality.	Creation and innovative in the area of specialization
9)	Dialogue and discussion based on scientific facts in the field milk, dairy products, edible fat and oil and egg quality assessment and dealing with their quality problems.	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills in examination and processing of milk and dairy products.	Mastering basic and modern professional skills in the area of specialization
2)	Constructing a conclusive professional reliable reports help in judgment on milk quality and evaluates and interprets any reports in a proper manner to achieve dairy quality control.	Writing and evaluating professional reports
3)	Applying modern techniques for isolation and identification of different bacterial species in milk and dairy products and analysis of food using spectroscopy based and molecular techniques.	Evaluating and modernizing methods and tools in the area of specialization
4)	Use different modern techniques such as PCR and Elisa and laboratory investigations to serve the professional practice.	Using modern technological means to serve professional practice
5)	Plan for the improvement of professional practice and developing performance of all hazard analysis and critical (HACCP) team members.	Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Communicate effectively in different ways with workers, owners and all members of dairy factories.	Effective communication
2)	Utilize information technology to serve development of microbiology and technology of milk and dairy products.	Utilizing information technology to serve development of professional practice
3)	Teaching others and evaluating their performance	Teaching others and evaluating their performance
4)	Self-assessment and continuous learning	Self-assessment and continuous learning
5)	Using different resources to obtain knowledge and information	Using different resources to obtain knowledge and information
6)	Work in team and able to lead the team.	Team working and leading a team in familiar professional contexts
7)	Management of scientific meetings with the ability to manage time efficiently	Management of scientific meetings with the ability to manage time efficiently

ثالثاً: برامج الدكتوراه

١- مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادراً على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستتباً و مطوراً للعلاقات البيئية بينها
٥. إظهار وعيا عميقاً بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حلولاً مبتكرة لحلها
٧. إتقان نطاقاً واسعاً من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تنميتها والعمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢- المعايير القياسية العامة

المعرفة و الفهم:

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادراً علي الفهم و الدراية بكل من:

أ- النظريات و الأساسيات و الحديث من المعارف في مجال التخصص و المجالات ذات العلاقة

ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة

ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص

ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و وطرق تنمية البيئة وصيانتها
المهارات الذهنية

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

- أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
- ب- حل المشاكل المتخصصة استنادا على المعطيات المتاحة
- ج- إجراء دراسات بحثية تضيف إلى المعارف
- د- صياغة أوراق علمية
- هـ- تقييم المخاطر في الممارسات المهنية
- و- التخطيط لتطوير الأداء في مجال التخصص
- ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة
- ح- الابتكار/ الإبداع
- ط- الحوار و النقاش المبني على البراهين والأدلة

المهارات المهنية

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

- أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
- ب- كتابة و تقييم التقارير المهنية
- ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
- د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
- هـ- التخطيط لتطوير الممارسة المهنية و تنمية أداء الآخرين

المهارات العامة و المنتقلة

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

- أ- التواصل الفعال بأنواعه المختلفة
- ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية
- ت- تعليم الآخرين و تقييم أداءهم
- ث- التقييم الذاتي و التعلم المستمر
- ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
- ح- العمل في فريق و قيادة فرق العمل
- خ- إدارة اللقاءات العلمية و القدرة على إدارة الوقت

Course specification (2021 / 2022)

1 - Basic Information:

Code number...208/2

Course title: **Hygienic control of milk and dairy products (Advanced)**

Academic Year: PhD, year 2016-2017

Total teaching hours: 192 hrs. hrs

Lectures:96 hrs

Practical:96 hrs

2 - OVERALL AIMS OF THE COURSE:

To provide postgraduates with recent and advanced knowledge and skills concerning hygienic production of milk and dairy products and to gain students with the skills which enable them to use the advanced and rapid methods for analyzing milk, dairy products, in addition to learn students how to write a report about the suitability of each product for human consumption.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of studying the course, the graduate should be able to:

- A.1 Outline the international organizations dealing with food, and laws and ethical codes relevant to milk.
- A.2 State the knowledge about milk hygiene and biosynthesis of milk.
- A.3 Relate the knowledge about milk composition, factors affecting milk composition and yield, nutritive values of milk and advanced methods for analysis of milk nutrients.
- A.4 Recite and define hygienic handling of raw milk (application of HACCP system from dairy animal until reach to dairy plant).
- A.5 Discuss basis for clean milk production and methods of cleaning, sanitization and sterilization in dairy farms.
- A.6 Write on the knowledge about sanitary and keeping quality of milk.
- A.7 Estimate and define milk spoilage (fermentation) and abnormal milk.
- A.8 Outline machine milking and, its role in transmitting microorganisms causing mastitis.
- A.9 Explain advanced methods for detection of subclinical mastitis
- A.10 Infer the knowledge about milk-borne pathogens (Epidemic, Zoonotic diseases and isolation of causative agents), spoilage organisms and advanced methods used for detection of causative organisms.
- A. 11 Identify the hygienic measures during production of dairy products and advanced methods used for detection of products quality.

3-B: INTELLECTUAL SKILLS:

By the end of studying the course, the graduate should be able to:

- B.1 Assess the important problem from case interaction.
- B.2 Formulate appropriate quantitative and qualitative advanced methodologies.
- B.3 Originate the HACCP system at the dairy plants and revise the methods to confirm its correct application
- B.4 Prioritize the use the advanced methods for analyze milk samples and dairy products.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of studying the course, the graduate should be able to:

- C.1 Apply ideal methods to collect and transfere the samples.
- C.2 Sketch the method to minimize the risks of contamination and cross infection.

C.3 Examine milk and dairy products samples (physically, chemically, microbiologically and for residues).

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D.1 Draw the way by which he should be able to work effectively as a member of a team in the delivery of services to community.
- D.2 Prioritize effective communication with the public, colleagues and appropriate authorities.
- D.3 Apply the skills to be able to have access to the internet and retrieve information.
- D.4 Write reports in a form that is satisfactory and understandable.
- D.5 Apply primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

4.A:- Topics :-

TOPIC	Total hours	Hours for lecture	Hours for practical
The international organizations dealing with food, and laws and ethical codes relevant to milk.	10	10	-
Introduction of milk hygiene and biosynthesis of milk.	10	10	-
Milk composition, factors affecting milk composition and yield , nutritive values of milk	20	8	12
Hygienic handling of raw milk (application of HACCP system from dairy animal until reach to dairy plant).	22	8	14
Basis for clean milk production and methods of cleaning, sanitization and sterilization in dairy farms.	12	6	6
Sanitary and keeping quality of milk.	20	8	12
Milk spoilage (fermentation) and abnormal milk.	10	4	6
Machine milking and, its role in transmitting microorganisms causing mastitis.	10	4	6
Advanced methods for detection of subclinical mastitis	22	8	14
Milk-borne pathogens (Epidemic, Zoonotic diseases and isolation of causative agents) and spoilage organisms. Advanced methods used for detection of causative organisms.	16	12	4
Hygienic measures during production of dairy products. Advanced methods used for detection of products quality.	40	18	22
Total	192	96	96

5- TEACHING & LEARNING METHODS:

***Lectures**

(Using white board, data show and brain storming)

***Practical and small group sessions:**

1: Practical training
(Practical demonstrations, practice of skills, and discussions)

*** Site visits**

Two visits one to the dairy farm and one to the dairy plant for practical application

***self learning**

(Computer researches and faculty library visits to prepare essays and presentations)

Library researches.

Internet researches.

Discussion in the researches.

Visits to dairy plants.

*** Audiovisual**

Video show in practical laboratory

Television circle in practical laboratory

6. METHODS FOR STUDENTS With limited capabilities:-

- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	After 48th week	After 48th week	After 48th week
7.c grads	50	25	25

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Text book available in faculty library
- Microscopes, slides and computer presentations used during teaching.

8-2: References books:

- 1- 8-2.a-Pesticides residues in food evaluations, FAO(1990).
- 2- 8-2.b-Alan H. Varnam, Jane P. Sutherland, Milk and milk products, Chapman & Hall
- 3- 8-2.c-A.P.H.A. Standard Method For Examination of Dairy products.
- 4- 8-2.d-A.H.Varnam, Food borne pathogens, Wolfe publishing Ltd.
- 5- 8-2.e-AAOAC, Official Methods of Analysis of AOAC international.
- 8-2.f-U.S. Food and Drug Admin, Dept. of Health and Human Services. Code of Federal Regulations, Part 1, Title 21, Sections 131, 133, and 135. April 2006 Revision.
<http://www.gpoaccess.gov/cfr/index.html>,
- 8-2.g-Law, B. A. ed. Microbiology and Biochemistry of Cheese and Fermented Milks. 1997. 2nd Ed. Blackie Academic and Professional, London.
- 8-2.h-Hall, C. W., and G. M. Trout. Milk Pasteurization. AVI Publ. Co., Inc., Wesport, CT.
- 6- 8-2.i-Adnan Y. Tamime (2009) Milk Processing and Quality Management . Blackwell Publishing Ltd. ISBN: 978-1-405-14530-5

8-3: Suggested materials:

- Apparatus
- Chemicals, glasses reagents and media
- Kits
- Data show

8.4: web sites and jouranlsand so on

- WWW.PubMed.com
- International of veterinary information services (IVIS)

- www.Vet.net.com
- Journal of dairy sciences
- Journal of food protection
- Journal of veterinary microbiology
- Veterinary medical journal

Course content ILOs Matrex:

TOPIC	K.U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
The international organizations dealing with food, and laws and ethical codes relevant to milk.	A1			
Introduction of milk hygiene and biosynthesis of milk.	A2	B1		
Milk composition, factors affecting milk composition and yield , nutritive values of milk	A1-A2-A3	B1-B2- B4-	C1-C2- C3	D1-D2-D3- D4- D5
Hygienic handling of raw milk (application of HACCP system from dairy animal until reach to dairy plant).	A1-A3-A4	B1-B2- B3-	C1-C2- C3	D1-D2-D3- D4- D5
Basis for clean milk production and methods of cleaning, sanitization and sterilization in dairy farms.	A1-A2-A3- A4-A5	B1-B2- B3 B4-	C1-C2- C3-	D1-D2- D4- D5
Sanitary and keeping quality of milk.	A4-A5-A6-	B1-B2- B4	C1-C2- C3	D1-D2- D4- D5
Milk spoilage (fermentation) and abnormal milk.	A6-A7	B1-B2- B4	C1-C2- C3	D1-D2-D4- D5
Machine milking and, its role in transmitting microorganisms causing mastitis.	A5-A8-	B1-B2- B4	C1-C2- C3	D1-D2-D3- D4- D5
Advanced methods for detection of subclinical mastitis	- A9	B1-B2- B4	C1-C2- C3	D1-D2-D3- D4- D5
Milk-borne pathogens (Epidemic, Zoonotic diseases and isolation of causative agents) and spoilage organisms. Advanced methods used for detection of causative organisms.	A4-A5-A10	B1-B2- B3	C1-C2- C3	D1-D2-D3- D4- D5
Hygienic measures during production of dairy products. Advanced methods used for detection of products quality.	A1-A3-A4- A5-A6-A7 A11	B1-B2- B3- B4	C1-C2- C3	D1-D2 D3- D4- D5
Total				

Assessment ILOs Matrix:

TOOLS	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectual	Practical	General	
Written examination	A1-A11	B3. B4		D4	50
Oral examination	A1-A11	B3 ,B4		D2	25
Practical examination		B1. B2	C1.C2.C3	D1.D2.D4.D5	25

Course Coordinator:

Prof. Dr. Ibrahim Mohamed aman

Head of Department:

Prof. Dr. Nader Yehia Mostafa

Course specification

(2021 / 2022)

1 - Basic Information:

Code number...209/2

Course title: **Dairy microbiology**

Academic Year: PhD degree, year 2016-2017

Total teaching hours: 192 hrs. hrs

Lectures:96hrs

Practical:96 hrs

2 - OVERALL AIMS OF THE COURSE:

The aim of the course is to provide the students with advanced and most recent knowledge about microbiology of milk and dairy products, to provide the students with the skills which able them to analyze milk and dairy products samples microbiologically. Thus student is capable to write a report about microbial quality and the suitability of each sample for human consumption, and be able to highlight the important microbial dairy problems and deal with them efficiently.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of studying the course, the graduate should be able to:

- A.1 Discuss sources of milk and dairy products contamination and discuss how to prevent
- A.2 Paraphrase the factors affecting microbial growth and recognize ideal dealing with milk their products.
- A.3 Recognize the microbiology of raw milk..
- A.3 Recite knowledge about microbiology of raw milk.
- A.4 Relate the knowledge about microbiology of market milk.
- A.5 State the knowledge about microbiology of cream.
- A.6 Write on microbiology of butter.
- A.7 Repeat the knowledge about microbiology of milk powder.
- A.8 Explaine microbiology of concentrated milk.
- A.9 Compare microbiology of different types of cheese.
- A.10 Infer the knowledge about microbiology of fermented milks.
- A.11 Outline and discuss milk-borne pathogens and spoilage organisms.
- A.12 Estimate the knowledge about indicator organisms and their significance..
- A.13 Identify microbial defects in milk and dairy products.

3-B: INTELLECTUAL SKILLS:

By the end of studying the course, the graduate should be able to:

- B.1 Assess the important problem from case interaction.
- B.2 Design appropriate quantitative and qualitative advanced methodologies.
- B.3 Originate the HACCP system at the dairy plants and revise the methods to confirm its correct application

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of studying the course, the graduate should be able to:

- C.1 Apply ideal methods to collect and transfere the samples.

C.2 Sketch the method to minimize the risks of contamination and cross infection.

C.3 Examine milk and dairy products samples microbiologically and apply the sensitivity test to the isolated organisms.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D.1 Draw the way by which he should be able to work effectively as a member of a team in the delivery of services to community.

D.2 Prioritize effective communication with the public, colleagues and appropriate authorities.

D.3 Apply the skills to be able to have access to the internet and retrieve information.

D.4 Write reports in a form that is satisfactory and understandable.

D.5 Apply primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

OPIC	Total hours	Hours for lecture	Hours for practical
Sources of milk and dairy products contamination	16	8	8
Factors affecting microbial growth	16	8	8
Microbiology of raw milk	20	10	10
Microbiology of market milk	20	10	10
Microbiology of cream	12	6	6
Microbiology of butter	12	6	6
Microbiology of milk powder	12	6	6
Microbiology of concentrated milk	12	6	6
Microbiology of cheese	12	6	6
Microbiology of fermented milks	12	6	6
Milk-borne pathogens and spoilage organisms	16	8	8
Indicator organisms	16	8	8
Microbial defects in milk and dairy products	16	8	8
Total	192	96	96

5- TEACHING & LEARNING METHODS:

***Lectures**

(Using white board, data show and brain storming)

***Practical and small group sessions:**

1: Practical training (Practical demonstrations, practice of skills, and discussions)

*** Site visits**

Two visits one to the dairy farm and one to the dairy plant for practical application

***self learning**

Computer researches and faculty library visits to prepare essays and presentations

Library researches.

Internet researches.

Discussion in the researches.

Visits to dairy plants.

*** Audiovisual**

Video show in practical laboratory

Television circle in practical laboratory

6. METHODS FOR STUDENTS WITH LIMITED CAPABILITIES:-

- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	After 48 th week	After 48 th week	After 48 th week
7.c grads	50	25	25

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Text book available in faculty library

8-2: References books:

- 8-2.a-Pesticides residues in food evaluations, FAO.
- 8-2.b-Alan H. Varnam, Jane P. Sutherland, Milk and milk products, Chapman & Hall
- 8-2.c-A.P.H.A. Standard Method For Examination of Dairy products.
- 8-2.d-A.H.Varnam, Food borne pathogens, Wolfe publishing Ltd.
- 8-2.e-AAOAC, Official Methods of Analysis of AOAC international.
- 8-2.f-U.S. Food and Drug Admin, Dept. of Health and Human Services. Code of Federal Regulations, Part 1, Title 21, Sections 131, 133, and 135. April 2006 Revision. <http://www.gpoaccess.gov/cfr/index.html>,
- 8-2.g-Law, B. A. ed. Microbiology and Biochemistry of Cheese and Fermented Milks. 1997. 2nd Ed. Blackie Academic and Professional, London.
- 8-2.h-Hall, C. W., and G. M. Trout. Milk Pasteurization. AVI Publ. Co., Inc., Westport, CT.
- 8-2.i-Adnan Y. Tamime (2009) Milk Processing and Quality Management . Blackwell Publishing Ltd. ISBN: 978-1-405-14530-5

8-3: Suggested materials:

- Apparatus
- Chemicals, glasses reagents and media
- Kits
- Data show

8.4: web sites and jouranlsand so on

- WWW.PubMed.com
- International of veterinary information services (IVIS)
- www.Vet.net.com
- Journal of dairy sciences
- Journal of food protection
- Journal of veterinary microbiology
- Veterinary medical journal

Course content ILOs Matrex:

TOPIC	K.U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Sources of milk and dairy products contamination	A1	B1- B3	C2	D2--D3-D4
Factors affecting microbial growth	A2	B1-B2- B3	C2	D2-D3- D5

Microbiology of raw milk	A1-A2-A3-	B1-B2-B3-	C1-C2-C3	D2-D3-D4-D5
Microbiology of market milk	A1-A2-A3-A4	B1-B2-B3	C1-C2-C3	D2-D3-D4-D5
Microbiology of cream	A1-A2- A3-A5	B1-B2-B3	C1-C2-C3	D1-D2-D3-D4- D5
Microbiology of butter	A1—A2-A3-A5--A6	B1-B2-B3	C1-C2-C3	D1-D2-D3-D4- D5
Microbiology of milk powder	A1-A2-A3-A7	B2-B3	C1	D1-D2-D3-D4- D5
Microbiology of concentrated milk	A1-A2-A3- A8	B1-B2-B3	C1-C2-C3	D1-D2-D3-D4- D5
Microbiology of cheese	A1-A2-A3-A9	B1-B2-B3	C1-C2-C3	D1-D2-D3-D4- D5
Microbiology of fermented milks	A1-A2-A3-A4-A10	B1-B2-B3	C1-C2-C3	D1-D2-D3-D4- D5
Milk-borne pathogens and spoilage organisms	A1-A2-A3-A4-A11	B1-B2-B3	C1-C2-C3	D1-D2-D3-D4- D5
Indicator organisms	A1-A2-A3-A4-A12	B1-B2-B3	C1-C2-C3	D1-D2-D3-D4- D5
Microbial defects in milk and dairy products	A1-A2-A3-A4-A13	B1-B2-B3	C1-C2-C3	D1-D2-D3-D4- D5

Assessment ILOs Matrix:

TOOLS	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectual	Practical	General	
Written examination	A1-A2-A3-A4-A5 -A6-A7-A8- A9-A10 A11-A12-A13	B1-B2			50
Oral examination	A1-A2-A3-A4-A5 -A6-A7-A8- A9-A10 A11-A12-A13	B1-B2-B3.		D4- D5	25
Practical examination		B1-B2-B3	C1-C2-C3	D1.D2.D3.D5	25

Course Coordinator:

Prof. Dr. Hossam Farouk Ahmed

Head of Department:

Prof. Dr. Nader Yehia Mostafa

Course specification

(2021 / 2022)

1 - Basic Information:

Code number... 210/2

Course title: **milk and milk products preservation and technology**

Academic Year: PhD degree, year 2016-2017

Total teaching hours: 192hrs. hrs

Lectures:96 hrs

Practical:96 hrs

2 - OVERALL AIMS OF THE COURSE:

To provide student with advanced and most recent knowledge and skills concerning dairy technology. Student be able to apply the theoretical and practical knowledge to control processes for conversion of milk into dairy products. Thus they gain the skills for testing quality of dairy products, highlight the important Critical Control Points on manufacture of each dairy product, monitor and evaluate the parameters for product safety.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of studying the course, the graduate should be able to:

- A.1 Recite knowledge about dairy plant hygiene.
- A.2 List definitions and standards used in milk regulations and basis for milk processing.
- A.3 Outline the application of HACCP system on manufacture of each dairy product.
- A.4 Estimate the knowledge about chemistry of dairy products
- A.5 Write on the knowledge about microbiology of dairy products.
- A.6 Identify the dairy preservation.

3-B: INTELLECTUAL SKILLS:

By the end of studying the course, the graduate should be able to:

- B.1 Assess the important Critical control points on manufacture of each dairy product.
- B.2 Design and evaluate the parameters for product safety.

3-C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of studying the course, the graduate should be able to:

- C.1 Construct the HACCP system at the dairy plants and apply methods to verify its correct application.
- C.2 Apply good physical, chemical and microbiological processes during milk products manufacture.
- C.3 Investigate the quality of each dairy product.

3-D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D.1 Draw the way by which he should be able to work effectively as a member of a team in the delivery of services to community.
- D.2 Prioritize effective communication with the public, colleagues and appropriate authorities.
- D.3 Apply the skills to be able to have access to the internet and retrieve information.
- D.4 Write reports in a form that is satisfactory and understandable.
- D.5 Apply primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

Topics :-

TOPIC	Total hours	Hours for lecture	Hours for practical
Aim and introduction to dairy technology	6	6	-
Assessment of plant hygiene (Monitoring and evaluation of parameters e.g. microbiology, chemical and physical for product safety)	12	8	4
Heat treatment	18	10	8
Starter culture	12	4	8
Main steps in manufacture of dairy products (cream, butter, ghee, ice cream, fermented dairy products, concentrated milk, milk powder,)	34	20	14
Application of HACCP system on manufacture of each dairy products	18	8	10
Chemistry of dairy products	18	8	10
Microbiology of dairy products	18	10	8
Spoilage and defects of dairy products	16	8	8
Milk byproducts (Dairy protein byproducts, fermented byproducts, industrial uses,	14	6	8
Therapeutic value of dairy products	12	4	8
Dairy preservation (Technologies used to render food safe, keep contaminants below dangerous levels and that prevent recontamination during or after manufacture)	14	4	10
Total	192	96	96

5- TEACHING & LEARNING METHODS:

*Lectures

(Using white board, data show and brain storming)

*Practical and small group sessions:

1: Practical training (Practical demonstrations, practice of skills, and discussions)

* Site visits

Two visits one to the dairy farm and one to the dairy plant for practical application

*self learning

Computer researches and faculty library visits to prepare essays and presentations

Library researches.

Internet researches.

Discussion in the researches.

Visits to dairy plants.

* Audiovisual

Video show in practical laboratory

Television circle in practical laboratory

6. METHODS FOR STUDENTS With limited capabilities:-

- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	After 48th week	After 48th week	After 48th week
7.c grads	50	25	25

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Text book available in faculty library

8-2: References books:

- 8-2.a Wilkie F. Harrigan, Laboratory Methods in Food Microbiology, Academic press limited
- 8-2.b Sara Martimore , Carole Wallace, HACCP A practical approach.
- 8-2.c A.H.Varnam, Food Borne Pathogens, Wolfe publishing Ltd.
- 8-2.d RK. Robinson, Modern Dairy Technology, Library of congress.
- 8-2.e A.P.H.A. Standard Method For Examination of Dairy products.
- 8-2.f AOAC, Official Methods of Analysis of AOAC international. 16th ed., 1998.
- 8-2. G Edgar Spreer, Milk and Dairy Product Technology, Marcel Dekker, Inc, New York .Basel,

8-3: Suggested materials:

- Apparatus
- Chemicals, glasses reagents and media
- Kits
- Data show

8.4: web sites and jouranlsand so on

- WWW.PubMed.com
- International of veterinary information services (IVIS)
- www.Vet.net.com
- Journal of dairy sciences
- Journal of food protection
- Journal of food and drug analysis
- Veterinary medical journal

Course content ILOs Matrex:

TOPIC	K.U (A)	I.S (B)	P.P.S (C)	G.T.S (D)
Aim and introduction to dairy technology	A1			
Assessment of plant hygiene (Monitoring and evaluation of parameters e.g. microbiology, chemical and physical for product safety)	A1-A3	B1-B2-	C1	D1-D2-D3-D4-
Heat treatment	A2-A3-A5-A6	B1-B2-	C1-C2-C3	D1-D2-D3-D4-
Starter culture	A2-A3-A5-A6	B1-B2-	C2-C3	D1-D2-D3-D4-
Main steps in manufacture of dairy products (cream, butter, ghee, ice cream, fermented dairy products, concentrated milk, milk powder,)	A2-A3-A4-A5-A6-	B1-B2-	C1-C2-C3	D1-D2-D3-D4- D5-
Application of HACCP system on manufacture of each dairy products	A1-A2	B2	C1	D1-D2-D4-D5-
Chemistry of dairy products	A2-A4		C1-C2-	D1-D2-D3-D4- D5-
Microbiology of dairy products	A2-A5	B1-B2-	C2-C3	D1-D2-D3-D4- D5
Spoilage and defects of dairy products	A2-A4-A5-	B1-B2-	C2-C3	D1-D2-D3-D4- D5-
Milk byproducts (Dairy protein byproducts, fermented byproducts, industrial uses,)	A2-A5-A6	B1-B2-	C2--C3	D1-D2-D3-D4- D5-

Therapeutic value of dairy products	A2-A3A4-- A5-A6	B1-B2-	C1-	D1-D2-D3- D4
Dairy preservation (Technologies used to render food safe, keep contaminants below dangerous levels and that prevent recontamination during or after manufacture)	-A2-A4 -A5- A6	B1-B2-	C1-- C3	D1-D2-D3- D4

Assessment ILOs Matrix:

TOOLS	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectual	Practical	General	
Written examination	A1-A2-A3-A4-A5 -A6-	B1-B2		D1, D4- D5	50
Oral examination	A1-A2-A3-A4-A5 -A6-	B1-B2		D4- D5	25
Practical examination		B1	C1-C2-C3	D2.D3	25

Course Coordinator:

Prof. Dr. Azza M. K.Sobeih

Head of Department:

Prof. Dr. Nader Yehia Mostafa

Course specification (2021 / 2022)

1 - Basic Information:

Code number... 211/2

Course title: **food analysis**

Academic Year: PhD degree, year 2016-2017

Total teaching hours: 192 hrs. hrs

Lectures:96 hrs

Practical:96 hrs

2 - OVERALL AIMS OF THE COURSE:

To provide student with recent and advanced knowledge concerning of food (milk and its products, eggs and its products, fats and oils) analysis and to gain the students with the skills for sampling and analyzing them with ordinary and advanced methods, and to write a report about the suitability of each sample for human consumption.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of studying the course, the graduate should be able to:

A.1 Recite the knowledge about principles of food analysis techniques.

A.2 State the knowledge about food inspection.

A.3 Outline the international organizations and laws dealing with food and ethical codes relevant to food.

A.4 Relate and understand the knowledge about compositional quality (physical character and chemical composition) of food of animal origin (milk, dairy products, fats, oils and eggs) and their adulteration.

A.5 Discuss the knowledge about residues, contaminants and inhibitory substances in food of animal origin

A.6 Estimate the knowledge about ordinary and advanced methods for analysis of milk and dairy products.

A.7 Write on the knowledge about ordinary and advanced methods for analysis of fats and oils.

A.8 Relate the knowledge about ordinary and advanced methods for testing of eggs and its products.

3-B: INTELLECTUAL SKILLS:

By the end of studying the course, the graduate should be able to:

B.1 Formulate essential precautions for sampling.

B.2 Compose the methods to minimize the risks of contamination of samples.

B.3 Assess and detect defects in each samples.

B.4 Design appropriate quantitative and qualitative methodologies.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of studying the course, the graduate should be able to:

C.1 Apply ideal methods to collect and transference the samples.

C.2. Examine milk samples (physically, chemically, microbiologically and for residues)

C.3 Analyze milk product samples (physically, chemically, microbiologically and for residues).

C.4. Investigate fats, oils and egg samples (physically, chemically, microbiologically and for residues).

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D.1 Draw the way by which he should be able to work effectively as a member of a team in the delivery of services to community.

D.2 Prioritize effective communication with the public, colleagues and appropriate authorities.

D.3 Apply the skills to be able to have access to the internet and retrieve information.

D.4 Write reports in a form that is satisfactory and understandable.

D.5 Apply primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

4.A:- Topics :-

TOPIC	Total hours	Hours for lecture	Hours for practical
Sampling of food (Milk, eggs and their products, fats and oils)	6	4	2
Nutrient analysis	8	6	2
Principles of food analysis techniques (e.g Kjeldahl, Soxhlet, Calorimetry.....)	8	6	2
Food inspection	8	4	4
National and international standards	6	6	-
Milk analysis (Physical testing, chemical analysis)	18	8	10
Dairy products analysis (Sensory evaluation, chemical analysis)	18	8	10
Milk adulteration	12	4	8
Testing dairy products for adulteration	20	8	12
Detection of potential hazardous substances in food (Antibiotics, insecticides, heavy metals, mycotoxins,....)	30	14	16
Testing physical and chemical constants of fats and oils.	22	10	12
Testing of table eggs (freshness, structural quality, nutrient content, microbiological quality, residues and contaminant,....)	22	10	12
Testing of egg products	14	8	6
Total	192	96	96

5- TEACHING & LEARNING METHODS:

***Lectures**

(Using white board, data show and brain storming)

***Practical and small group sessions:**

1: Practical training (Practical demonstrations, practice of skills, and discussions)

*** Site visits**

Two visits one to the dairy farm and one to the dairy plant for practical application

***self learning**

(Computer researches and faculty library visits to prepare essays and presentations)

Library researches.

Internet researches.

Discussion in the researches.

Visits to dairy plants.

*** Audiovisual**

Video show in practical laboratory

Television circle in practical laboratory

6. METHODS FOR STUDENTS WITH LIMITED CAPABILITIES:-

- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	After 48 th week	After 48 th week	After 48 th week
7.c grads	50	25	25

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Text book available in faculty library

8-2: References books:

- 8-2.a-Pesticides residues in food evaluations, FAO.
- 8-2.b-Alan H. Varnam, Jane P. Sutherland, Milk and milk products, Chapman & Hall
- 8-2.c-A.P.H.A. Standard Method For Examination of Dairy products.
- 8-2.d-A.H.Varnam, Food borne pathogens, Wolfe publishing Ltd.
- 8-2.e-AAOAC, Official Methods of Analysis of AOAC international.

8-3: Suggested materials:

- Apparatus
- Chemicals, glasses reagents and media
- Kits
- Data show

8.4: web sites and jouranlsand so on

- WWW.PubMed.com
- International of veterinary information services (IVIS)
- www.Vet.net.com
- Journal of dairy sciences
- Journal of food protection
- Journal of food and drug analysis
- Veterinary medical journal

Course content ILOs Matrex:

TOPIC	K.U (A)	I.S (B)	P.P.S ©	G.T.S (D)
Sampling of food (Milk, eggs and their products, fats and oils)	A1- A2- A6- A7- A8	B1-B2	C1	D1-D2-D4
Nutrient analysis	A1- A2- A3-A4	B1-B2- B3- B4	C1-C2- C3-C4	D1-D2-D4- D5
Principles of food analysis techniques (e.g Kjeldahl, Soxhlet, Calorimetry.....)	A1-A2-A3	B1-B2- B3-	C1-C2- C3-C4	D1-D2-D3- D4- D5
Food inspection	A1- A2-A3-A4- A6-A7-A8	B1-B2 B3-B4	C1-C2- C3-C4	D1-D2-D3- D4- D5
National and international standards	A1-A2 -A4	B3	C2-C3- C4	D1-D2-D3- D4- D5
Milk analysis (Physical testing, chemical analysis)	A1-A2-A3-A4- A6	B1-B2- B3-B4	C1-C2	D1-D2-D4- D5
Dairy products analysis (Sensory evaluation, chemical analysis)	A1-A2- A3- A4- A6-	B1-B2- B3- B4	C1-C3-	D1-D2-D4- D5
Milk adulteration	A1-A2- A3- A4- A6	B1-B2- B3-	C1-C2	D1-D2-D4- D5
Testing dairy products for adulteration	A2-A3-A5-A6- A9	B1-B2- B3- B4	C1-C3	D1-D2-D4- D5
Detection of potential hazardous substances in food (Antibiotics, insecticides, heavy metals,	A1-A2-A3-A5-	B1-B2- B3- B4	C1-C2- C3-C4	D1-D2-D3- D4-D5

mycotoxins,....)				
Testing physical and chemical constants of fats and oils.	A1-A2- A3- A4- A7	B1-B2- B3- B4	C1-C2- C3--C4	D1-D2-D4- D5
Testing of table eggs (freshness, structural quality, nutrient content, microbiological quality, residues and contaminant,....)	A1-A2-A3-A4- A8	B1-B2- B3- B4	C1--C4	D1-D2-D4- D5
Testing of egg products	A1-A2-A3-A4- A8-	B1-B2- B3- B4	C1-C4	D1-D2-D4- D5

Assessment ILOs Matrix:

TOOLS	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectual	Practical	General	
Written examination	A1-A2-A3-A4-A5 -A6- A7,A8	B1-B2		D1, D4- D5	50
Oral examination	A1-A2-A3-A4-A5 -A6- A7,A8	B1-B2		D4- D5	25
Practical examination		B3,B4	C1-C2-C3,C4	D2.D3	25

Course Coordinator:

Prof. Dr. Azza M.M. Deeb

Head of Department:

Prof. Dr. Nader Yehia Mostafa

Course specification (2021 / 2022)

1 - Basic Information:

Code number... 212/2

Course title: **food poisoning**

Academic Year: PhD degree, year 2016-2017

Total teaching hours: 144 hrs. hrs

Lectures:48 hrs

Practical:96 hrs

2 - OVERALL AIMS OF THE COURSE:

To provide students with advanced and professional knowledge and skills with positive behavior towards better dealing with food poisoning science. Also, apply research concepts and technologies in different fields of food poisoning sciences. Moreover, show satisfactory interpersonal and communication skills confirming the sensitive role of the veterinarian in society and disseminating the awareness of maintaining human health.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of studying the course, the graduate should be able to:

- A.1 Outline bacterial food poisoning (Infection and intoxication)
- A.2 Identify viral food poisoning
- A.3 State mycotic food poisoning
- A.4 Discuss parasitic food poisoning
- A.5 Explain vegetable and chemical food poisoning

3-B: INTELLECTUAL SKILLS:

By the end of studying the course, the graduate should be able to:

- B.1 Generate critical thinking and scientific curiosity.
- B.2 Originate a rigorous approach to problem solving of food poisoning cases.
- B.3 Combine their knowledge into role of food of animal origin in food poisoning outbreaks.
- B.4 Formulate and apply appropriate methodology for diagnosis.
- B.5 Invent problem lists and differential diagnosis.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of studying the course, the graduate should be able to:

- C.1 Apply appropriate quantitative and qualitative methodologies for diagnosis.
- C.2 Examine food implicated, prepare, preserve and transport samples to the laboratory for examination.
- C.3 Analyze food samples for food poisoning organisms.
- C.4 Modify methods to minimize the risk of contamination and cross infection.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D.1 Draw the way by which he should be able to work under pressure and / or contradictory conditions.
- D.2 Prioritize effective utilization computer and internet skills, and search for new information and technology as well as adopt life-long self-learning ethics.
- D.3 Write reports in a form that is satisfactory and understandable.
- D.4 Compose and control tasks and resources.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
Aim and introduction	4	4	-
Classification of food poisoning	6	6	-
Bacterial food poisoning (Infection and intoxication)(causative agent, implicated food, symptoms, diagnosis, prevention and control)	34	8	26
Viral food poisoning (causative agent, implicated food, symptoms, diagnosis, prevention and control)	20	6	14
Mycotic food poisoning (causative agent, implicated food, symptoms, diagnosis, prevention and control)	24	6	18
Parasitic food poisoning (causative agent, implicated food, symptoms, diagnosis, prevention and control)	16	6	10
Chemical food poisoning (causes, implicated food, symptoms, diagnosis, prevention and control)	24	6	18
Vegetable food poisoning (causes, implicated food, symptoms, diagnosis, prevention and control)	16	6	10
total	144	48	96

5- TEACHING & LEARNING METHODS:

*Lectures

(Using white board, data show and brain storming)

*Practical and small group sessions:

1: Practical training (Practical demonstrations, practice of skills, and discussions)

* Site visits

Two visits one to the dairy farm and one to the dairy plant for practical application

*self learning

Computer researches and faculty library visits to prepare essays and presentations

Library researches.

Internet researches.

Discussion in the researches.

Visits to dairy plants.

* Audiovisual

Video show in practical laboratory

Television circle in practical laboratory

6. METHODS FOR STUDENTS With limited capabilities:-

- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	After 48th week	After 48th week	After 48th week
7.c grads	50	20	30

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Text book available in faculty library

8-2: References books:

- 8-2.a- Wilkie F. Harrigan: Laboratory methods in food microbiology, Academic press limited
- 8-2.b-A.P.H.A. Standard Method For Examination of Dairy products..
- 8-2.e-AAOAC, Official Methods of Analysis of AOAC international.

8-3: Suggested materials:

- Apparatus
- Chemicals, glasses reagents, media and Kits
- Data show

8.4: web sites and jouranlsand so on

- WWW.PubMed.com
- International of veterinary information services (IVIS)
- www.Vet.net.com
- Journal of dairy sciences
- Journal of food protection
- Journal of veterinary microbiology
- Veterinary medical journal

Course content ILOs Matrex:

TOPIC	K.U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Aim and introduction	A1	B1-B2-		D2
Classification of food poisoning	A1- A2- A3-A4- A5	B3	C1	D3
Bacterial food poisoning (Infection and intoxication)(causative agent, implicated food, symptoms, diagnosis, prevention and control)	A1	B1-B2- B3-B4- B5	C1- C2- C3-C4	D1-D2- D3-D4
Viral food poisoning (causative agent, implicated food, symptoms, diagnosis, prevention and control)	A2	B1-B2- B3-B4- B5	C1- C2- C3-C4	D1-D2- D3-D4
Mycotic food poisoning (causative agent, implicated food, symptoms, diagnosis, prevention and control)	A3	B1-B2- B3-B4- B5	C1- C2- C3-C4	D1-D2- D3-D4
Parasitic food poisoning (causative agent, implicated food, symptoms, diagnosis, prevention and control)	A4	B1-B2- B3-B4- B5	C1- C2- C3-C4	D1-D2- D3-D4
Chemical food poisoning (causes, implicated food, symptoms, diagnosis, prevention and control)	A5	B1-B2- B3-B4- B5	C1- C2- C3-C4	D1-D2- D3-D4
Vegetable food poisoning (causes, implicated food, symptoms, diagnosis, prevention and control)	A5	B1-B2- B3-B4- B5	C1- C2- C3-C4	D1-D2- D3-D4

Assessment ILOs Matrix:

TOOLS	I.L.O.S Evaluation				Marks allocated
	Knowledge	intellectual	practical	general	
Written examination	A1-A2-A3-A4-A5	B1-B2-B3			50
Oral examination	A1-A2-A3-A4-A5	B1-B2-B3		D4	20
Practical examination		B4-B5	C1-C2-C3- C4	D1-D2-D3-	30

				D4	
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Course Coordinator:

Prof. Dr. Hossam Farouk Ahmed

Head of Department:

Prof. Dr. Nader Yehia Mostafa

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Course specification

(2021 / 2022)

1 - Basic Information:

Code number... 213/2

Course title: **Variable courses in (Milk contamination, Mastitis, diseases transmitted through milk and its products, quality of eggs, edible fats and oils**

Academic Year: PhD degree, year 2016-2017

Total teaching hours: 192 hrs. hrs

Lectures:96 hrs

Practical:96 hrs

2 - OVERALL AIMS OF THE COURSE:

To provide student with advanced knowledge concerning of sources of contamination of milk and its products and to gain skills to solve the problems of food of animal origin.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of studying the course, the graduate should be able to:

- A.1 Estimate different sources of contamination of raw milk and dairy products.
- A.2 Outline new emerging food-borne pathogens and spoilage organisms.
- A.3 Explain modern methods for production of clean milk.
- A.4 Identify different diseases of the udder.
- A.5 Describe quality and testing of eggs and their products.
- A.6 Discuss composition, nutritive value and examination of edible fats and oils.

3-B: INTELLECTUAL SKILLS:

By the end of studying the course, the graduate should be able to:

- B.1 Assess the important problem from case interaction.
- B.2 Conclude the role of milk, egg and their products in transmitting diseases to consumer.
- B.3 Design methods to minimize the risks of contamination and cross infection.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of studying the course, the graduate should be able to:

- C.1 Apply advanced quantitative and qualitative methodologies.
- C.2. Construct ELISA and PCR methods for detection of subclinical mastitis.
- C.3 Examine milk, eggs and their product samples for quality.
- C.4 Analyze edible fats and oils samples for quality.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D.1 Draw the way by which he should be able to work effectively as a member of a team in the delivery of services to community.
- D.2 Prioritize effective communication with the public, colleagues and appropriate authorities.
- D.3 Apply the skills to be able to have access to the internet and retrieve information.
- D.4 Write reports in a form that is satisfactory and understandable.
- D.5 Apply primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
Sources of contamination	20	20	-

Abnormal milk	12	4	8
Mastitis (Causes, modern methods for detection)	37	15	22
Milk- borne diseases	33	15	18
Eggs and eggs products (nutritive value, diseases transmitted through them, testing)	30	14	16
Edible fats and oils (Composition , nutritive value)	21	11	10
Examination of edible fats and oils for quality	27	11	16
Cholesterol	12	6	6
total	192	96	96

5- TEACHING & LEARNING METHODS:

*Lectures

(Using white board, data show and brain storming)

*Practical and small group sessions:

1: Practical training (Practical demonstrations, practice of skills, and discussions)

* Site visits

Two visits one to the dairy farm and one to the dairy plant for practical application

*self learning

Computer researches and faculty library visits to prepare essays and presentations

Library researches.

Internet researches.

Discussion in the researches.

Visits to dairy plants.

* Audiovisual

Video show in practical laboratory

Television circle in practical laboratory

6. METHODS FOR STUDENTS WITH LIMITED CAPABILITIES:-

- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	After 48th week	After 48th week	After 48th week
7.c grads	50	25	25

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Text book available in faculty library

8-2: References books:

8-2.a-Wilkie F. Harrigan, Laboratory methods in food microbiology, Academic press limited

8-2.b-Alan H. Varnam, Jane P. Sutherland, Milk and milk products, Chapman & Hall .

8-2.c-AOAC, Official Methods of Analysis of AOAC international.

8-2.eA.P.H.A. Standard Method For Examination of Dairy products

8-3: Suggested materials:

- Apparatus
- Chemicals, glasses reagents and media

- Kits
- Data show

8.4: web sites and jouranlsand so on

- WWW.PubMed.com
- International of veterinary information services (IVIS)
- www.Vet.net.com
- Journal of dairy sciences
- Journal of food protection
- Journal of veterinary microbiology
- Veterinary medical journal

Course content ILOs Matrex:

TOPIC	K.U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Sources of contamination	A1	B1-B2		D5
Abnormal milk	A1- A2-A3	B2	C1	D5
Mastitis (Causes, modern methods for detection)	A2-A4	B1-B2- B3-	C1-C2	D1 -D4- D5
Milk- borne diseases	A2-A4	B1-B2- B3-	C1-C2	D2-D3 D5
Eggs and eggs products (nutritive value, diseases transmitted through them, testing)	A2-A5	B1-B2- B3	C1- C3	D3-D4- D5
Edible fats and oils (Composition , nutritive value)	A2-A6	B1-B2- B3	C1 -C4	D3-D4- D5
Examination of edible fats and oils for quality	A6	B1-B3	C1- C4	D2-D4- D5
Cholesterol	A6		C4	D1-D4

Assessment ILOs Matrix:

TOOLS	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectual	Practical	General	
Written examination	A1-A2-A3-A4-A5-A6	B2		D3.D4.D5	50
Oral examination	A1-A2-A3-A4-A5-A6	B1.B2.B3.		D3.D4.D5	25
Practical examination		B3	C1.C2.C3.C4	D1.D2.	25

Course Coordinator:

Prof. Dr. Azza M.K.Sobeih

Head of Department:

Prof. Dr. Nader Yehia Mostafa

Course specification

(2021 / 2022)

1 - Basic Information:

Code number... 214/2

Course title: **Hygienic criteria in dairy plant**

Academic Year: PhD degree, year 2016-2017

Total teaching hours: 192hrs. hrs

Lectures:96hrs

Practical:96 hrs

2 - OVERALL AIMS OF THE COURSE:

To provide student with recent and advanced knowledge and skills concerning of the Hygienic criteria in dairy plant, to gain the skills to asses hygiene in dairy plant, to analyze dairy products and to write a report about the suitability of each sample for human consumption and the hygiene of the plant.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of studying the course, the graduate should be able to:

- A.1 State the knowledge about standards used to establish the dairy industry.
- A.2 Outline and discuss hygienic measures adopted inside and outside the industry.
- A.3 Relate the knowledge about application of HACCP system in dairy plants
- A.4 Recite and define detergent and chemical sanitizer.
- A.5 Estimate the knowledge about cleaning procedures.
- A.6 Explain clean in place system (CIP)
- A.7 Identify cleaning process
- A.8 Discuss efficiency of sanitization.
- A.9 Write on the knowledge about criteria for evaluation of dairy products.

3-B: INTELLECTUAL SKILLS:

By the end of studying the course, the graduate should be able to:

- B.1 Assesst the important problem from case interaction.
- B.2 Design appropriate quantitative and qualitative advanced methodologies.
- B.3 Originate the HACCP system at the dairy plants and revise the methods to confirm its correct application

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of studying the course, the graduate should be able to:

- C.1 Apply criteria for evaluation of dairy products.
- C.2 Construct the methods to minimize the risks of contamination and cross infection.
- C.3 Examine efficiency of cleaning and sanitization of dairy equipment.
- C.4 Analyze dairy products samples (physically, chemically, microbiologically and for residues).

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D.1 Draw the way by which he should be able to work effectively as a member of a team in the delivery of services to community.
- D.2 Prioritize effective communication with the public, colleagues and appropriate authorities.
- D.3 Apply the skills to be able to have access to the internet and retrieve information.
- D.4 Write reports in a form that is satisfactory and understandable.

D.5 Apply primary research techniques and critical evaluation.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
Knowledge about standard used to establish the dairy industry.	24	12	12
Hygienic measures adopted inside and outside the industry.	24	12	12
Application of HACCP system in dairy plants	24	12	12
Knowledge about detergent and chemical sanitizer.	24	12	12
Cleaning procedures.	24	12	12
Designing of clean in place system (CIP)	16	8	8
Verification of cleaning	12	6	6
Detection of efficiency of sanitization.	20	10	10
Criteria for evaluation of dairy products.	24	12	12
Total	192	96	96

5- TEACHING & LEARNING METHODS:

***Lectures**

(Using white board, data show and brain storming)

***Practical and small group sessions:**

1: Practical training (Practical demonstrations, practice of skills, and discussions)

*** Site visits**

visit to the dairy farm and to the dairy plant for practical application

***self learning**

Computer researches and faculty library visits to prepare essays and presentations

Library researches.

Internet researches.

Discussion in the researches.

Visits to dairy plants.

*** Audiovisual**

Video show in practical laboratory

Television circle in practical laboratory

6. METHODS FOR STUDENTS With limited capabilities:-

- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	After 48th week	After 48th week	After 48th week
7.c grads	50	25	25

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Text book available in faculty library

8-2: References books:

- 8-2.a-Pesticides residues in food evaluations, FAO.

- 8-2.b-Alan H. Varnam, Jane P. Sutherland, Milk and milk products, Chapman & Hall
- 8-2.c-A.P.H.A. Standard Method For Examination of Dairy products.
- 8-2.d-A.H.Varnam, Food borne pathogens, Wolfe publishing Ltd.
- 8-2.e-AAOAC, Official Methods of Analysis of AOAC international.

8-3: Suggested materials:

- Apparatus
- Chemicals, glasses reagents and media
- Kits
- Data show

8.4: web sites and jouranlsand so on

- WWW.PubMed.com
- International of veterinary information services (IVIS)
- www.Vet.net.com
- Journal of dairy sciences
- Journal of food protection
- Journal of FDA
- Veterinary medical journal

Course content ILOs Matrex:

TOPIC	K.U (A)	I.S (B)	P.P.S (C)	G.T.S (D)
Knowledge about standard used to establish the dairy industry.	A1	B1	C1	D1-D2-D4
Hygienic measures adopted inside and outside the industry.	A2	B1-B2-B3	C1-C2-C3	D1-D2-D3-D4- D5
Application of HACCP system in dairy plants	A1-A2-A3	B1-B2-B3-	C1-C2-C3	D1-D2-D3-D4- D5
Knowledge about detergent and chemical sanitizer.	A4	B2-B3	C1	D1-D2-D4- D5
Cleaning procedures.	A1-A2 -A4 A5	B1-B2-B3	C1-C2-C3	D1-D2-D3-D4- D5
Designing of clean in place system (CIP)	A1-A2-A3- A4-A5-A6	B1-B2-B3	C1-C2-C3	D1-D2-D3-D4- D5
Verification of cleaning	A3-A5- A7	B1-B2-B3	C1-C2-C3	D1-D2-D3-D4- D5
Detection of efficiency of sanitization.	A8	B1-B2-B3	C1-C2-C3	D1-D2-D4- D5
Criteria for evaluation of dairy products.	A2-A3-A5- A6- A9	B1-B2-B3	C1-C2-C3-C4	D1-D2-D4 D5

Assessment ILOs Matrix:

TOOLS	I.L.O.S Evaluation			Marks	
	Knowledge	Intellectual	Practical		
Written examination	A1.A2.A3.A4.A5.A6 A7.A8.A9	B1		D3.D4.D5	50
Oral examination	A1.A2.A3.A4.A5.A6 A7.A8.A9	B1		D2	25
Practical examination		B1.B2.B3.	C1.C2.C3.C4	D1.D2	25

Course Coordinator:

Prof. Dr. Azza M.M.Deeb

Head of Department:

Prof. Dr. Nader Yehia Mostafa

كلية الطب البيطري

وحدة ضمان الجودة

Program Spc. For Ph.D in Pharmacology



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Pharmacology

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy

(Pharmacology)



Kafr El-Sheikh University

Faculty of Veterinary Medicine

Department of Pharmacology

Program Specification for PhD Degree

(2021-2022)

A- Administrative information:

- 1- Awarding Body:** Kafr El-Sheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Pharmacology
- 4- Program Title:** PhD Degree in Veterinary Science (Pharmacology)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years
- 7- Program Coordinator:** Prof. Dr. Kamal Elshazly
- 8- External evaluator:** Prof. Dr. Kamal kamal metwally

B- Professional information:

1- Aims of the Program:

This PhD program aim is to render the postgraduate able to:

- Creation of new knowledge and understanding in Internal medicine through the process of research and inquiry.
- Development of communication skills, recent techniques and diagnostic tools in the field of Pharmacology and experience of scientific research skills.
- Giving the graduate the ability to be creative in the field of advance Pharmacology through new scientific research.
- Achievement of capability in modern laboratory technology to develop practical research project.



- Demonstrating an awareness of the connections between disciplines and develop the ability to be covenant with scientific literature and to critically review and present their own research data for the protection and promotion of the animal health.
- Enhancing the ability of graduate to analyze statistical data, results and stimulate the interpretation and dissertation, presentation skills.
- Exhibiting awareness about current Pharmacological problems and their identification with finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of Pharmacology.

2- Academic standards:

**Academic reference standards (ARS) adopted by the faculty committee No(1)
14/9/2014**

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Mastering the basics and methodologies of scientific research in Veterinary Pharmacology for better dealing with drugs administration problems professionally.
- 2) Performing continuous effort to add knowledge about determination of drugs actions, mode of action and drugs pharmacokinetics.
- 3) Analysis of information in Veterinary Pharmacology and fields related to it including, Microbiology, Pathology, Biochemistry, Physiology, Clinical pathology, Forensic medicine and toxicology, Parasitology, etc.
- 4) Integrating data collected from the diseased animals and poultry with related laboratory findings to reach the correct treatment of different animals and poultry cases.
- 5) Showing deep awareness with the ongoing drug administration problems and modern theories in treating diseased animals.



- 6) Identifying the main causes of drugs side effects, toxicity, interaction and residues and suggesting the appropriate methods for animal and human protection.
- 7) Mastering of a wide range of professional skills in Pharmacology laboratory investigation of drugs and modern Pharmacological techniques performed for drugs actions determination.
- 8) Acquiring trends towards developing modern methods and tools in determination of drugs actions, mechanism of actions and drugs pharmacokinetics.
- 9) Using appropriate technological means including molecular biology, chromatography to serve professional practice.
- 10) Communicating effectively with pharmacologists, students and colleagues and leading work team through professional scale.
- 11) Making decision in different professional situations especially under field conditions to deal with drugs side effects, toxicity interaction and drug residue.
- 12) Using of the available resources efficiently in the development of new techniques and work to find new resources.
- 13) Being aware with his role in society development and community preservation from the drugs toxicity.
- 14) Acting with integrity, credibility and according to the rules of profession.
- 15) Realizing the importance of self and life-long learning and progress.

4-Programme outcomes [intended learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

- a.1. Recognize recent theories, principles and knowledge in determination of drugs actions, mechanism of actions and drugs pharmacokinetics .
- a.2. Realize the basics of using drugs in treatment and control of different affections of different body systems and different infective agents.
- a.3. Realize principles, methodologies and ethics of scientific research and its tools including using laboratory animals in pharmacological research and legal ways for extrapolation of research findings of other pharmacologists.
- a.4. Describe the principles, methodologies and ethics of scientific research in Veterinary Pharmacology.



- a.5. List legal and ethical principles of treatment diseased animals.
- a.6. Realize legal and ethical principles and methods of protecting human food from animal origin from drug residues.
- a.7. Recognize Principles and the basics of quality assurance in laboratory determinations of drugs.
- a.8. Apply their knowledge and understanding in Veterinary Pharmacology for enhancing animal health and production
- a.9. Recognize the effect of drugs on the environment and methods of prevention of environmental pollution.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1. Analyze and evaluate information about uses of drugs for treatment and control of different affections and infective agents.
- b.2. Analyze and interpret the history of disease, clinical signs, PM lesions and laboratory investigation in order to reach perfect diagnosis and treatment of disease.
- b.3. Solve professional problems in Veterinary Pharmacology using available data under field or laboratory conditions.
- b.4. Perform scientific research studies that can give significant impact on the control and treatment of diseased animals.
- b.5. Conduct scientific research studies aiming at protecting human from the drugs residues and toxicity, etc.
- b.6. Formulating scientific papers in Veterinary Pharmacology with the ability to match and discuss his own findings with those of other scientists.
- b.7. Asses risks of drug residues in milk, meat and eggs of animals and poultry.
- b.8. Asses risks of dealing with different chemicals and infective agents in Pharmacology lab.
- b.9. Planning to enhance the performance in the determination of drugs actions , mechanism of actions and drugs pharmacokinetics by using modern biotechnology techniques.
- b.10. Make professional decisions about treatment of different diseases and suggesting further investigations and search for new drugs.
- b.11. Decide the possible cause of disease and therefore suggesting the best treatment.



- b.12.** Trying new drugs to fight against different infective agents
- b.13.** Lead a discussion based on pharmacological evidences and proofs including drugs residues in animal body.
- b.14.** Share and lead scientific open discussion in the field of Veterinary Pharmacology based on evidences and proofs.

c. Practical and professional skills:

At the end of the program, postgraduate will inquire the ability of:

- c.1.** Conduct basic and modern professional missions including determination of drugs actions and drugs pharmacokinetics by using advanced laboratory techniques.
- c.2.** Master advanced and new drugs for treatment of different affections and infective agents and perfect selection of appropriate drug for each case.
- c.3.** Write and evaluate professional Pharmacological reports including the effect and use of drugs against different affections of body systems and different infective agents.
- c.4.** Evaluate and modernize methods depending upon use of DNA technology in Veterinary Pharmacology.
- c.5.** Creation of new tests in vitro and in vivo for determination of drugs action and fate of drug in the body and target organ.
- c.6.** Use modern technological means to serve professional practice.
- c.7.** Planning for the improvement of veterinary medicine by applying recent molecular techniques in Veterinary Pharmacology, and developing performance of veterinarians in the field.

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1.** Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology in the improvement of professional practice.
- d.2.** Utilize information technology to serve professional practice.
- d.3.** Teach others and evaluate their performance.
- d.4.** Self-evaluate and identify personal learning requirements
- d.5.** Lead team under different professional circumstances.
- d.6.** Use of different sources for obtaining information and knowledge.



d.7. Manage scientific meetings with the ability to manage time efficiently.

d.8. Asses himself and life-long learning

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, and seminars.

6-Assessments:

The program depends on different assessment ways:

a. Course assessment:

1. Final written exam

- To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills

2. Practical exam

- To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.

3. Oral exam

- To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.

b. Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work

c. PhD Thesis assessment

- Annual reports adopted by the Faculty.
- Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
- Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes



Tool or method	ILOs
Written	a1,2; b1,2
Oral	a1-2; b1,2
Practical	C1-7
Qualifying Exam	a1-5; b1-14
Thesis	a3-9; b1-14; C1-7; d1-8

7. Program structure

a. Program duration (years):

PhD degree from 3-5 years and it should not exceed a period of six years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law.

b. Program courses:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council so that include 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

C-Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

D-Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments



at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion .

. Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Pharmacology include:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Pharmacology	199/2	100- General pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1

.2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab



Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of	2	2



		skin, hooves, claws and Nails		
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3



	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and	2	2



		parasitic diseases in animal		
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
		81- Advanced immunology	2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2



	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93 Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96- Wild life parasitology	1	2
	196/2	97- Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Hygiene and control of milk and dairy products	208/2	108- Hygiene and control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118- inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2



	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/2	134- Stress diseases during animals transport.		
Infectious diseases	235/2	135- Infectious diseases of cattle	2	2
	236/2	136- Infectious diseases of sheep and goat	2	2
	237/2	137- Infectious diseases camel	2	2
	238/2	138 Infectious diseases of equine	2	2
	239/2	139- Infectious diseases of pet animals	2	2
	240/2	140- Infectious diseases lab animals	1	2
	241/2	141- Infectious diseases of udder and newly born animals	2	2
	242/2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild		



		animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2



	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in polutry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures- specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-



Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2



	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (**Pharmacology**) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medical science lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.



3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.
5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.
7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.
8. The applicant should submit a seminar (Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).
9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met: Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.



10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and in case of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.

11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards it to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.

12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.



After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade		Percentage
Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45



13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
I	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

program Co-ordinator:

Prof. Dr. Kamal Elshazly

Head of Department:

Prof. Dr. Abo Elnasr Zahra

Matching program ILOs with ARS - Matrix

Program ILOs	ARS																												
	K&U (a)						I.S. (b)							P.P. (c)					G.T. (d)										
	1	2	3	4	5		1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7		
K&U	1	3	5	7	8	9																							
I.S.							1	3	4	6	7	9	10	12	13														
P.P.																1	3	4	6	7									
G.T.																													

كلية الطب البيطري

وحدة ضمان الجودة

Program Spc. For Ph.D in Pharmacology



Program Specification Matrix

PhD in Veterinary Medical Sciences (Pharmacology)

Courses		Total Contact hours/course	No. of hours / week			K.U (a)					I.S (b)									P.P (c)					G.T (d)															
Code	Name		Lect.	Lab.	Total	1	2	3	4	5				1	2	3	4	5	6	7	8	9				1	2	3	4	5				1	2	3	4	5	6	7
Predoctoral courses (10-12 theoretical and practical hours weekly for 12 months)						x	x							x	x	x											x	x	x				x	x	x	x	x	x	x	
Qualification exam								x	x	x				x	x	x	x	x	x	x	x	x				x	x	x	x	x				x	x	x	x	x	x	
Thesis								x	x	x				x	x	x	x	x	x	x	x	x				x	x	x	x	x				x	x	x	x	x	x	



ARS for PhD in Veterinary Medical Sciences (Pharmacology)

1) Graduate attributes

The graduate should have the ability for:

- 16) Mastering the basics and methodologies of scientific research in Veterinary Pharmacology for better dealing with drugs administration problems professionally.
- 17) Performing continuous effort to add knowledge about determination of drug actions, efficacy and pharmacokinetics.
- 18) Analysis of information in Veterinary Pharmacology and fields related to it including, Microbiology, Pathology, Biochemistry, Physiology, Clinical pathology, Forensic medicine and toxicology, Parasitology, etc.
- 19) Integrating data collected from the diseased animals and poultry with related laboratory findings to reach the correct treatment of different animals and poultry cases.
- 20) Showing deep awareness with the ongoing drug administration problems and modern theories in treating diseased animals.
- 21) Identifying the main causes of drugs side effects, toxicity, interaction and residues and suggesting the appropriate methods for animal and human protection.
- 22) Mastering of a wide range of professional skills in Pharmacology laboratory including investigation of drug action and modern Pharmacological techniques performed for drug metabolic pathways.
- 23) Acquiring trends towards developing modern methods and tools in determination of drug synergism and antagonism.
- 24) Using appropriate technological means including molecular biology, chromatography to serve professional practice.
- 25) Communicating effectively with pharmacologists, students and colleagues and leading work team through professional scale.
- 26) Making decision in different professional situations especially under field conditions to deal with drugs side effects, toxicity, interaction, and drug residue.
- 27) Using of the available resources efficiently in the development of new techniques and work to find new resources.
- 28) Being aware with his role in society development and community preservation from the drugs toxicity.



- 29) Acting with integrity, credibility and according to the rules of profession.
- 30) Realizing the importance of self and life-long learning and progress.

A) Knowledge and understanding

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Recent theories, basics and knowledge in Pharmacokinetics and Pharmacodynamics.		Recent theories, principles and knowledge in the field of specialization and related areas
2)	Principles methodologies and ethics of scientific research and its tools including using laboratory animals and radioactive isotopes in pharmacological research.		Basics, methodologies and ethics of scientific research and its different tools
3)	Legal and ethical principles of using new drugs for animal and human use after the legal experimentation in experimental animals		Legal and ethical principles of professional practice in the area of specialization
4)	Principles and the basics of quality assurance in pharmacology laboratory concerning calibrations, sterilization of instruments and other protective measures		Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Awareness with the effect of drugs on the animal health and methods for enhancing animal production		Awareness with the effect of professional practice on the environment and methods of its maintain and development

B) Intellectual skills

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analyzing and evaluating information about using of drugs in the treatment of different animals and poultry diseases.		Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solving pharmacological problems including drugs side effects, toxicity, interactions and drugs residues using available data		Solving professional problems using available data



3)	Performing scientific research studies that can give significant impact on the treatment and control of different animals and poultry diseases.	Conducting scientific research studies that add to knowledge
4)	Formulating scientific articles in veterinary pharmacology and therapeutics	Formulating scientific papers
5)	Taking safety measures when dealing with different chemicals and infective agents (bacteria, fungi, and viruses) in Pharmacology laboratory.	Risk-assessment in the field of specialization
6)	Planning to enhance the performance in the laboratory determination of drugs actions and drugs pharmacokinetics.	Planning to enhance the performance in field of specialization
7)	Making professional decisions for selecting the ideal drugs of treating diseased animals under field condition	Making professional decisions under different professional contexts
8)	Trying new drugs for treating diseased animals.	Creation and innovative in the area of specialization
9)	Dialogue and discussion based on pharmacological evidences and proofs.	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills in pharmacology lab and in treatment and control of infectious and non-infectious diseases.	Mastering basic and modern professional skills in the area of specialization.
2)	Writing and evaluating professional pharmacological reports involving the effect of drugs on different body systems and infective agents.	Writing and evaluating professional reports
3)	Evaluating and modernizing methods and tools in testing drugs actions and drugs pharmacokinetics.	Evaluating and modernizing methods and tools in the area of specialization
4)	Using DNA biotechnology and proteomics in Pharmacology	Using modern technological means to serve professional practice
5)	Planning for the improvement of veterinary medicine by applying recent molecular techniques in veterinary pharmacology, and developing performance of others	Planning for the improvement of professional practice and developing performance of others



D) General and transferable skill

	Adopted ARS	NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Effective communication with Pharmacologists, students and veterinarians.	Effective communication
2)	Utilizing information technology to serve development of Veterinary Pharmacology practice	Utilizing information technology to serve development of professional practice
3)	Presenting information clearly in written, electronic and oral forms	Teaching others and evaluating their performance
4)	Establishment of life-long self-learning required for continuous professional development.	Self-assessment and continuous learning
5)	Using different resources to obtain knowledge and information	Using different resources to obtain knowledge and information
6)	Team working and leading a team in familiar professional contexts	Team working and leading a team in familiar professional contexts
7)	Management of time and open discussions in the professional field	Management of scientific meetings with the ability to manage time efficiently

ثالثا: برامج الدكتوراه

١ - مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستتبطا و مطورا للعلاقات البيئية بينها
٥. إظهار وعيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حلولاً مبتكرة لحلها
٧. إتقان نطاقا و اسعا من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تنميتها والعمل على إيجاد موارد جديدة

١٣ . الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة

١٤ . التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة

١٥ . الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢ - المعايير القياسية العامة

المعرفة و الفهم:

بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا علي الفهم والدرابة بكل من:
أ- النظريات و الأساسيات والحديث من المعارف في مجال التخصص والمجالات ذات العلاقة

ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة

ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص

ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص

ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و طرق تنمية البيئة وصيانتها

المهارات الذهنية

بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها

ب- حل المشاكل المتخصصة استنادا علي المعطيات المتاحة

ج- إجراء دراسات بحثية تضيف إلى المعارف

د- صياغة أوراق علمية

هـ- تقييم المخاطر في الممارسات المهنية

و- التخطيط لتطوير الأداء في مجال التخصص

ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة

ح- الابتكار/ الإبداع

ط- الحوار و النقاش المبني علي البراهين والأدلة

المهارات المهنية

بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص

ب- كتابة و تقييم التقارير المهنية

ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص

د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية

هـ- التخطيط لتطوير الممارسة المهنية و تنمية أداء الآخرين

المهارات العامة و المنتقلة

بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

أ- التواصل الفعال بأنواعه المختلفة

ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية

ت- تعليم الآخرين و تقييم أداءهم

ث- التقييم الذاتي و التعلم المستمر

ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف

ح- العمل في فريق و قيادة فرق العمل

خ- إدارة اللقاءات العلمية و القدرة علي إدارة الوقت

Course specification

(2021 / 2022)

1 - Basic Information:

Code number: 199/2



Course title: Advanced general veterinary pharmacology

Academic Year: predoctor year : PhD (Pharmacology) Programme

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

The aim of this course is to provide the postgraduate students with up- to- date basic and advanced information and knowledge about the general pharmacology, drug actions, mechanism of action, uses and toxicity.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Define the advanced concepts and theories of the general pharmacology and pharmacological actions of drugs .
- A2- Recognize the various types of drug doses and the dose-response relationship.
- A3- Realize factors affecting the actions and doses of drugs.
- A4- Describe in details the general mode of actions of drugs.
- A5- Recognize the sources and pharmaceutical forms of different drugs for veterinary use.
- A6- List the different routes of administration of drugs and the advantages and disadvantages of each.
- A7- Explain the drug residues and drug interactions.
- A8- Discuss fully the fate of drugs in the body.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Establish a good link between the doses, routes of administration and the actions of drugs.
- B2- Weigh up, solve and manage the general toxic hazards related to drugs administrationsuch as drug residues, drug interactions ,drug side effects and toxicity, etc.
- B3- Interpret the results of different laboratory tests.
- B4- Select the most suitable and economic drugs for treatment and prevention of diseases in animals.
- B5- Use the appropriate laboratory animal and equipments or in-vitro test for a specific experiment.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Perform recent techniques for better understanding of drug actions.
- C2- Estimate the drugs actions in-vivo and in-vitro.
- C3- Use appropriate basic laboratory equipments and animals safely and efficiently.
- C4- Differentiate between the different sources, forms and routes of administration of drugs.



C5- Carry out dosing, sampling, labeling and preservation of samples.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Perform group working , good management and problem solving ability.

D2- Conduct good communications.

D3-Use new technology and has the ability of self learning.

D4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

SNO.	TOPIC	Total hours	Hours for lecture	Hours for practical
1	Introduction to general Pharmacology	4	4	-
2	Sources of Drugs.	8	8	-
3	Drug forms and pharmaceutical preparations.	8	8	-
4	Routes of drugs administration.	8	8	-
5	Fate of drugs in the body.	38	38	-
6	Drug residues.	8	8	-
7	Drugs actions theories and mechanism of actions.	12	12	-
8	Factors affecting drugs actions and doses.	10	10	-
9	Drug forms and routes of administration of drugs.	6	-	6
10	Handling, anaesthesia and requirements of laboratory animals.	6	-	6
11	Isolated organ bath system (oscillograph) parts, applications and uses.	6	-	6
12	Detection of drug actions on isolated tissue and organ preparations.	30	-	30
13	Assessment of drugs actions on intact laboratory animals.	40	-	40
14	Testing the drugs actions given by different routes of administration.	8	-	8
	Total	192	96	96

5- TEACHING & LEARNING METHODS:

***Lectures:**



Using data show.

***Practical and small group sessions:**

Practical demonstrations, practice of skills and discussions

*** Self learning:**

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.

• **Audiovisual:**

Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

No disabled students until now, but if present the staff members in the department plan to held several meetings with the students to face any difficulties that meet the students.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	At the the end of academic year	At the end of academic year	Two weeks before the end of the academic year
<u>7.c grads</u>	50	20	30

8. LEARNING AND REFERENCE MATERIALS:

8-1: Basic materials:

- Text books in Pharmacology available in library of the faculty.
- Overhead projections, Microscopes, , slides and computer presentations used during teaching.

8-2: Recmonded books:

- **Joel G. Hardman, Lee E. Limbird and (2001):** Goodman & Gilman's: The Pharmacological Basis of Therapeutics, 10th Edition.
- **H. Richard Adams (1995) :** Veterinary Pharmacology and Therapeutics, 7th Edition.

8-3: Suggested books:

- **Clive , P., Brian, H., Michael, C. and Michael, W. (2006):** Integrated Pharmacology: With Student Consult Access, 3rd Edition.
- **Carl Binz (2008):** Lectures on pharmacology for practitioners and students ,Volume: v.2.

8.4: Web sites and jouranlsand so on:

- Journal of pharmacology and experimental therapeutics.



- British Journal of pharmacology.
- European Journal of Pharmacology.
- <http://www.vetmed.wsu.edu/depts.-vcpl/>
- <http://www.cc.nih.gov/>
- <http://www.acvcp.org/>
- <http://www.clinicalpharmacology.com/>
- <http://www.vetnet.net/>
- <http://www.summitpk.com/pksolutions.htm>
- <http://www.analyticon.co.uk/pkpdpage.htm>

9.1. Course content ILOs Matrix:

TOPIC	K.U (A)	I.S (B)	P.P.S (C)	G.T.S (D)
Introduction to general Pharmacology	A1	-	-	D1 to D4
Sources of Drugs.	A5	-	-	D1 to D4
Drug forms and pharmaceutical preparations.	A5	-	-	D1 to D4
Routes of drugs administration.	A6	B1	-	
Fate of drugs in the body.	A8	-	-	D1 to D4
Drug residues.	A7	B2	-	D1 to D4
Drugs actions theories and mechanism of actions.	A1,A4	B4	-	D1 to D4
Factors affecting drugs actions and doses.	A2,A3	B1,B2	-	D1 to D4
Drug forms and routes of administration of drugs.	-	B1	C4	D1 to D4
Handling, anaesthesia and requirements of laboratory animals.	-	B5	C3	D1 to D4
Isolated organ bath system (oscillograph) parts, applications and uses.	-	B5	C3	D1 to D4
Detection of drug actions on	-	B3,B5	C1,C2,C5	D1 to D4



isolated tissue and organ preparations.				
Assessment of drugs actions on intact laboratory animals.	-	B3,B5	C1,C2,C5	D1 to D4
Testing the drugs actions given by different routes of administration.	-	B1,B3,B5	C1,C2,C5	D1 to D4

9.2. Assessment ILOs Matrix:

Methods	Knowledge	I.L.O.S Evaluation			Marks allocated
		Intellectual	Practical	general	
Written examination	A1, A2, A3., A4, A5, A6,A7, A8	B1, B2, B3, B4, B5	-		50
Oral examination	A1, A2, A3., A4, A5, A6, A7, A8	B1, B2, B3, B4, B5	-	D1,D2, D3,D4	25
Practical examination	-	B1, B3, B5	C1, C2, C3 C4,C5	D1,D2, D3,D4	25

Course Coordinator:

Prof. Dr. Kamal Ahmed El-Shazly

Head of Department:

Prof. Dr. Aboelnasr Zahra



Course specification **(2021 / 2022)**

1 - Basic Information:

Code number: 200/2

Course title: Pharmacology of the autonomic nervous system and autacoids.

Academic Year: Predoctor year PhD (Pharmacology) Programme

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

The aim of this course is to provide the postgraduate students with up- to- date basic and advanced information and knowledge about the drugs acting on autonomic nervous system (Sympathetic and parasympathetic which control all vital functions of the body), skeletal muscle relaxant, local hormones and anti- inflammatory drugs .

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Recognize the physiology of autonomic nervous system and autonomic receptors.
- A2- Identify the Pharmacodynamics and pharmacokinetics of the autonomic drugs ,skeletal muscle relaxants, local hormones and anti - inflammatory drugs.
- A3- List the sources and pharmaceutical forms of different mentioned drugs for veterinary use.
- A4- Describe in details the therapeutic uses and toxic effects of the mentioned drugs used in farm animals and poultry.
- A5- Be aware with the outcome of a possible interactions or residues of the above mentioned drugs. .
- A6- Recognize the use of the mentioned drugs in various field problems.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Investigate the basic lines for uses of drugs in the prevention and treatment of animals and poultry.
- B2- Select the most suitable and economic drugs for treatment and prevention of diseases in animals and poultry.
- B3- Weigh up, solve and manage the problems associated with drugs administration such as drug residues, drug interactions ,drug side effects and toxicity, etc.
- B4- Select the appropriate laboratory animal and equipments or in-vitro test for a specific experiment.



B5- Interpret the results of different laboratory tests.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1-** Perform advanced techniques for studying drug actions.
- C2-** Estimate the drugs actions in-vivo and in-vitro.
- C3-** Prepare the experimental laboratory animals and requirements.
- C4-** Use appropriate basic laboratory equipment and animals safely and efficiently.
- C5-** Carry out dosing, sampling, labeling and preservation of samples.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- D1-** Perform group working , good management and problem solving ability.
- D2-** Conduct good communications.
- D3-** Use new technology and has the ability of self learning.
- D4-** Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

SNO.	TOPIC	Total hours	Hours for lecture	Hours for practical
1	Introduction and physiological concepts on autonomic nervous system	6	6	-
2	Autonomic drugs and receptors	6	6	-
3	Adrenomimetic drugs	10	10	-
4	Antiadrenergics	10	10	-
5	Parasympathomimetics	10	10	-
6	Parasympatholytics	10	10	-
7	Ganglionic stimulants	8	8	-
8	Ganglionic blockers	8	8	-
9	Skeletal muscle relaxants	8	8	-
10	Local hormones	10	10	-
11	Anti-inflammatory agents.	10	10	
12	Handling, anaesthesia and requirements of Laboratory animal.	8	-	8
13	Parts, applications and uses of oscillograph .	8	-	8



14	Determination of the autonomic drugs Pharmacodynamics on isolated tissue and organ preparations.	20	-	20
15	Assessment of the autonomic drugs Pharmacodynamics on intact laboratory animals.	20	-	20
16	Detection of the Autacoids and Anti-inflammatory agents Pharmacodynamics on isolated tissue and organ preparations.	20	-	20
17	Detection of the Autacoids and Anti-inflammatory agents Pharmacodynamics on intact laboratory animals.	20	-	20
Total		192	96	96

5- TEACHING & LEARNING METHODS:

***Lectures:**

Using data show.

***Practical and small group sessions:**

Practical demonstrations, practice of skills and discussions

*** Self learning:**

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.

- **Audiovisual:**

Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

No disabled students until now, but if present the staff members in the department plan to hold several meetings with the students to face any difficulties that meet the students.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	At the end of academic year	At the end of academic year	Two weeks before the end of the academic year
<u>7.c grads</u>	50	20	30



8. LEARNING AND REFERENCE MATERIALS:

8-1: Basic materials:

- Text books in Pharmacology available in library of the faculty.
- Overhead projections, Microscopes, Slides and computer presentations used during teaching.

8-2: Recmended books:

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- **Walter H. Hsu, William O. Reece and William J. Reece (2008) :** Handbook of Veterinary Pharmacology, 1st edition.
- **H. Richard Adams (1995) :** Veterinary Pharmacology and Therapeutics, 7th Edition.

8-3: Suggested books:

- **Clive , P., Brian, H., Michael, C. and Michael, W. (2006):** Integrated Pharmacology: With Student Consult Access, 3rd Edition.
- **Heinz Lüllmann, M. D.,Klaus Mohr, M. D.,Albrecht Ziegler, Ph.D.,Detlef and Bieger, M. D. (2005) :** Color Atlas of Pharmacology , 3rd edition .
- **Carl Binz (2008):** Lectures on pharmacology for practitioners and students ,Volume: v.2.

8.4: Web sites and jouranlsand so on:

- Journal of pharmacology and experimental therapeutics.
- British Journal of pharmacology.
- European Journal of Pharmacology.
- <http://www.vetmed.wsu.edu/depts.-vcpl/>
- <http://www.cc.nih.gov/>
- <http://www.acvcp.org/>
- <http://www.clinicalpharmacology.com/>
- <http://www.vetnet.net/>
- <http://www.summitpk.com/pksolutions.htm>
- <http://www.analyticon.co.uk/pkpdpage.htm>

9.1. Course content ILOs Matrix:



TOPIC	K.U (A)	LS (B)	P.P.S (C)	G.T.S (D)
Introduction and physiological concepts on autonomic nervous system	A1	-	-	D1 to D4
Autonomic drugs and receptors	A2 to A6	-	-	D1 to D4
Adrenomimetic drugs	A2 to A6	B1,B2,B3	-	D1 to D4
Antiadrenergics	A2 to A6	B1,B2,B3	-	
Parasympathomimetics	A2 to A6	B1,B2,B3	-	D1 to D4
Parasympatholytics	A2 to A6	B1,B2,B3	-	D1 to D4
Ganglionic stimulants	A2 to A6	B1,B2,B3	-	D1 to D4
Ganglionic blockers	A2 to A6	B1,B2,B3	-	D1 to D4
Skeletal muscle relaxants	A2 to A6	B1,B2,B3	-	D1 to D4
Local hormones	A2 to A6	B1,B2,B3	-	D1 to D4
Anti-inflammatory agents.	A2 to A6	B1,B2,B3	-	D1 to D4
Handling, anaesthesia and requirements of Laboratory animal.	-	B4	C3,C4	D1 to D4
Parts, applications and uses of oscillograph	-	B4	C3,C4	D1 to D4
Determination of the autonomic drugs	-		C1,C2,C5	D1 to D4
Pharmacodynamics on isolated tissue and organ preparations.		B4,B5		
Assessment of the autonomic drugs	-		C1,C2,C5	D1 to D4
Pharmacodynamics on intact laboratory animals.		B4,B5		
Detection of the Autacoids and Anti-inflammatory agents	-		C1,C2,C5	D1 to D4
Pharmacodynamics on isolated tissue and organ preparations.		B4,B5		
Detection of the Autacoids and Anti-inflammatory agents	-		C1,C2,C5	D1 to D4
Pharmacodynamics		B4,B5		



on intact laboratory animals.

9.2. Assessment ILOs Matrix:

Methods	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectual	Practical	general	
Written examination	A1, A2, A3., A4, A5, A6	B1, B2, B3, B4, B5	-		50
Oral examination	A1, A2, A3., A4, A5, A6	B1, B2, B3, B4, B5	-	D1,D2, D3 & D4	25
Practical examination	-	B4, B5	C1, C2, C3 C4,C5	D1,D2, D3 & D4	25

Course Coordinator:

Prof. Dr. Abeer Hanafy

Head of Department:

Prof. Dr Aboelnasr Zahra



Course specification **(2021 / 2022)**

1 - Basic Information:

Code number: 201/2

Course title: Pharmacology of the central nervous system

Academic Year: predoctor year: PhD (Pharmacology) Programme

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

The aim of this course is to provide the postgraduate students with up- to- date basic and advanced information and knowledge about the drugs affecting the central nervous system(stimulants and depressants).

By the end of the course, students should be able to:

- Identify the classifications, actions and mechanism of action of different drugs.
- Elucidate the fate of drugs in the body.
- Demonstrate drugs uses, side effects, interactions and drugs residues.
- Develop approaches for treatment and prevention of different diseases.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1-** Recognize the physiology of central nervous system.
- A2-** Describe the pharmacological actions of the central nervous system affecting drugs.
- A3-** Explain in details the mechanism of actions of different groups of the central nervous system affecting drugs.
- A4-** Discuss the sources and pharmaceutical forms of different central nervous system affecting drugs for veterinary use .
- A5-** List the therapeutic uses and toxic effects of central nervous system affecting drugs used in farm animals and poultry.
- A6-** Identify the outcome of a possible interaction or residue of the central nervous system affecting drugs with other drugs, nutritional status and environmental conditions.
- A7-** Recognize the better approach with the central nervous system affecting drugs to various field problems.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:



- B1-** Weigh up, solve and manage the general toxic hazards related to drugs administration such as drug residues, drug interactions, drug side effects and toxicity, etc.
- B2-** Investigate the basic lines for uses of drugs in the prevention and treatment of diseases in animals and poultry.
- B3-** Select the most suitable and economic drugs for treatment and prevention of diseases in animals and poultry.
- B4-** Select the appropriate laboratory animal and equipments or in-vitro test for a specific experiment.
- B5-** Interpret the results of different laboratory tests.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1-** Perform advanced techniques for studying drugs actions.
- C2-** Estimate the drugs actions in-vivo and in-vitro.
- C3-** Prepare the experimental requirements and the laboratory animals.
- C4-** Use appropriate basic laboratory equipment and animals safely and efficiently.
- C5-** Carry out dosing, sampling, labeling and preservation of samples.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- D1-** Perform group working, good management and problem solving ability.
- D2-** Conduct good communications.
- D3-** Use new technology and has the ability of self learning.
- D4-** Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

SNO.	TOPIC	Total hours	Hours for lecture	Hours for practical
1	Introduction and Physiological consideration on central nervous system	4	4	-
2	CNS Stimulants	30	30	-
3	CNS Depressants	36	36	-
4	General anaesthetics.	14	14	-
5	Local anaesthetics.	12	12	-
6	Laboratory animals handling and requirements.	6	-	6
7	Oscillograph parts, applications and uses	6	-	6



8	Determination the effects of the C.N.S. stimulants and their antidotes in intact laboratory animals.	18	-	18
9	Determination the effects of the C.N.S. depressants and their antidotes in intact laboratory animals.	18	-	18
10	Testing the general anaesthetic effect of drugs on laboratory animals.	16	-	16
11	Testing the local anaesthetic effect of drugs on laboratory animals.	16	-	16
12	Testing the local anaesthetic effect of drugs on isolated tissue and organ preparations.	16	-	16
	Total	192	96	96

5- TEACHING & LEARNING METHODS:

***Lectures:**

Using data show.

***Practical and small group sessions:**

Practical demonstrations, practice of skills and discussions

*** Self learning:**

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.

- **Audiovisual:**

Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

No disabled students until now, but if present the staff members in the department plan to held several meetings with the students to face any difficulties that meet the students.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	At the end of academic year	At the end of academic year	Two weeks before the end of the academic year
<u>7.c grads</u>	50	20	30



8. LEARNING AND REFERENCE MATERIALS:

8-1: Basic materials:

- Text books in Pharmacology available in library of the faculty.
- Overhead projections, Microscopes, , slides and computer presentations used during teaching.

8-2: Recmended books:

- **Joel G. Hardman, Lee E. Limbird and Alfred G. Gilman (2001).**: Goodman & Gilman's: The Pharmacological Basis of Therapeutics, 10th Edition.
- **Walter H. Hsu, William O. Reece and William J. Reece (2008)** : Handbook of Veterinary Pharmacology, 1st edition.
- **H. Richard Adams (1995)** : Veterinary Pharmacology and Therapeutics, 7th Edition.

8-3: Suggested books:

- **Clive , P., Brian, H., Michael, C. and Michael, W. (2006):** Integrated Pharmacology: With Student Consult Access, 3rd Edition.
- **Heinz Lüllmann, M. D.,Klaus Mohr, M. D.,Albrecht Ziegler, Ph.D.,Detlef and Bieger, M. D. (2005)** : Color Atlas of Pharmacology , 3rd edition .
- **Carl Binz (2008):** Lectures on pharmacology for practitioners and students , Volume: v.2.

8.4: Web sites and jouranlsand so on

- Journal of pharmacology and experimental therapeutics.
- British Journal of pharmacology.
- European Journal of Pharmacology.
- <http://www.vetmed.wsu.edu/depts.-vcpl/>
- <http://www.cc.nih.gov/>
- <http://www.acvcp.org/>
- <http://www.clinicalpharmacology.com/>
- <http://www.vetnet.net/>
- <http://www.summitpk.com/pksolutions.htm>
- <http://www.analyticon.co.uk/pkpdpage.htm>



9.1. Course content ILOs Matrix:

TOPIC	K.U (A)	I.S (B)	P.P.S (C)	G.T.S (D)
Introduction and Physiological consideration on central nervous system CNS Stimulants	A1	-	-	D1 to D4
	A2 to A7	B1,B2,B3	-	D1 to D4
CNS Depressants	A2 to A7	B1,B2,B3	-	D1 to D4
General anaesthetics.	A2 to A7	B1,B2,B3	-	
Local anaesthetics.	A2 to A7	B1,B2,B3	-	D1 to D4
Laboratory animals handling and requirements.	-	B4	C3,C4	D1 to D4
Oscillograph parts, applications and uses	-	B4	C3,C4	D1 to D4
Determination the effects of the C.N.S. stimulants and their antidotes in intact laboratory animals.	-	B4,B5	C1,C2,C5	D1 to D4
Determination the effects of the C.N.S. depressants and their antidotes in intact laboratory animals.	-	B4,B5	C1,C2,C5	D1 to D4
Testing the general anaesthetic effect of drugs on laboratory animals.	-	B4,B5	C1,C2,C5	D1 to D4
Testing the local anaesthetic effect of drugs on laboratory animals.	-	B4,B5	C1,C2,C5	D1 to D4
Testing the local anaesthetic effect of drugs on isolated tissue and organ preparations.	-	B4,B5	C1,C2,C5	D1 to D4

9.2. Assessment ILOs Matrix:

Methods	I.L.O.S Evaluation			Marks allocated
	Knowledge	Intellectual	Practical	
Written	A1, A2, A3., A4, A5,	B1, B2, B3	-	50



examination	A6,A7				
Oral examination	A1, A2, A3., A4, A5, A6, A7	B1, B2, B3	-	D1,D2, D3, D4	25
Practical examination	-	B4, B5	C1, C2, C3 C4,C5	D1,D2, D3,D4	25

Course Coordinator:

Prof. Dr Kamal Ahmed El-Shazly

Head of Department:

Prof. Dr Aboelnasr Zahra



Course specification **(2021 / 2022)**

1 - Basic Information:

Code number: : 202/2

Course title: Pharmacology of anaesthesia.

Academic Year: predoctor year: PhD (Pharmacology) Programme

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

The aim of this course is to provide the postgraduate students with up- to- date basic and advanced information and knowledge about the general , local anaesthetic drugs and pre- anaesthetic medications.

By the end of the course, students should be able to:

- Identify the classifications, actions and mechanism of action of different anaesthetic drugs.
- Elucidate the fate of anaesthetic drugs in the body.
- Demonstrate anaesthetic drugs uses, side effects and interactions.
- Estimate the benefits of pre- anaesthetic medications.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Define the advanced concepts and theories of the mechanisms of action of general and local anaesthetic drugs and pre- anaesthetic medications.

A2- Discuss in details the stages of general anaesthetic drugs.

A3- Describe the factors affecting the general and local anaesthetic drugs actions.

A4- Recognize the different types of general , local anaesthetic drugs and pre- anaesthetic medications.

A5- Realize the different methods of administration of the anaesthetic and preanaesthetic drugs.

A6- Recognize the pharmacological actions of different groups of the anaesthetic and preanaesthetic drugs

A7- Illustrate the doses , uses, side and toxic effects of anaesthetic and preanaesthetic drugs used in animals.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:



- B1-** Establish a good link between anaesthetic and preanaesthetic drugs types , doses and species ,age and sex of animals.
- B2-** Weigh up, solve and manage the general toxicity and side effects in relation to anaesthetic drugs administration.
- B3-** Select the most suitable and economic anaesthetic drugs in animals.
- B4-** Select the appropriate laboratory animal and equipments or in-vitro test for a specific experiment.
- B5-** Interpret the results of different laboratory tests.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1-** Estimate the anaesthetic and preanaesthetic drugs actions in-vivo on intact laboratory animal.
- C2-** Test the anaesthetic and preanaesthetic drugs actions in-vitro in organ bath system and oscilograph.
- C3-** Prepare the laboratory animals and requirements.
- C4-** Differentiate between the different anaesthetic drugs .
- C5-** Use appropriate basic laboratory equipment and animals safely and efficiently.
- C6-** Carry out dosing, sampling, labeling and preservation of samples.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- D1-** Perform group working , good management and problem solving ability.
- D2-** Conduct good communications.
- D3-** Use new technology and has the ability of self learning.
- D4-** Develop the ethical behaviors between students and staff members as well as among the students themselves

4 - COURSE CONTENTS:

SNO.	TOPIC	Total hours	Hours for lecture	Hours for practical
1	Mode of action of general anaesthesia	8	8	-
2	Stages of anaesthesia	8	8	-
3	Types of preanaesthetic medications	12	12	-
4	Types of general anaesthesia	32	32	-
5	Methods of application of local anaesthesia	10	10	-



6	Characters of ideal local anaesthesia	6	6	-
7	Mechanism of action and effect of ph on the activity of local anaesthesia	8	8	-
8	Individual local anaesthesia	12	12	-
9	Laboratory animals handling and requirements.	4	-	4
10	Oscillograph parts, applications and uses	4	-	4
11	Estimation of the stages of general anaesthetic drugs on laboratory animal.	18	-	18
12	Assessment of the Preanaesthetic drugs actions on laboratory animals.	18	-	18
13	Testing the general anaesthetic effect of drugs on laboratory animals.	18	-	18
14	Testing the local anaesthetic effect of drugs on laboratory animals.	18	-	18
15	Testing the local anaesthetic effect of drugs on isolated tissue and organ preparations.	16	-	16
	Total	192	96	96

5- TEACHING & LEARNING METHODS:

***Lectures:**

Using data show.

***Practical and small group sessions:**

Practical demonstrations, practice of skills and discussions

*** Self learning:**

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.

- **Audiovisual:**

Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

No disabled students until now, but if present the staff members in the department plan to hold several meetings with the students to face any difficulties that meet the students.



7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	At the end of academic year	At the end of academic year	two weeks before the end of the academic year
<u>7.c grads</u>	50	20	30

8. LEARNING AND REFERENCE MATERIALS:

8-1: Basic materials:

- Text books in Pharmacology available in library of the faculty.
- Overhead projections, Microscopes, , slides and computer presentations used during teaching.

8-2: Recmended books:

- **Joel G. Hardman, Lee E. Limbird and Alfred G. Gilman (2001):** Goodman & Gilman's: The Pharmacological Basis of Therapeutics, 10th Edition.
- **H. Richard Adams (1995) :** Veterinary Pharmacology and Therapeutics, 7th Edition.
- **G. C. Brander, D. M. Pugh, R. J. Bywater and W. L. Jenkins (1991):** Veterinary applied pharmacology and therapeutics , 5th Edition.

8-3: Suggested books:

- **Clive , P., Brian, H., Michael, C. and Michael, W. (2006):** Integrated Pharmacology: With Student Consult Access, 3rd Edition.
- **Heinz Lüllmann, M. D.,Klaus Mohr, M. D.,Albrecht Ziegler, Ph.D.,Detlef and Bieger, M. D. (2005) :** Color Atlas of Pharmacology , 3rd edition .
- **Carl Binz (2008):** Lectures on pharmacology for practitioners and students ,Volume: v.2.

8.4: Web sites and jouranlsand so on:

- Journal of pharmacology and experimental therapeutics.
- British Journal of pharmacology.
- European Journal of Pharmacology.
- <http://www.vetmed.wsu.edu/depts.-vcpl/>
- <http://www.cc.nih.gov/>
- <http://www.acvcp.org/>



- <http://www.clinicalpharmacology.com/>
- <http://www.vetnet.net/>
- <http://www.summitpk.com/pksolutions.htm>
- <http://www.analyticon.co.uk/pkpdpage.htm>

9.1. Course content ILOs Matrix:

TOPIC	K.U (A)	I.S (B)	P.P.S (C)	G.T.S (D)
Mode of action of general anaesthesia	A1	-	-	D1 to D4
Stages of general anaesthesia	A2	-	-	D1 to D4
Types of preanaesthetic medications	A4,A6,A7	B1,B2,B3	-	
Types of general anaesthesia	A4,A6,A7	B1,B2,B3	-	D1 to D4
Methods of application of local anaesthesia	A5	-	-	D1 to D4
Characters of ideal local anaesthesia	A3	-	-	D1 to D4
Mechanism of action and effect of ph on the activity of local anaesthesia	A1,A3	-	-	D1 to D4
Individual local anaesthesia	A4,A6,A7	B1,B2,B3	-	D1 to D4
Laboratory animals handling and requirements.	-	B4	C3,C5	D1 to D4
Oscillograph parts, applications and uses	-	B4	C3,C5	D1 to D4
Estimation of the stages of general anaesthetic drugs on laboratory animal.	-	B4,B5	C1,C6	D1 to D4
Assessment of the Preanaesthetic drugs actions on laboratory animals.	-	B4,B5	C1,C6	D1 to D4
Testing the general anaesthetic effect of drugs on laboratory animals.	-	B4,B5	C1,C4,C6	D1 to D4
Testing the local anaesthetic effect of drugs on laboratory animals.	-	B4,B5	C1,C4,C6	D1 to D4



Testing the local anaesthetic effect of drugs on isolated tissue and organ preparations.	-	B4,B5	C2,C4,C6	D1 to D4
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9.2. Assessment ILOs Matrix:

Methods	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectual	Practical	general	
Written examination	A1, A2, A3., A4,A5, A6,A7	B1, B2, B3, B4, B5	-		50
Oral examination	A1, A2, A3., A4, A5, A6, A7	B1, B2, B3, B4, B5	-	D1,D2, D3, D4	25
Practical examination	-	B1, B2, B3, B4, B5	C1, C2, C3 C4,C5 & C6	D1,D2, D3, D4	25

Course Coordinator:

Prof. Dr Kamal Ahmed El-Shazly

Head of Department:

Prof. Dr Aboelnasr Zahra



Course specification

(2021 / 2022)

1 - Basic Information:

Code number: 203/2

Course title: Pharmacology of systems

Academic Year: predoctor year : PhD (Pharmacology) Programme

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

The aim of this course is to provide the postgraduate students with up- to- date basic and advanced information and knowledge about the veterinary drugs used in the treatment of different affections of body systems including digestive , respiratory, cardiovascular, urinary, reproductive and respiratory systems beside drugs acting on skin and eye .

By the end of the course, students should be able to:

- Identify the classifications of different drugs.
- Elucidate the sources, actions and mechanisms of actions of different drugs.
- Describe the fate of drugs in the body.
- Demonstrate the drugs uses, side effects ,interactions and residues.
- Develop approaches for treatment and prevention of different diseases in animals and poultry.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1-** Recognize the physiology of different body systems.
- A2-** Categorize the classifications, sources and pharmaceutical forms of different drugs for veterinary use .
- A3-** Discuss in details the pharmacological actions and mode of actions of drugs.
- A4-** List the therapeutic uses, toxic and side effects of drugs used in farm animals and poultry.
- A5-** Describe the outcome of a possible interaction of drugs .
- A6-** Identify the importance of interspecies difference and physiological status on drug applications.
- A7-** Evaluate fully the pharmacological bases for treatment of diseased conditions.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:



- B1-** Select the appropriate laboratory animal or in-vitro test for a specific experiment.
B2- Interpret the results of different laboratory tests.
B3- Establish a good link between the action of drugs in vivo and in vitro.
B4- Establish a good link between drugs and their economy use in the veterinary field.
B5- Analyze, summarize and evaluate information about drugs in professional manner.
B6- Select the different drugs in diseased conditions in professional way.
B7- Evaluate, solve and manage of veterinary therapeutic problems associated with administration of drugs as drug interactions ,drug side effects and toxicity in professional manner.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1-** Estimate the drugs actions in-vivo.
C2- Test the drugs actions in-vitro.
C3- Use appropriate basic laboratory equipment and animals safely and efficiently.
C4- Differentiate between actions of different drugs in-vivo and in-vitro.
C5- Carry out dosing, sampling, labeling and preservation of samples.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- D1-** Perform group working , good management and problem solving ability.
D2- Conduct good communications.
D3- Use new technology and has the ability of self learning.
D4- Develop the ethical behaviors between students and staff members as well as among the students themselves

4 - COURSE CONTENTS:

SNO.	TOPIC	Total hours	Hours for lecture	Hours for practical
1	Effects of drugs on gastrointestinal tract.	18	18	-
2	Effects of drugs on respiratory systems.	16	16	-
3	Effects of drugs on cardiovascular system.	16	16	-
4	Effects of drugs on reproductive system.	16	16	-
5	Effects of drugs on urinary system.	16	16	-
6	Effects of drugs on the Skin.	8	8	-



7	Effects of drugs on the eye.	6	6	-
8	Determination the actions of drugs on gastrointestinal tract.	16	-	16
9	Determination the actions of drugs on respiratory systems.	16	-	16
10	Assessment the actions of drugs on cardiovascular system.	16	-	16
11	Determination the actions of drugs on reproductive system.	16		16
12	Determination the actions of drugs on urinary system.	12		12
13	Testing the drugs actions on the Skin.	10		10
14	Testing the drugs actions on the eye.	10		10
	Total	192	96	96

5- TEACHING & LEARNING METHODS:

***Lectures:**

Using data show.

***Practical and small group sessions:**

Practical demonstrations, practice of skills and discussions

*** Self learning:**

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.
- **Audiovisual:**
Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

No disabled students until now, but if present the staff members in the department plan to held several meetings with the students to face any difficulties that meet the students.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	At the end of academic year	At the end of academic year	Two weeks before the end of the academic year



7.c grads	50	20	30
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8. LEARNING AND REFERENCE MATERIALS:

8-1: Basic materials:

- Text books in Pharmacology available in library of the faculty.
- Overhead projections, Microscopes, , slides and computer presentations used during teaching.

8-2: Recmended books:

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- **Walter H. Hsu, William O. Reece and William J. Reece (2008) :** Handbook of Veterinary Pharmacology, 1st edition.
- **H. Richard Adams (1995) :** Veterinary Pharmacology and Therapeutics, 7th Edition.

8-3: Suggested books:

- **Clive , P., Brian, H., Michael, C. and Michael, W. (2006):** Integrated Pharmacology: With Student Consult Access, 3rd Edition.
- **Heinz Lüllmann, M. D.,Klaus Mohr, M. D.,Albrecht Ziegler, Ph.D.,Detlef and Bieger, M. D. (2005) :** Color Atlas of Pharmacology , 3rd edition .
- **Carl Binz (2008):** Lectures on pharmacology for practitioners and students ,Volume: v.2.

8.4: Web sites and jouranlsand so on

- Journal of pharmacology and experimental therapeutics.
- British Journal of pharmacology.
- European Journal of Pharmacology.
- <http://www.vetmed.wsu.edu/depts.-vcpl/>
- <http://www.cc.nih.gov/>
- <http://www.acvcp.org/>
- <http://www.clinicalpharmacology.com/>
- <http://www.vetnet.net/>
- <http://www.summitpk.com/pksolutions.htm>
- <http://www.analyticon.co.uk/pkpdpage.htm>



9.1. Course content ILOs Matrix:

TOPIC	K.U (A)	LS (B)	P.P.S (C)	G.T.S (D)
Effects of drugs on gastrointestinal tract.	A1 to A7	B4,B5,B6, B7	-	D1 to D4
Effects of drugs on respiratory systems.	A1 to A7	B4,B5,B6, B7	-	D1 to D4
Effects of drugs on cardiovascular system.	A1 to A7	B4,B5,B6, B7	-	D1 to D4
Effects of drugs on reproductive system.	A1 to A7	B4,B5,B6, B7	-	
Effects of drugs on urinary system.	A1 to A7	B4,B5,B6, B7	-	D1 to D4
Effects of drugs on the Skin.	A1 to A7	B4,B5,B6, B7	-	D1 to D4
Effects of drugs on the eye.	A1 to A7	B4,B5,B6, B7	-	D1 to D4
Determination the actions of drugs on gastrointestinal tract.	-	B1,B2,B3	C1 to C5	D1 to D4
Determination the actions of drugs on respiratory systems.	-	B1,B2,B3	C1 to C5	D1 to D4
Assessment the actions of drugs on cardiovascular system.	-	B1,B2,B3	C1 to C5	D1 to D4
Determination the actions of drugs on reproductive system.	-	B1,B2,B3	C1 to C5	D1 to D4
Determination the actions of drugs on urinary system.	-	B1,B2,B3	C1 to C5	D1 to D4
Testing the drugs actions on the Skin.	-	B1,B2,B3	C1 to C5	D1 to D4
Testing the drugs actions on the eye.	-	B1,B2,B3	C1 to C5	D1 to D4

9.2. Assessment ILOs Matrix:



Methods	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectual	Practical	general	
Written examination	A1, A2, A3., A4, A5, A6, A7	B1, B2, B3, B4, B5, B6, B7.	-		50
Oral examination	A1, A2, A3., A4, A5, A6, A7	B1, B2, B3, B4, B5, B6, B7	-	D1,D2, D3, D4	25
Practical examination	-	B1, B2, B3	C1, C2, C3 C4,C5	D1,D2, D3,D4	25

Course Coordinator:

Prof. Dr. Kamal Ahmed El-Shazly

Head of Department:

Prof. Dr.Aboelnasr Zahra



Course specification **(2021 / 2022)**

1 - Basic Information:

Code number: 204/2

Course title: Pharmacology of metabolism

Academic Year: predoctor year: PhD (Pharmacolgy) Programme

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

The aim of this course is to provide the postgraduate students with up- to- date basic and advanced information and knowledge about the drugs affecting metabolism and growth promoting agents .

By the end of the course, students should be able to:

- e. Identify the drugs affecting fluid and electrolytes balance, organic, inorganic metabolism and carbohydrate metabolism.
- f. Describe the different metabolic diseases and disorders and develop approaches for prevention, diagnosis and treatment of them.
- g. Elucidate the growth promoting agents and estimate their side effects.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Define the drugs affecting fluid and electrolytes balance, inorganic metabolism and carbohydrate metabolism.

A2- Realize the common clinical conditions and diseases related to body fluids , electrolytes , and acid base regulation.

A3- Illustrate the clinical approach in disturbed metabolism.

A4- Be aware with the metabolic interrelationships, integration between different organs in some metabolic states and how they are affected in health and disease.

A5- Discuss in details the growth promoting agents and their side effects.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1- Interpret the results of different laboratory analysis



- B2-** Formulate a systematic approach for laboratory diagnosis and treatment of metabolic diseases.
- B3-** Relate some diseases with metabolic disorders.
- B4-** Analyze the changes between the microbial and metabolic diseases.
- B5-** Weigh up the toxic hazards and side effects in relation to growth promoters.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1-** Perform measuring of different metabolic substances with various advanced techniques .
- C2-** Analyze Statistic data.
- C3-** Estimate the differentiations between the normal and abnormal metabolism.
- C4-** Demonstrate the relation between the disease and the disturbances in metabolism.
- C5-** Test the growth promoting effect of drugs.
- C6-** Carry out dosing, sampling, labeling and preservation of samples.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- D1-** Perform group working , good management and problem solving ability.
- D2-** Conduct good communications.
- D3-** Use new technology and has the ability of self learning.
- D4-** Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

SNO.	TOPIC	Total hours	Hours for lecture	Hours for practical
1	Effects of drugs on Water and electrolyte metabolism and acid base balance..	22	22	-
2	Effects of drugs on inorganic metabolism.	30	30	-
3	Effects of drugs on carbohydrate metabolism.	30	30	-
4	Growth promoting agents.	14	14	-
5	Determination the effect of drugs on Water and electrolyte metabolism.	20	-	20
6	Assessment the effect of drugs on inorganic metabolism.	20	-	20
7	Testing the effect of drugs on	20	-	20



	carbohydrate metabolism.			
8	Diagnosis of some metabolic disorders.	20	-	20
9	Testing the growth promoting effect of drugs.	16	-	16
	Total	192	96	96

5- TEACHING & LEARNING METHODS:

***Lectures:**

Using data show.

***Practical and small group sessions:**

Practical demonstrations, practice of skills and discussions

*** Self learning:**

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.

- **Audiovisual:**

Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

No disabled students until now, but if present the staff members in the department plan to held several meetings with the students to face any difficulties that meet the students.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	At the end of academic year	At the end of academic year	Two weeks before the end of the academic year
<u>7.c grads</u>	50	20	30

8. LEARNING AND REFERENCE MATERIALS:

8-1: Basic materials:

- Text books in Pharmacology available in library of the faculty.
- Overhead projections, Microscopes, , slides and computer presentations used during teaching.



8-2: Recomed books:

- **Joel G. Hardman, Lee E. Limbird and Alfred G. Gilman (2001):** Goodman & Gilman's: The Pharmacological Basis of Therapeutics, 10th Edition.
- **H. Richard Adams (1995) :** Veterinary Pharmacology and Therapeutics, 7th Edition.
- **Merck , S. and Dohme , C. (2005) :** The Merck Veterinary Manual, 9th Edition.
- **Zilva, M.; Charles, F. and Myne, N. (1993):** Clinical Chemistry in Diagnosis and Treatment ,6th Edition.
- **J. M. Payne(1991):** Metabolic and Nutritional Diseases of Cattle , 1st Edition

8-3: Suggested books:

- **Thomas M. Devlin (2002):** Text book of Biochemistry with Clinical Correlations , 5th Ed.
- **Martin Crook (2006):** Clinical Chemistry & Metabolic Medicine, 7th Ed.
- **Clive , P., Brian, H., Michael, C. and Michael, W. (2006):** Integrated Pharmacology: With Student Consult Access, 3rd Edition.
- **Carl Binz (2008):** Lectures on pharmacology for practitioners and students ,Volume: v.2.

8.4: Web sites and jouranlsand so on

- Journal of pharmacology and experimental therapeutics.
- British Journal of pharmacology.
- European Journal of Pharmacology.
- Journal of Biochemistry
- American Journal of Biochemical Association.
- American Journal of Veterinary Research.
- <http://www.vetmed.wsu.edu/depts.-vcpl/>
- <http://www.cc.nih.gov/>
- <http://www.acvcp.org/>
- <http://www.clinicalpharmacology.com/>
- <http://www.vetnet.net/>
- <http://www.summitpk.com/pksolutions.htm>
- <http://www.analyticon.co.uk/pkpdpage.htm>

9.1. Course content ILOs Matrix:



TOPIC	K.U (A)	I.S (B)	P.P.S (C)	G.T.S (D)
Effects of drugs on Water and electrolyte metabolism and acid base balance..	A1 to A4	B2,B3,B4	-	D1 to D4
Effects of drugs on inorganic metabolism.	A1 to A4	B2,B3,B4	-	D1 to D4
Effects of drugs on carbohydrate metabolism.	A1 to A4	B2,B3,B4	-	D1 to D4
Growth promoting agents.	A5	B5	-	
Determination the effect of drugs on Water and electrolyte metabolism.	-	B1	C1,C2,C5	D1 to D4
Assessment the effect of drugs on inorganic metabolism.	-	B1	C1,C2,C5	D1 to D4
Testing the effect of drugs on carbohydrate metabolism.	-	B1	C1,C2,C5	D1 to D4
Diagnosis of some metabolic disorders.	-	B2	C3,C4	D1 to D4
Testing the growth promoting effect of drugs.	-	B5	C2, C5,C6	D1 to D4

9.2. Assessment ILOs Matrix:

Methods	Knowledge	I.L.O.S Evaluation			Marks allocated
		Intellectual	Practical	general	
Written examination	A1, A2, A3., A4, A5	B1, B2, B3, B4, B5	-		50
Oral examination	A1, A2, A3., A4, A5	B1, B2, B3, B4, B5	-	D1,D2, D3, D4	25
Practical examination	-	B1, B2, B3, B4, B5	C1, C2, C3 C4,C5,C6	D1,D2, D3, D4	25

Course Coordinator:

Prof. Dr. Kamal Ahmed El-Shazly

Head of Department:

Prof. Dr. Aboelnasr Zahra



Course specification **(2021 / 2022)**

1 - Basic Information:

Code number: 205/2

Course title: Hormonal drugs.

Academic Year: predoctor year: PhD (Pharmacology) Programme

Total teaching hours: 144 hrs

Lectures: 48 hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

The aim of this course is to provide the postgraduate students with up- to- date basic and advanced information , knowledge and practical skills about all the major aspects of the safe hormonal uses in the therapy and in growth promotion in veterinary medicine , how to do it and how to solve therapy problems.

By the end of the course, students should be able to:

- h. Detect the hormones deficiencies, deficiency complaints and physical signs.
- i. Elucidate the successful correct of hormone deficiencies.
- j. Identify and gives solutions to the various problems that may occur in the course of therapy.
- k. Be aware with the means of increasing the safety and efficacy of treatments, what doses, which products, how to start, which are the safest routes to get hormones into the body.
- l. Demonstrate how to balance hormone therapies with one another.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1-** Explain the physiology of hormones and their normal secretion.
- A2-** Describe in details the nature of hormones and their chemistry.
- A3-** Define the general mode of hormones actions and functions and control of hormones secretion.
- A4-** Recognize the effect of hormones in health and disease states.
- A5-** Discuss fully the signs of hormone deficiencies and excesses.
- A6-** Describe the diagnosis of hormonal dysfunction and how to optimize the treatment.
- A7-** Realize the practical use of hormones therapies and side effects of hormones used in farm animals and poultry.



3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1-** Interpret the results of different laboratory analysis.
- B2-** Distinguish between physiological and pathological hormonal disturbances.
- B3-** Relate some diseases with hormonal disturbance.
- B4-** Select the best ways and products to treat hormonal deficiency cases.
- B5-** Demonstrate an investigating and analytic thinking approaches to conditions relevance to hormone treatment.
- B6-** Weigh up, solve and manage the general and specific toxic hazards related to hormonal treatment such as hormones side effects, toxicity and hormonal imbalance.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1-** Use the appropriate instruments , devices and laboratory animals in evaluation of hormones.
- C2-** Detect the hormonal activity of drugs in-vivo.
- C3-** Test the hormonal activity of drugs in-vitro.
- C4-** Make hormonal assay.
- C5-** Carry out dosing, sampling, labeling and preservation of samples.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- D1-** Perform group working , good management and problem solving ability.
- D2-** Conduct good communications.
- D3-** Use new technology and has the ability of self learning.
- D4-** Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

SNO.	TOPIC	Total hours	Hours for lecture	Hours for practical
1	Introduction and physiological consideration about hormonal drugs.	2	2	-
2	Anterior pituitary hormones.	4	4	-
3	Gonadotrophic releasing hormones.	4	4	-
4	Placental gonadotrophin hormones.	4	4	-
5	Posterior pituitary hormones.	4	4	-
6	Adrenal cortex hormones.	4	4	-
7	Thyroid and parathyroid glands hormones.	4	4	-



8	Antithyroid hormones.	4	4	-
9	Endocrine pancreatic hormones.	4	4	-
10	Sex steroid hormones.	4	4	-
11	Steroidal anti inflammatory hormones.	4	4	-
12	Autacoids(local or tissue hormones).	4	4	-
13	Growth promoting hormones	2	2	-
14	Laboratory animals handling, anaesthesia and requirements.	8	-	8
15	Determination of the Estrogen like-action of drugs.	22	-	22
16	Assessment of the Progesterone like-action of drugs.	22	-	22
17	Determination of the Androgen like-action of drugs.	22	-	22
18	Testing of the Gonadotrophin like-action of drugs.	22	-	22
	Total	144	48	96

5- TEACHING & LEARNING METHODS:

***Lectures:**

Using data show.

***Practical and small group sessions:**

Practical demonstrations, practice of skills and discussions

*** Self learning:**

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.

***Audiovisual:**

Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

No disabled students until now, but if present the staff members in the department plan to hold several meetings with the students to face any difficulties that meet the students.

7. STUDENT ASSESSMENT:-



7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	At the end of academic year	At the end of academic year	Two weeks before the end of the academic year
7.c grads	50	20	30

8. LEARNING AND REFERENCE MATERIALS:

8-1: Basic materials:

- Text books in Pharmacology available in library of the faculty.
- Overhead projections, Microscopes, , slides and computer presentations used during teaching.

8-2: Recmonded books:

- **Joel G. Hardman, Lee E. Limbird and Alfred G. Gilman (2001):** Goodman & Gilman's: The Pharmacological Basis of Therapeutics, 10th Edition.
- **G. C. Brander, D. M. Pugh, R. J. Bywater and W. L. Jenkins (1991):** Veterinary applied pharmacology and therapeutics , 5th Edition.
- **Merck , S. and Dohme , C. (2005) :** The Merck Veterinary Manual, 9th Edition.
- **KOCH, W. :**Hormones and Hormone Therapy in Veterinary Medicine, 1949 pp. viii + 86 pp.
- **Thierry , H.(2010):** The Hormone Handbook ,2nd Edition.

8-3: Suggested books:

- **Clive , P., Brian, H., Michael, C. and Michael, W. (2006):** Integrated Pharmacology: With Student Consult Access, 3rd Edition.
- **Carl Binz (2008):** Lectures on pharmacology for practitioners and students ,Volume: v.2.
- **Thierry H.(2010):** Atlas of Endocrinology & Hormone Therapy.
- **William F. Ganong: (2001):** Review of Medical Physiology , 20 th Edition.
- **Arthur C. Guyton and John E. Hall (2000):** Textbook of Medical Physiology , 10th Edition.

8.4: Web sites and jouranlsand so on

- Journal of pharmacology and experimental therapeutics.
- British Journal of pharmacology.
- European Journal of Pharmacology.
- American journal of Physiology.



- <http://www.vetmed.wsu.edu/depts.-vcpl/>
- <http://www.cc.nih.gov/>
- <http://www.acvcp.org/>
- <http://www.clinicalpharmacology.com/>
- <http://www.vetnet.net/>
- <http://www.summitpk.com/pksolutions.htm>
- <http://www.analyticon.co.uk/pkpdpage.htm>

9.1. Course content ILOs Matrix:

TOPIC	K.U (A)	LS (B)	P.P.S (C)	G.T.S (D)
Introduction and physiological consideration about hormonal drugs.	A1	B2 to B6	-	D1 to D4
Anterior pituitary hormones.	A2 to A7	B2 to B6	-	D1 to D4
Gonadotrophic releasing hormones.	A2 to A7	B2 to B6	-	D1 to D4
Placental gonadotrophin hormones.	A2 to A7	B2 to B6	-	
Posterior pituitary hormones.	A2 to A7	B2 to B6	-	D1 to D4
Adrenal cortex hormones.	A2 to A7	B2 to B6	-	D1 to D4
Thyroid and parathyroid glands hormones.	A2 to A7	B2 to B6	-	D1 to D4
Antithyroid hormones.	A2 to A7	B2 to B6	-	D1 to D4
Endocrine pancreatic hormones.	A2 to A7	B2 to B6	-	D1 to D4
Sex steroid hormones.	A2 to A7	B2 to B6	-	D1 to D4
Steroidal anti inflammatory hormones.	A2 to A7	B2 to B6	-	D1 to D4
Autacoids(local or tissue hormones).	A2 to A7	B2 to B6	-	D1 to D4
Growth promomting hormones	A2 to A7	B2 to B6	-	D1 to D4
Laboratory animals	-	B1	C1 to C5	D1 to D4



handling, anaesthesia and requirements.				
Determination of the Estrogen like-action of drugs.	-	B1	C1 to C5	D1 to D4
Assessment of the Progesterone like-action of drugs.	-	B1	C1 to C5	D1 to D4
Determination of the Androgen like-action of drugs.	-	B1	C1 to C5	D1 to D4
Testing of the Gonadotrophin like-action of drugs.		B1	C1 to C5	D1 to D4

9.2. Assessment ILOs Matrix:

Methods	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectual	Practical	general	
Written examination	A1, A2, A3., A4, A5, A6,A7	B1, B2, B3, B4, B5, B6	-		50
Oral examination	A1, A2, A3., A4, A5, A6, A7	B1, B2, B3, B4, B5, B6	-	D1,D2, D3, D4	25
Practical examination	-	B1	C1, C2, C3,C4,C5	D1,D2, D3, D4	25

Course Coordinator:

Prof. Dr. Kamal Ahmed El-Shazly

Head of Department:

Prof. Dr. Aboelnasr Zahra



Course specification

(2021 / 2022)

1 - Basic Information:

Code number: 206/2

Course title: Chemotherapy

Academic Year: predoctor year: PhD (Pharmacology) Programme

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs.

2 - OVERALL AIMS OF THE COURSE:

The aim of this course is to provide the postgraduate students with up- to- date basic and advanced information and knowledge about different chemotherapeutic agents used in the treatment of diseased conditions caused by different infective agents including bacterial, parasitic, fungal ,viral and cancer diseases .

By the end of the course, students should be able to:

- Identify the sources, chemical structure and actions of different drugs.
- Elucidate the pharmacokinetics, mechanism of actions and the scientific basis of safe and efficient use of different drugs.
- Estimate the side and toxic effects , ethical , environmental and human health implication of veterinary drugs uses.
- Be aware with different possible interactions and residues of veterinary drugs and their importance in applied therapy.
- Develop approaches for prevention, diagnosis and treatment of different diseases.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1-** Introduction and advanced basic concepts about chemotherapy and drug resistance.
- A2-** Recognize the sources, chemical structure and pharmaceutical forms of the different chemotherapeutic agents for veterinary use.
- A3-** Discuss in details the pharmacological actions and mode of actions of the various chemotherapeutic agents on different causative organisms and diseased tissues.
- A4-** Describe fully the therapeutic uses as well as the pharmacological bases for treatment with chemotherapeutic agents in farm animals and poultry.
- A5-** Be aware with the safety and toxicity of the different chemotherapeutic agents.
- A6-** Define the policy of drug choice according to specific causative organisms



- A7- Identify the importance of interspecies difference and physiological status on chemotherapeutic agents activity.
- A8- Recognize the importance of environmental and human health implications of chemotherapeutic agents.
- A9- Realize the outcome of a possible interaction and residues of the various chemotherapeutic agents.
- A10- Express the better approach with the various chemotherapeutic agents to various field problems.
- A11- List the ethical standards which will be developed in relation to veterinary drug therapeutics.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Analyze, summarize and evaluate information about chemotherapeutic agents in professional manner.
- B2- Investigate the basic lines of use of the various chemotherapeutic agents in treating various diseases..
- B3- Select the most suitable and economic drugs for treatment and prevention of diseases in animals and poultry.
- B4- Select the chemotherapeutic agents and prescribe them for patient animals.
- B5- Manipulate problem solving in relation to chemotherapeutic agents side effects, toxicity, interactions and residues .
- B6- Interpret the results of different laboratory analysis.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Use appropriate basic laboratory equipments safely and efficiently.
- C2- Prepare recent pharmaceutical preparations essential for veterinary field.
- C3- Know and differentiate between different chemotherapeutic formulations and drugs.
- C4- Perform essential and advanced calculations in pharmacology.
- C5- Estimate the MIC and MBC of drugs.
- C6- Carry out the sensitivity tests to choose the most effective drug on micro organisms.
- C7- Choose and administer chemotherapeutic agents according to the specific causative agent
- C8- Describe the results and reports in professional way.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- D1- Perform group working , good management and problem solving ability.
- D2- Conduct good communications.
- D3- Use new technology and has the ability of self learning.
- D4- Develop the ethical behaviors between students and staff members as well as among



the students themselves.

4 - COURSE CONTENTS:

SNO.	TOPIC	Total hours	Hours for lecture	Hours for practical
1	Introduction and basic concepts about chemotherapy	4	4	-
2	Drug resistance.	4	4	-
3	Antimicrobials	20	20	-
4	Anthelmintics	16	16	-
5	Antiprotozoal agents	12	12	-
6	Insecticides and rodenticides.	6	6	-
7	Antiseptics and disinfectants.	8	8	-
8	Vaccines and antisera.	4	4	-
9	Chemotherapy of tumors.	4	4	-
10	Immuno pharmacology.	6	6	-
11	Teratology.	4	4	-
12	Drug residues	4	4	-
13	Clinical pharmacology.	4	4	-
14	Drug forms and preparations.	10	-	10
15	Prescription writing .	10	-	10
16	Prescriptions for veterinary use.	10	-	10
17	Posology and metrology.	10	-	10
18	Compounding and dispensing of drugs for veterinary use.	16	-	16
19	Drug samples and patent preparation used in veterinary practice .	8	-	8
20	Calculations and doses of the commonly used drugs in veterinary medicine.	10	-	10
21	Testing the MIC and MBC of drugs.	12	-	12
22	Antibiotic sensitivity test.	10	-	10
	Total	192	96	96

5- TEACHING & LEARNING METHODS:

***Lectures:**

Using data show.

***Practical and small group sessions:**

Practical demonstrations, practice of skills and discussions

*** Self learning:**



Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.

***Audiovisual:**

Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

No disabled students until now, but if present the staff members in the department plan to held several meetings with the students to face any difficulties that meet the students.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	At the end of academic year	At the end of academic year	Two weeks before the end of the academic year
7.c grads	50	20	30

8. LEARNING AND REFERENCE MATERIALS:

8-1: Basic materials:

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- **Walter H. Hsu, William O. Reece and William J. Reece (2008) :** Handbook of Veterinary Pharmacology, 1st edition.
- **H. Richard Adams (1995) :** Veterinary Pharmacology and Therapeutics, 7th Edition.
- **G. C. Brander, D. M. Pugh, R. J. Bywater and W. L. Jenkins (1991):** Veterinary applied pharmacology and therapeutics , 5th Edition.
- **Merck , S. and Dohme , C. (2005) :** The Merck Veterinary Manual, 9th Edition.

8-3: Suggested books:

- **Clive , P., Brian, H., Michael, C. and Michael, W. (2006):** Integrated Pharmacology: With Student Consult Access, 3rd Edition.
- **Heinz Lüllmann, M. D.,Klaus Mohr, M. D.,Albrecht Ziegler, Ph.D.,Detlef and Bieger, M. D. (2005) :** Color Atlas of Pharmacology , 3rd edition .
- **Carl Binz (2008):** Lectures on pharmacology for practitioners and students ,Volume:



v.2.

- **M. Maureen Dale, John C. Foreman and Tai-Ping D. Fan (1994):** Immunopharmacology ,3rd Edition.
- **P. Venkatesan and M. J. Wood (1998):** General principles of antimicrobial therapy , pp. 63-78.

8.4: Web sites and jouranlsand so on

- Journal of pharmacology and experimental therapeutics.
- British Journal of pharmacology.
- European Journal of Pharmacology.
- <http://www.vetmed.wsu.edu/depts.-vcpl/>
- <http://www.cc.nih.gov/>
- <http://www.acvcp.org/>
- <http://www.clinicalpharmacology.com/>
- <http://www.vetnet.net/>
- <http://www.summitpk.com/pksolutions.htm>
- <http://www.analyticon.co.uk/pkpdpage.htm>

9.1. Course content ILOs Matrix:

TOPIC	K.U (A)	I.S (B)	P.P.S (C)	G.T.S (D)
Introduction and basic concepts about chemotherapy	A1	-	-	D1 to D4
Drug resistance.	A1	-	-	D1 to D4
Antimicrobials	A2 to A9	B1,B2,B3, B4	-	D1 to D4
Anthelmintics	A2 to A9	B1,B2,B3, B4	-	
Antiprotozoal agents	A2 to A9	B1,B2,B3, B4	-	D1 to D4
Insecticides and rodenticides.	A2 to A9	B1,B2,B3, B4	-	D1 to D4
Antiseptics and disinfectants.	A2 to A9	B1,B2,B3, B4	-	D1 to D4
Vaccines and antisera.	A2 to A9	B1,B2,B3,	-	D1 to D4



		B4		
Chemotherapy of tumors.	A2 to A9	B1,B2,B3, B4	-	D1 to D4
Immuno pharmacology.	A2 to A9	B1,B2,B3, B4	-	D1 to D4
Teratology.	A2 to A9	B5	-	D1 to D4
Drug residues	A5	B5	-	D1 to D4
Clinical pharmacology.	A10,A11	B1,B2,B3, B4,B5	-	D1 to D4
Drug forms and preparations.	-	B6	C3	D1 to D4
Prescription writing .	-	B6	C4	D1 to D4
Prescriptions for veterinary use.	-	B6	C2,C7	D1 to D4
Posology and metrology.	-	B6	C4	D1 to D4
Compounding and dispensing of drugs for veterinary use.	-	B6	C1, C2	D1 to D4
Drug samples and patent preparation used in veterinary practice .	-	B6	C3,C7	D1 to D4
Calculations and doses of the commonly used drugs in veterinary medicine.	-	B6	C4	D1 to D4
Testing the MIC and MBC of drugs.	-	B6	C5,C8	D1 to D4
Antibiotic sensitivity test.	-	B6	C6,C8	D1 to D4

9.2. Assessment ILOs Matrix:

Methods	I.L.O.S Evaluation			Marks allocated
	Knowledge	Intellectual	Practical	
Written examination	A1, A2, A3., A4, A5, A6,A7 & A8,A9,A10,11	B1, B2, B3, B4, B5, B6	-	50
Oral examination	A1, A2, A3., A4, A5, A6,A7 & A8,A9,A10,11	B1, B2, B3, B4, B5, B6	-	D1,D2, D3, D4 25
Practical examination	-	B4, B6	C1, C2, C3 C4,C5,C6, C7,C8	D1,D2, D3,D4 25

Course Coordinator:

Prof. Dr. Abeer Hanafy

Head of Department:

Prof. Dr. Aboelnasr Zahra



Course specification **(2021 / 2022)**

1 - Basic Information:

Code number: 207/2

Course title: Drug bioassays.

Academic Year: predoctor year: PhD (Pharmacology) Programme

Total teaching hours: 96 hrs

Lectures: 48 hrs

Practical: 48 hrs.

2 - OVERALL AIMS OF THE COURSE:

The aim of this course is to provide the postgraduate students with up- to- date basic and advanced information and knowledge about the different methods and tests used for bioassay of new drugs in comparison with standard drugs to detect their potential therapeutic and toxic effects.

By the end of the course, students should be able to:

- Identify the different methods and tests of drugs bioassays.
- Elucidate the advantages and disadvantages of each method.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1-** Define in details the bioassays of drugs and list the advanced concepts and theories about drugs bioassay.
- A2-** Recognize the anti-inflammatory ,anti-arthritic and anti-edematous actions of drugs.
- A3-** Define the LD50 and ED50 of drugs.
- A4-** Identify the effect of drugs on male fertility.
- A5-** Describe the anti-depressants, antihistaminic and antipyretic effects of drugs.
- A6-** Discuss the analgesic, tranquilizer and fibrinolytic actions of drugs.
- A7-** Realize the hormonal activity of drugs.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1-** Use the appropriate laboratory animal or in-vitro test for a specific experiment.
- B2-** Interpret the results of different laboratory tests.
- B3-** Establish a good link between drugs actions in vivo and in vitro.
- B4-** Select the most suitable and economic method for determination of drug action.



3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Perform advanced techniques for determination of drugs actions.
- C2- Estimate the drugs actions in-vivo
- C3- Test the drugs actions in-vitro.
- C4- Use appropriate basic laboratory equipment and animals safely and efficiently.
- C5- Carry out dosing, sampling, labeling and preservation of samples.

3- D: GENERAL and transferable SKILLS:

By the end of studying the course, the graduate should be able to:

- D1- Perform group working , good management and problem solving ability.
- D2- Conduct good communications.
- D3-Use new technology and has the ability of self learning.
- D4- Develop the ethical behaviors between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

SNO.	TOPIC	Total hours	Hours for lecture	Hours for practical
1	Basic principals and concepts about drugs bioassays	4	4	-
2	Antiinflammatory agents , Anti-arthritic agents & Anti-edematous agents bioassays.	8	8	-
3	Calculation of ED50 andLD50.	4	4	-
4	Drugs affecting on male fertility.	4	4	-
5	Anti-depressants bioassays.	4	4	-
6	Analgesic agents bioassays.	4	4	-
7	Anti-histaminic agents bioassays.	4	4	-
8	Antipyretics bioassays	4	4	-
9	Tranquilizers bioassays.	4	4	-
10	Fibrinolytics bioassays	4	4	-
11	Hormonal drugs bioassays	4	4	
12	Determination of the anti- inflammatory actions of drugs.	4		4
13	Estimation of the anti-depressant actions of drugs.	8		8
14	Detection of the anti-histaminic actions	4		4



	of drugs.			
15	Methods for detection of analgesic actions of drugs.	4		4
16	Testing the tranquilizing effects of drugs.	4		4
17	Detection of the fibrinolytic actions of drugs.	4		4
18	Estimation of antipyretic effect of drugs.	4		4
19	Testing the ED50 and LD50 of drugs.	4		4
20	Assessment of the Hormonal activity of drugs.	4		4
21	Testing the effects of drugs on male fertility.	4		4
	Total	96	48	48

5- TEACHING & LEARNING METHODS:

***Lectures:**

Using data show.

***Practical and small group sessions:**

Practical demonstrations, practice of skills and discussions

*** Self learning:**

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.

***Audiovisual:**

Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

No disabled students until now, but if present the staff members in the department plan to hold several meetings with the students to face any difficulties that meet the students.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	At the end of academic year	At the end of academic year	Two weeks before the end of the academic year



7.c grads	50	20	30
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8. LEARNING AND REFERENCE MATERIALS:

8-1: Basic materials:

- Text books in Pharmacology available in library of the faculty.
- Overhead projections, Microscopes, , slides and computer presentations used during teaching.

8-2: Recmended books:

- **Jean-Charles, G. (2010):** Drug Safety Evaluation: Methods and Protocols , 1st Edition.
- **Hans G. Vogel (2002):**Drug Discovery and Evaluation: Pharmacological Assays, 2nd edition.
- **Joel G. Hardman, Lee E. Limbird and Alfred G. Gilman(2001):** Goodman & Gilman's: The Pharmacological Basis of Therapeutics, 10th Edition.
- **G. C. Brander, D. M. Pugh, R. J. Bywater and W. L. Jenkins (1991):** Veterinary applied pharmacology and therapeutics , 5th Edition.
- **Merck , S. and Dohme , C. (2005) :** The Merck Veterinary Manual, 9th Edition.

8-3: Suggested books:

- **Clive , P., Brian, H., Michael, C. and Michael, W. (2006):** Integrated Pharmacology: With Student Consult Access, 3rd Edition.
- **Heinz Lüllmann, M. D.,Klaus Mohr, M. D.,Albrecht Ziegler, Ph.D.,Detlef and Bieger, M. D. (2005) :** Color Atlas of Pharmacology , 3rd edition .
- **Carl Binz (2008):** Lectures on pharmacology for practitioners and students ,Volume: v.2.

8.4: Web sites and jouranlsand so on:

- Journal of pharmacology and experimental therapeutics.
- British Journal of pharmacology.
- European Journal of Pharmacology.
- <http://www.vetmed.wsu.edu/depts.-vcpl/>
- <http://www.cc.nih.gov/>
- <http://www.acvcp.org/>
- <http://www.clinicalpharmacology.com/>
- <http://www.vetnet.net/>



- <http://www.summitpk.com/pksolutions.htm>
- <http://www.analyticon.co.uk/pkpdpage.htm>

9.1. Course content ILOs Matrix:

TOPIC	K.U (A)	I.S (B)	P.P.S (C)	G.T.S (D)
Basic principals and concepts about drugs bioassays	A1	B1 to B4	-	D1 to D4
Antiinflammatory agents , Anti-arthritic agents & Anti-edematous agents bioassays.	A2	B1 to B4	-	D1 to D4
Calculation of ED50 andLD50.	A3	B1 to B4	-	D1 to D4
Drugs affecting on male fertility.	A4	B1 to B4	-	
Anti-depressants bioassays.	A5	B1 to B4	-	D1 to D4
Analgesic agents bioassays.	A6	B1 to B4	-	D1 to D4
Anti-histaminic agents bioassays.	A5	B1 to B4	-	D1 to D4
Antipyretics bioassays	A5	B1 to B4	-	D1 to D4
Tranquilizers bioassays.	A6	B1 to B4	-	D1 to D4
Fibrinolytics bioassays	A6	B1 to B4	-	D1 to D4
Hormonal drugs bioassays	A7	B1 to B4	-	D1 to D4
Determination of the anti-inflammatory actions of drugs.	-	B1 to B4	C1 to C5	D1 to D4
Estimation of the anti-depressant actions of drugs.	-	B1 to B4	C1 to C5	D1 to D4
Detection of the anti-histaminic actions of drugs.	-	B1 to B4	C1 to C5	D1 to D4
Methods for detection of analgesic actions of drugs.	-	B1 to B4	C1 to C5	D1 to D4
Testing the tranquilizing effects of drugs.	-	B1 to B4	C1 to C5	D1 to D4
Detection of the fibrinolytic actions of drugs.	-	B1 to B4	C1 to C5	D1 to D4
Estimation of antipyretic effect of drugs.	-	B1 to B4	C1 to C5	D1 to D4
Testing the ED50 and LD50	-	B1 to B4	C1 to C5	D1 to D4



of drugs.				
Assessment of the Hormonal activity of drugs.	-	B1 to B4	C1 to C5	D1 to D4
Testing the effects of drugs on male fertility.	-	B1 to B4	C1 to C5	D1 to D4

9.2. Assessment ILOs Matrix:

Methods	I.L.O.S Evaluation				Marks allocated
	Knowledge	Intellectual	Practical	general	
Written examination	A1, A2, A3., A4, A5, A6,A7	B1, B2, B3, B4	-	-	50
Oral examination	A1, A2, A3., A4, A5, A6, A7	B1, B2, B3, B4	-	D1,D2, D3, D4	25
Practical examination	-	B1, B2, B3, B4	C1, C2, C3 C4,C5	D1,D2, D3, D4	25

Course Coordinator:

Prof. Dr. Abeer Hanafy

Head of Department:

Prof. Dr. Aboelnasr Zahra



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Physiology

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy

(Physiology)



Kafrelsheikh University

Faculty of Veterinary Medicine

Department of Physiology

Program Specification for PhD Degree

(2021-2022)

A- Administrative information:

- 1- Awarding Body:** Kafrelsheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Physiology
- 4- Program Title:** PhD Degree in Veterinary Medicine (Physiology)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years

B- Professional information:

1- Aims of the Program:

- Allow graduate to create new knowledge and understanding in Physiology through the process of research and inquiry.
- Enable graduate to achieve competency in modern technology
- Provide the graduate with the opportunity to develop communication skills, recent techniques and tools in the field of Physiology and experience of scientific research skills.
- Giving the graduate the ability to be creative to advance Physiology through new scientific research.

- Enable graduate to achieve capability in modern technology to develop practical research project.
- Demonstrate an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and present their own research data for the improvement of the Physiology.
- Have the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibit awareness about current Physiology and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of Physiology.

2- Academic standards:

**Academic reference standards (ARS) adopted by the faculty committee No(1)
14/9/2014**

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Mastering the basics and methodologies of scientific research in physiology professionally.
- 2) Performing continuous effort to add knowledge about detection of causes and control of Physiological processes and its examination.
- 3) Analysis of Physiological parameters and fields related to Anatomy, Pathology, pharmacology, biochemistry, clinical pathology, etc.
- 4) Integrating data collected from laboratory findings to help reaching the

correct diagnosis.

- 5) Identifying the main causes of problems and suggest innovative solutions of the focus area and suggesting the appropriate methods of animal protection.
- 6) Mastering of a wide range of professional skills in physiological techniques performed for measuring hematological measurements.
- 7) Acquiring trends towards developing modern methods and tools in studying and researching in physiological sciences.
- 8) Using appropriate technological means including molecular biology, spectrophotometry to serve professional practice.
- 9) Communicating effectively with physiologists, pathologists, students and colleagues and leading work team through professional scale.
- 10) Making decision in different professional situations especially under field conditions dealing with approach to correct diagnosis and treatment.
- 11) Using all available resources efficiently in the development of new techniques and work to find new resources.
- 12) Being aware with his role in society development and community preservation from the spreading of blood and body fluids diseases in the environment.
- 13) Acting with integrity, credibility and according to the rules of profession.
- 14) Realizing the importance of self and life-long learning and progress.

4-Programme outcomes [intended learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

- a.1. Recognize recent theories, principles and knowledge in **Physiology**.
- a.2. Apply Principles methodologies and ethics of scientific research and its tools in **Physiology**
- a.3. Define legal and ethical principles of the area of **Physiology**.
- a.4. Recognize Principles and the basics of quality assurance the field of **Physiology**.
- a.5. Apply knowledge and understanding in the field of **Physiology** for enhancing animal health.
- a.6. Explain the effect of professional physiological practice on the environment.

- a.7.** Describe the principles, methodologies and ethics of scientific research in anatomy and embryology.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1.** Interpret and evaluate information about animal physiology and different body functions and coordinate with them.
- b.2.** Analyze and interpret the laboratory investigation of physiological parameters in order to reach perfect diagnosis.
- b.3.** Elucidate and interpret different problems in the animal physiological Solve professional problems in physiology field using available data under laboratory conditions.
- b.4.** Perform scientific research studies that can give significant impact on the control of animal physiological processes.
- b.5.** Conduct scientific research studies aiming to make a focus on normal animal physiology.
- b.6.** Formulating scientific papers in physiology with the ability to match and discuss his findings with those of other scientists.
- b.7.** Asses risks of pollutants in food, water and air on animal physiology.
- b.8.** Share and lead scientific open discussion in the field of physiology based on evidences and proofs.
- b.9.** Planning to enhance the performance in the laboratory diagnosis of deviation in physiological parameters using modern biotechnology techniques.
- b.10.** Make professional decisions about presence of deviated physiological parameters and suggesting further investigations and search for new evidences.

- b.11.** Decide the possible causes of hypo or hyper-function of body function.
- b.12.** Trying new techniques on the field of physiology.
- b.13.** Using the new biotechnological methods in physiology research.
- b.14.** Lead a discussion based on physiological parameters including biological trace evidence and residues in animal body.

c. Practical and professional skills:

At the end of the program, postgraduate will inquire the ability of:

- c.1.** Utilize basic and modern professional missions including examination of physiological parameters, collection of evidences, and performing advanced physiological laboratory techniques.
- c.2.** Write and evaluate professional scientific reports involving the analysis report of blood , different hormones and others
- c.3.** Assess recent methods aid in indicating the problems in the field of animal physiology.
- c.4.** Master advanced techniques for diagnosis of cases of hematological problems in different animals in addition to control and prevention of diseases, and advanced laboratory techniques.
- c.5.** Performing recent techniques using new methodologies in the field of physiology.

d. General and transferable skills:

At the end of the program graduate must be able to:

- d.1.** Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology.
- d.2.** Utilize information technology to serve professional practice.
- d.3.** Teach others and evaluate their performance.
- d.4.** Self-evaluate and identify personal learning requirements
- d.5.** Lead team under different professional circumstances.

- d.6. Correlate the different sources for obtaining information and knowledge.
- d.7. Manage scientific meetings with the ability to manage time efficiently.

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, and seminars.

6-Assessments:

The program depends on different assessment ways:

a. Course assessment:

1. Final written exam

- To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills

2. Practical exam

- To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.

3. Oral exam

- To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.

b. Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work

c. PhD Thesis assessment

- Annual reports adopted by the Faculty.
- Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
- Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1-2; b1,2,3
Oral	a1-2; b1,2,3
Practical	c1-2
Qualifying Exam	a1-7; b1-14
Thesis	a3-7; b4-14; c1-5; d1-7

7. Program structure

a. Program duration (years):

PhD degree from 3-5 years and it should not exceed a period of six years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law.

b. Program courses:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council so that include 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c- Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d- Scientific thesis

The applicant should conduct an innovative research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion .

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Physiology include:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
133/2	33-Fish physiology.	1	2	

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2



	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of	1	2



		pet animals		
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2



	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
		81- Advanced immunology	2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2



	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- General pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autacid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1
Hygiene and control of milk and dairy products	208/2	108- Hygienic control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of	1	1



		contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils		
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/2	134- Stress diseases during animals transport.		



Infectious diseases	235/ 2	135- Infectious diseases of cattle	2	2
	236/ 2	136- Infectious diseases of sheep and goat	2	2
	237/ 2	137- Infectious diseases camel	2	2
	238/ 2	138 Infectious diseases of equine	2	2
	239/ 2	139- Infectious diseases of pet animals	2	2
	240/ 2	140- Infectious diseases lab animals	1	2
	241/ 2	141- Infectious diseases of udder and newly born animals	2	2
	242/ 2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in	2	2



		ruminants- equine- pet animals)		
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their	2	2



		evaluation in poultry		
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses	285/2	185- advanced zoonosis (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonosis	2	2
	287/2	187- role of wild animals in transmission of zoonosis	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonosis		



Genetics and genetic engineering	289/2	189- Genetics of microorganisms.	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of Populations.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-

	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (**Physiology**) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medicine lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.
3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.
5. The applicant should pass written, practical and oral exams successfully in all courses.

6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.
7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.
8. The applicant should submit a seminar (Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).
9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met: Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.
10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and incase of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.

11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards bit to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.

12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade		Percentage
Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	Very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
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I	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

Program Coordinator

Head of Department

Dr/ Mustafa Shukry

**Prof. Dr. Shawky Abdelhady
Mahmoud**

Matching program ILOs with ARS - Matrix

Program ILOs	ARS																															
	K&U (a)					I.S. (b)							P.P. (c)					G.T. (d)														
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7						
K&U	1	2	3	4	5	6	7																									
I.S								1	2	3	4	5	6	7	8	9	10	11	12	13	14											
P.P																						1	2	3	4	5						
G.T																										1	2	3	4	5	6	7



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Physiology



ARS for PhD in Veterinary Medicine (Physiology)

1) Graduate attributes

The graduate should have the ability for:

- 1) Mastering the basics and methodologies of scientific research concerning the normal physiological functions of different body systems, tissues and molecules.
- 2) Making continuous effort to add knowledge about function of immune molecules, body proteins and hormones.
- 3) Analyzing and criticizing information in normal functions and fields related to physiology including pharmacology, biochemistry, clinical pathology, etc.
- 4) Integrating specialized knowledge with related information and extrapolate their interrelationship.
- 5) Showing deep awareness with selecting appropriate investigations for diagnosis, assessment of prognosis and monitoring of spontaneous animal disease and animal models of disease.
- 6) Identifying the professional problems and suggest innovative solutions of the focus area.
- 7) Mastering of a wide range of professional skills in applied physiology and modern hematological diagnosis technique
- 8) Acquiring trends towards developing modern methods and tools in studying and researching in physiology science.
- 9) Using appropriate technological means including molecular biology, chromatography and others to serve professional practice.
- 10) Communicate effectively and lead work team through professional scale.
- 11) Making decision in different professional situations especially under field conditions to approach to correct diagnosis and treatment.
- 12) Using of the available resources efficiently in the development of new techniques and work to find new resources.
- 13) Being aware with his role in society development and community preservation from the spreading of blood and body fluids diseases in the environment.
- 14) Acting with integrity, credibility and according to the rules of profession.
- 15) Realizing the importance of self and life-long learning and progress

A) Knowledge and understanding

Adopted ARS	NARS (PhD)
<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and</i>

		<i>accommodate the following:</i>
1)	Recent theories, principles and knowledge in recognizing the relation between different body systems, in addition to analysis and interpretation of nature of different body secretions.	Recent theories, principles and knowledge in the field of specialization and related areas
2)	Principles, methodologies and ethics of scientific research and its tools including dealing with laboratory animals and other scientific papers in Physiological field.	Basics, methodologies and ethics of scientific research and its different tools
3)	Legal and ethical principles of professional practice in the area of animal physiology.	Legal and ethical principles of professional practice in the area of specialization
4)	Principles of laboratory safety and regulations (laboratory hazards and protective equipment)	Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	The effect of professional Physiological study on the environment and methods of environmental development and maintenance.	The effect of professional practice on the environment and methods of environmental development and maintenance

B) Intellectual skills

	Adopted ARS	NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analyzing and evaluating information about animal physiology and different body functions and relating between them.	Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solving different diagnostic problems in the animal physiological area using available data.	Solving professional problems using available data
3)	Performing analytical research studies that can give significant impact on the animal physiological field.	Conducting scientific research studies that add to knowledge
4)	Writing review, plan of scientific research and discussing own results with those of other physiologists	Formulating scientific papers
5)	Designing a risk Assessment form and performing a risk assessment for an item within clinical physiology laboratory	Risk-assessment in the field of specialization
6)	Planning to enhance the performance in field of animal clinical laboratory diagnosis	Planning to enhance the performance in field of specialization
7)	Using appropriate intellectual strategy and evidence based decisions to deal with laboratory diagnostic problems and make decisions.	Making professional decisions under different professional contexts
8)	Creation and innovative in the area of animal	Creation and innovative in the area of

	physiology.	specialization
9)	Scientific open discussion in the field of animal physiology based on evidences and proofs.	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills in diagnosis and differential diagnosis of animal diseases depending upon reference physiological values of body fluids and cells	Mastering basic and modern professional skills in the area of specialization
2)	Write and evaluate professional laboratory reports involving the analysis of blood and body fluids	Writing and evaluating professional reports
3)	Evaluating and modernizing methods and tools in the field of animal Physiology.	Evaluating and modernizing methods and tools in the area of specialization
4)	Using modern technological means to serve animal laboratory diagnosis for different physiological parameters	Using modern technological means to serve professional practice
5)	Planning for the improvement of veterinary medicine by applying recent molecular techniques in the area of animal physiology and developing performance of others	Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Communicating effectively with physicians, other health professionals, and health related agencies.	Effective communication
2)	Using the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.	Utilizing information technology to serve development of professional practice
3)	Presenting information clearly in written, electronic and oral forms	Teaching others and evaluating their performance
4)	Establishment of life-long self-learning required for continuous professional development.	Self-assessment and continuous learning
5)	Using different resources to obtain knowledge and information	Using different resources to obtain knowledge and information

6)	Team working and leading a team in familiar professional contexts	Team working and leading a team in familiar professional contexts
7)	Management of time and open discussions in the professional field	Management of scientific meetings with the ability to manage time efficiently

ثالثا: برامج الدكتوراه

١ - مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستتبطا و مطورا للعلاقات البيئية بينها

٥. إظهار وعيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص

٦. تحديد المشكلات المهنية و إيجاد حولا مبتكرة لحلها

٧. إتقان نطاقا واسعا من المهارات المهنية في مجال التخصص

٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية

٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية

١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة

١١. اتخاذ القرار في ظل المعلومات المتاحة

١٢. توظيف الموارد المتاحة بكفاءة و تميتها والعمل على إيجاد موارد جديدة

١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة

١٤. التصرف بما يعكس الالتزام بالنزاهة و المصادقية و قواعد المهنة

١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢ - المعايير القياسية العامة

المعرفة و الفهم:

بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا علي الفهم والدراية بكل من:
أ- النظريات و الأساسيات والحديث من المعارف في مجال التخصص و المجالات ذات العلاقة

ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة

ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص

ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص

ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و طرق تنمية البيئة وصيانتها

المهارات الذهنية

بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها

ب- حل المشاكل المتخصصة استنادا علي المعطيات المتاحة

ج- إجراء دراسات بحثية تضيف إلى المعارف

د- صياغة أوراق علمية

هـ- تقييم المخاطر في الممارسات المهنية

و- التخطيط لتطوير الأداء في مجال التخصص

ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة

ح- الابتكار/ الإبداع

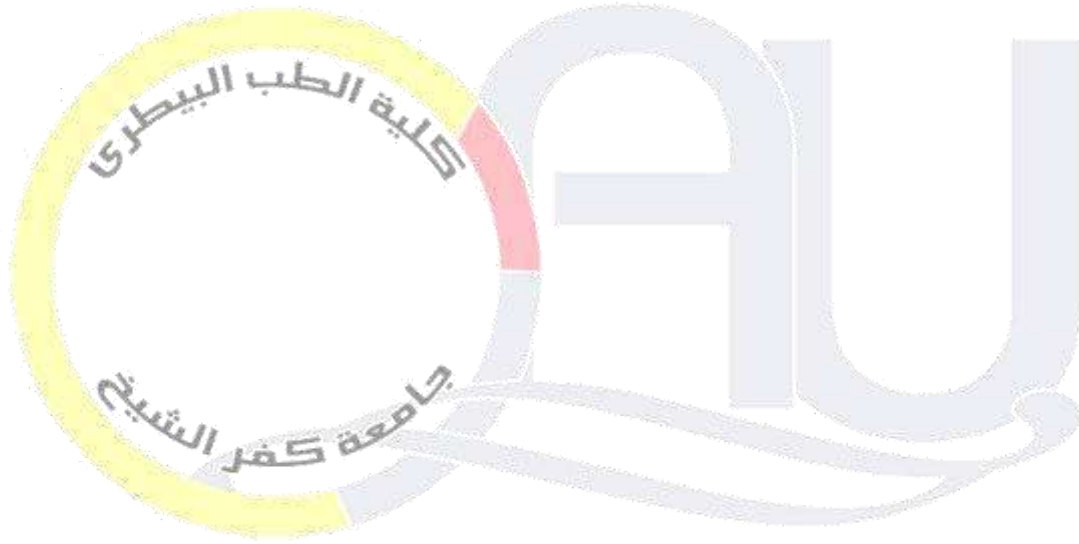
ط- الحوار و النقاش المبني علي البراهين والأدلة

المهارات المهنية

بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص

- ب- كتابة و تقييم التقارير المهنية
ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
هـ- التخطيط لتطوير الممارسة المهنية وتنمية أداء الآخرين
- المهارات العامة و المنقطة**
بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- التواصل الفعال بأنواعه المختلفة
ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية
ت- تعليم الآخرين وتقييم أداءهم
ث- التقييم الذاتي والتعلم المستمر
ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
ح- العمل في فريق وقيادة فرق العمل
خ- إدارة اللقاءات العلمية والقدرة علي إدارة الوقت



Course specification (2021 / 2022)

1 - Basic Information:

Course Title: **Physiology of blood and body fluids.**

Code: **128/2**

Academic Year: **Ph.D. in Veterinary Medical Sciences**

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

-To ensure that students reserve a comprehensive theoretical base in blood and blood forming elements.

--To provide students with knowledge, skills, experiences and confidence to qualify for employment in veterinary laboratories.

-- To know Composition of body fluids

--To provide students with knowledge and skills in interpretation of their data.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Identify the blood components and their functions.
- a.2 Recognize the origin and mode of production of each blood component.
- a.3. Indicate immune systems in the animal body.
- a.4. Delimit the classification of immunity and its vital role in the animal body.
- a.5. Enumerate the deviation of normal blood values and its impacts on animal health.
- a.6. Clarify the blood coagulation and its disorders.
- a.7. define the blood groups in animals.
- a.8. Recognize the role blood in defense of body .

2-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Identify the immunological parameters.
- b.2. Investigate the RBCs, WBCs count.
- b.3. Illustrate the hemoglobin and PCV estimation.
- b.4. Outline the blood film examination.
- b.5. Distinguish the differential leucocytic count.
- b.6. Confirm the blood grouping test.
- b.7. Analyze the blood coagulation test.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1 Examine the immunological tests (phagocytic activity, phagocytic index, and inflammatory markers)
- c.2. Apply the RBCs, WBCs count.
- c.3. Assign the hemoglobin and PCV estimation.
- c.4. Explore blood film examination.
- c.5. Customize the differential leucocytic count.
- c.6. Process the blood grouping test.
- c.7. Employ the technological means of blood coagulation test

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able:

D1-Coach and work in group.

D2-Classify different duties.

D3-Utilize computer and internet skills.

D4-Develop the ethical behaviours between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lect.	Pract.	Total
Blood components	12	-	12
Red blood cells in different animals	12	-	12
White blood cells in different animals (immunity)	10	-	10
Hematopoiesis	12	-	12
complete blood count	10	-	10
Blood groups in animals	10	-	10
Blood coagulation	10	-	10
Coagulation disorders	10	-	10
Role of blood in immunity	10	-	10
RBCs and WBCs count	-	16	16
Differential leucocytic count	-	10	10
Blood film	-	10	10
Hemoglobin measurement	-	10	10
PCV measurement	-	10	10
Blood groups	-	10	10
Coagulation tests	-	10	10
Phagocytic activity and phagocytic index tests (immunity)	-	12	12
Evaluation of inflammatory markers (immunity)	-	8	8
Total	96	96	192

5- TEACHING & LEARNING METHODS:

*Lectures

(using data show, white board, overhead projector and brain storming)

***Practical and small group sessions:**

1: Practical training.

(Practical demonstrations, practice of skills, discussions Microscopes and other facilities as Data show)

*** Self learning**

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

*** Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

*** Audiovisual : Video show.**

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

Evaluation Intended learning out comes

Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written examination	A1-A8	B1-B7		D1-D3- D4
Oral examination	A1-A8	B1-B7		D2- D4
Practical examination		B1-B7	C1-C7	D2- D4

KU, knowledge, and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills. KU, knowledge, and

understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Animal Physiology. Richard W Hill, Gordon A Wyse, Margaret Anderson (4th Ed) ISBN: 9781605357379 Edition: 4 Paperback Oct 2017
- Principles of Animal Physiology (2016) 3rd edition. Christopher D. Moyes, Patricia M. Schulte
- Principles of Animal Physiology (2018) 3rd edition, Christopher D. Moyes, Patricia M. Schulte
- Eckert Animal Physiology: Mechanisms and Adaptations (1997) 4th Ed, David Randall, Warren Burggren
- Functional Anatomy and Physiology of Domestic Animals, (2017) 5th Edition, William O. Reece, Eric W. Rowe
- Cunningham's Textbook of Veterinary Physiology, 6th Edition - January 3, 2019
- Dukes' Physiology of Domestic Animals, (2015) 13th Edition, William O. Reece (Editor), Jesse P. Goff, Etsuro E. Uemura
- COMPARATIVE ANIMAL PHYSIOLOGY (2020) 1st Edition, by Philip C. Withers Anatomy and Physiology of Farm Animals, 8th Edition, Anna Dee Fails, Christianne Magee
- Essentials of Animal Physiology, (2007) S. C. Rastogi
- Equine Exercise Physiology (2002), David Marlin, Kathryn J. Nankervis
- Guyton and Hall Textbook of Medical Physiology (Guyton Physiology) (2022) 14th Edition, by John E. Hall PhD, Michael E. Hall MD MSc.
- Sturkie's Avian Physiology (2015) • Sixth Edition • 2015
- The Physiology of Fishes (2016), By Suzanne Currie, David H. Evans

8-2: Recommended books:

- Ruchebusch, Y., Phaneuf, I. and Dunlop, R (2000) Physiology of small and large Animals. B.C. Decker, Inc, Philadelphia, Hamilton.
- Swenson M.J, Reece, W.O. and Comstock (2015) Duke's Physiology of Domestic Animals. 11th edition, publishing Associates a division of Cornell University press. Ithaca and London.
- Gunningham, J. (2013) Text book of Veterinary Physiology 5th Edition. W.B. Saunderson Company, Toronto, Montreal, Tokyo.
- Guyton, A. (2020) Text book of Medical physiology. 14th, W.B. Saunderson Company.
- Ganong, W.F. (2020) Review of Medical Physiology. 26th (Middle East edition) Appleton and Lang 8.2.f- Periodicals, Web Sites, ... etc.

8-3: Egyptian Knowledge Bank:

- Animal Physiology, Beaver, BV and Höglund, DL. 2016. Academic Press, Elsevier Inc.
- Animal Physiology: An Environmental Perspective, by Patrick J. Butler, J. Anne Brown, et al. | Sep 23, 2020. Academic Press, Elsevier Inc.
- Principles of Animal Physiology, by Christopher Moyes and Patricia Schulte | Jan 15, 2015. Academic Press, Elsevier Inc.
- Animal Physiology: From Genes to Organisms, by Lauralee Sherwood, Hillar Klandorf, et al. | Jan 1, 2012. Academic Press, Elsevier Inc

- Anatomy and Physiology of Farm Animals, by Anna Dee Fails and Christianne Magee | Jul 11, 2018. Academic Press, Elsevier Inc.
- Veterinary Anatomy Coloring Book: Animal Anatomy and Veterinary Physiology Coloring Book Vet Tech, Summer Sparks | Sep 22, 2020. Academic Press, Elsevier Inc
- Functional Anatomy and Physiology of Domestic Animals. by William O. Reece and Eric W. Rowe | Aug 14, 2017, Academic Press, Elsevier Inc
- Introduction to Animal and Veterinary Anatomy and Physiology, by Victoria Aspinall and Melanie Cappello | Dec 12, 2019. Academic Press, Elsevier Inc
- Eckert Animal Physiology: Mechanisms and Adaptations, by David Randall | Nov 1, 2001, Academic Press, Elsevier Inc
- Animal Physiology: Adaptation and Environment. by Knut Schmidt-Nielsen | Apr 10, 1997. Academic Press, Elsevier Inc.
- Das, DN. Paul, D. and Mondal, S. 2022. Emerging Issues in Climate Smart Livestock Production. Biological Tools and Techniques. Academic Press, Elsevier Inc.
- Avian (Poultry) Production: 2nd Revised and Enlarged Edition, by D. Sapkota, D. Narahari, J.D. Mahanta, 2017.
- Poultry Health: A Guide for Professionals, by Paul Barrow, Venugopal Nair, Susan Baigent, Robert Atterbury, Michael Clark, 2021.
- Poultry Science, 5th Edition, by Colin G. Scanes, Karen D. Christensen, 2019.

8.4. Scientific Journals

- Animals
- Animal physiology and biochemistry
- Cells
- Life science
- Fish physiology and biochemistry
- Stress
- Biomedicine
- Animal reproduction science
- Aquaculture
- Veterinary sciences
- Scientific report
- .frontier in veterinary science
- Journal of Animal Science.
- Livestock Production Science.
- British Journal of Animal Science.
- Egyptian Poultry Science
- Poultry Science Association
- American journal of poultry science
- British Poultry Science
- International journal of Poultry Science.
- Journal of Applied Poultry Research

8.5. Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <https://animalphys4e.sinauer.com/>
- <https://teachmephysiology.com/>
- <https://www.nature.com/subjects/animal-physiology>



- <https://sites.msudenver.edu/haysc/biology-courses/animal-physiology-bio-3360/>
- <https://www.acsedu.com/Courses/animal-biology-animal-husbandry-i-599.aspx>
- <https://animalphys4e.sinauer.com/quiz/>
- <https://askabiologist.asu.edu/explore/animal-physiology>
- <https://www.sinauer.com/media/wysiwyg/tocs/AnimalPhysiology3.pdf>
- <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/animal-physiology>
- <https://library.ivytech.edu/c.php?g=869309&p=6239318>
- DeLaval Dairy Supply. <http://www.delaval.com/en/-/Dairy-knowledge-and-advice/>
- Lactation Biology: <http://classes.aces.uiuc.edu/ansci308/index.html>
- Heat Detection and Timing of Insemination for Cattle. Penn State, College of Agricultural Sciences, Cooperative Extension. <https://extension.psu.edu/heat-detection-and-timing-of-insemination-for-cattle> accessed 08/09/2017.
- National Dairy Database: <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>
- The Babcock Institute: <http://babcock.cals.wisc.edu>
- WWW Virtual Library for Dairy Production* (Oklahoma).
<http://www.ansi.okstate.edu/library/dairy/>
- US Dairy Export Council: <http://www.usdec.org/about/whoweare.htm>
- The International Dairy Federation (IDF): <http://www.fil-idf.org/>
- Managing of dairy heifers: <http://www3.das.psu.edu/dcn/calfmgt/385/index.html>
- Management Practices Associated with High-Producing U.S. Dairy Herds (USDA):
http://www.aphis.usda.gov/vs/ceah/cahm/Dairy_Cattle/drymgmt.htm
- A beginners guide to raising sheep
<http://www.sheep101.info/201/feedwaterequip.html>
- <http://www.thepoultrysite.com/>
- <http://www.worldpoultry.net/>

Course Coordinator:

Dr/ Mustafa Shukry

Head of Department:

Prof.Dr/ Shawky Abdelhady Mahmoud



Course Matrix for the achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding(K.U)								Intellectual Skills(b)					Practical & Professional Skills(c)					General & Transferable Skills(d)			
		1	2	3	4	5	6	7	8	1	2	3	4	5	1	2	3	4	5	1	2	3	4
Blood components	10	✓								✓	✓	✓								✓	✓	✓	✓
Red blood cells in different animals	10	✓	✓	✓						✓	✓	✓	✓	✓	✓					✓	✓	✓	✓
White blood cells in different animals (immunity)	20	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓		✓				✓	✓	✓	✓
Hematopoiesis	29	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓				✓	✓	✓	✓
complete blood count	16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓
Blood groups in animals	15							✓		✓	✓	✓	✓	✓	✓					✓	✓	✓	✓
Blood coagulation	10		✓	✓			✓			✓	✓	✓	✓	✓					✓	✓	✓	✓	✓
Coagulation disorders	23		✓	✓			✓			✓	✓	✓	✓	✓					✓	✓	✓	✓	✓
Role of blood in immunity	15	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓
RBCs and WBCs count	5															✓							



Differential leucocytic count	5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Blood film	5	✓	✓	✓						✓	✓	✓	✓	✓	✓		✓		✓	✓
Hemoglobin measurement	5	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓		✓		✓	✓
PCV measurement	5	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓		✓		✓	✓
Blood groups	5				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓
Coagulation tests	5				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓
Phagocytic activity and phagocytic index tests (immunity)	5				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓
Evaluation of inflammatory markers (immunity)	4				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓

DEPARTMENT OF PHYSIOLOGY

Course specification
(2021 / 2022)

1 - Basic Information:

Course Title: Physiology of digestion, metabolism, and energy.

Code: 129/2

Academic Year: Ph.D. of Veterinary Medical Sciences (Animal physiology).

Total teaching hours: 192hrs

Lectures: 96 hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

a-To ensure that students reserve a comprehensive theoretical base in veterinary physiology.

b-To provide students with knowledge, skills and confidence to enable them to pursue a career in the field of nutrition of farm animals.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Point the salivary secretion, mastication and deglutition.
- a.2. Realize the gastric secretion , gastric mucosal barrier , motility , gastric evacuation and vomiting
- a.3. Type a distinction on pancreatic secretion and control of secretion.
- a.4 Make a distinction on hepatic secretion, gall bladder, control of bladder evacuation, jaundice.
- a.5. Elucidate the small & large intestine, digestive and absorptive functions.
- a.6. Clarify the gastrointestinal motility and GIT hormones and defecation.
- a.7. Comprehend the energy balance and basal metabolic rate.
- a.8. Elucidate the control of food intake, obesity estimation of body fat.
- a.9. Understand the difference between digestion in simple and compound stomach animals.
- a.10. Recognize the comparison between metabolism in simple and compound stomach animals.

2-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Evaluate rumen samples.
- b.2. Interpret stomach samples.
- b.3. Appraisal of saliva.

b.4. Evaluate gastric juice.

b.5. judge pancreatic juice.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1** analysis of rumen samples.
- c.2.** analyze of stomach samples.
- c.3.** Apply examination of saliva.
- c.4.** Accomplish gastric juice examination.
- c.5.** assess the pancreatic juice.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able:

- D1-Coach and work in group.
- D2-Classify different duties.
- D3-Utilize computer and internet skills.
- D4-Develop the ethical behaviours between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lect.	Pract.	Total
Salivary secretion , mastication and deglutition	14	-	14
Gastric secretion , gastric mucosal barrier , motility , gastric evacuation and vomiting	14	-	14
Pancreatic secretion and control of secretion	10	-	10
Hepatic secretion, gall bladder, control of bladder evacuation,	10	-	10
Small & large intestine , digestive and absorptive	10	-	10
Gastrointestinal motility , Defecation and GIT hormones	10	-	10
Digestion in ruminant	10	-	10
Energy balance and metabolic rate	10	-	10
Control of food intake, Estimation of body Gain and fat.	8	-	8
Evaluate and analysis of rumen samples	-	20	20
Evaluate and analysis of stomach samples	-	20	20
Examination of saliva	-	20	20
Examination of gastric juice	-	10	10
Examination of pancreatic juice	-	10	10
Examination of intestinal juice	-	16	16
Total hours	96	96	192

5- TEACHING & LEARNING METHODS:

*Lectures

(using data show, white board, overhead projector and brain storming)

*Practical and small group sessions:

1: Practical training.

(Practical demonstrations, practice of skills, discussions Microscopes and other facilities as Data show)

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

* **Audiovisual** :Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination	Activities
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
<u>7.c grads</u>	50	20	20	10

Evaluation Intended learning out comes

Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written examination	A1-A10	B1-B5	C1-C5	D3
Oral examination	A1-A10	B1-B5	C1-C5	D4
Practical		B1-B5	C1-C5	D1-2

examination				
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KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills. KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- **Animal Physiology.** Richard W Hill, Gordon A Wyse, Margaret Anderson (4th Ed) ISBN: 9781605357379 Edition: 4 Paperback Oct 2017
- Principles of Animal Physiology (2016) 3rd edition. Christopher D. Moyes, Patricia M. Schulte
- Principles of Animal Physiology (2018) 3rd edition, Christopher D. Moyes, Patricia M. Schulte
- Eckert Animal Physiology: Mechanisms and Adaptations (1997) 4th Ed, [David Randall](#), [Warren Burggren](#)
- Functional Anatomy and Physiology of Domestic Animals, (2017) 5th Edition, [William O. Reece](#), [Eric W. Rowe](#)
- Cunningham's Textbook of Veterinary Physiology, 6th Edition - January 3, 2019
- Dukes' Physiology of Domestic Animals, (2015) 13th Edition, [William O. Reece \(Editor\)](#), [Jesse P. Goff](#), [Etsuro E. Uemura](#)
- COMPARATIVE ANIMAL PHYSIOLOGY (2020) 1st Edition, by Philip C. Withers
Anatomy and Physiology of Farm Animals, 8th Edition, [Anna Dee Fails](#), [Christianne Magee](#)
- Essentials of Animal Physiology, (2007) [S. C. Rastogi](#)
- Equine Exercise Physiology (2002), [David Marlin](#), [Kathryn J. Nankervis](#)
- Guyton and Hall Textbook of Medical Physiology (Guyton Physiology) (2022) 14th Edition, by [John E. Hall PhD](#), [Michael E. Hall MD MSc](#).
- Sturkie's Avian Physiology (2015) • Sixth Edition • 2015
- The Physiology of Fishes (2016), By Suzanne Currie, David H. Evans

8-2: Recommended books:

- Ruchebusch, Y., Phaneuf, I. and Dunlop, R (1991) Physiology of small and large Animals. B.C. Decker, Inc, Philadelphia, Hamilton.
- Swenson M.J, Reece, W.O. and Comstock (1993) Duke's Physiology of Domestic Animals. 11th edition, publishing Associates a division of Cornell University press. Ithaca and London.
- Gunningham, J. (1992) Text book of Veterinary Physiology. W.B. Saunders Company, Toronto, Montreal, Tokyo.
- Guyton, A. (1991) Text book of Medical physiology. 8th, W.B. Saunders Company.
- - Ganong, W.F. (1989) Review of Medical Physiology. 9th (Middle East edition) Appleton and Lang.
- 8.2.f- Periodicals, Web Sites, ... etc.

8-3: Egyptian Knowledge Bank:

- [Animal Physiology](#), [Beaver](#), BV and [Höglund](#), DL. 2016. Academic Press, Elsevier Inc.

- [Animal Physiology: An Environmental Perspective](#), by Patrick J. Butler, J. Anne Brown, et al. | Sep 23, 2020. Academic Press, Elsevier Inc.
- Principles of Animal Physiology ,by Christopher Moyes and Patricia Schulte | Jan 15, 2015. Academic Press, Elsevier Inc.
- [Animal Physiology: From Genes to Organisms](#), by [Lauralee Sherwood](#) , Hillar Klandorf, et al. | Jan 1, 2012. Academic Press, Elsevier Inc
- [Anatomy and Physiology of Farm Animals](#), by Anna Dee Fails and Christianne Magee | Jul 11, 2018. Academic Press, Elsevier Inc.
- Veterinary Anatomy Coloring Book: Animal Anatomy and Veterinary Physiology Coloring Book Vet Tech, Summer Sparks | Sep 22, 2020. Academic Press, Elsevier Inc
- Functional Anatomy and Physiology of Domestic Animals. by William O. Reece and Eric W. Rowe | Aug 14, 2017, Academic Press, Elsevier Inc
- Introduction to Animal and Veterinary Anatomy and Physiology, by Victoria Aspinall and Melanie Cappello | Dec 12, 2019. Academic Press, Elsevier Inc
- [Eckert Animal Physiology: Mechanisms and Adaptations](#), by David Randall | Nov 1, 2001, Academic Press, Elsevier Inc
- Animal Physiology: Adaptation and Environment. by Knut Schmidt-Nielsen | Apr 10, 1997. Academic Press, Elsevier Inc.
- Das, DN. Paul, D. and Mondal, S. 2022. Emerging Issues in Climate Smart Livestock Production. Biological Tools and Techniques. Academic Press, Elsevier Inc.
- Avian (Poultry) Production: 2nd Revised and Enlarged Edition, by D. Sapkota, D. Narahari, J.D. Mahanta, 2017.
- Poultry Health: A Guide for Professionals, by Paul Barrow, Venugopal Nair, Susan Baigent, Robert Atterbury, Michael Clark, 2021.
- Poultry Science, 5th Edition, by Colin G. Scanes, Karen D. Christensen, 2019.

8.4. Scientific Journals

- Animals
- Animal physiology and biochemistry
- Cells
- Life science
- Fish physiology and biochemistry
- Stress
- Biomedicine
- Animal reproduction science
- Aquaculture
- Veterinary sciences
- Scientific report
- .frontier in veterinary science
- Journal of Animal Science.
- Livestock Production Science.
- British Journal of Animal Science.
- Egyptian Poultry Science
- Poultry Science Association
- American journal of poultry science

- British Poultry Science
- International journal of Poultry Science.
- Journal of Applied Poultry Research

8.5. Scientific websites

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- <https://teachmephysiology.com/>
- <https://www.nature.com/subjects/animal-physiology>
- <https://sites.msudenver.edu/haysc/biology-courses/animal-physiology-bio-3360/>
- <https://www.acsedu.com/Courses/animal-biology-animal-husbandry-i-599.aspx>
- <https://animalphys4e.sinauer.com/quiz/>
- <https://askabiologist.asu.edu/explore/animal-physiology>
- <https://www.sinauer.com/media/wysiwyg/tocs/AnimalPhysiology3.pdf>
- <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/animal-physiology>
- <https://library.ivytech.edu/c.php?g=869309&p=6239318>
- DeLaval Dairy Supply. <http://www.delaval.com/en/-/Dairy-knowledge-and-advice/>
- **Lactation Biology:** <http://classes.aces.uiuc.edu/ansci308/index.html>
- Heat Detection and Timing of Insemination for Cattle. Penn State, College of Agricultural Sciences, Cooperative Extension. <https://extension.psu.edu/heat-detection-and-timing-of-insemination-for-cattle> accessed 08/09/2017.
- **National Dairy Database:** <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>
- **The Babcock Institute:** <http://babcock.cals.wisc.edu>
- WWW Virtual Library for Dairy Production* (Oklahoma). <http://www.ansi.okstate.edu/library/dairy/>
- US Dairy Export Council: <http://www.usdec.org/about/whoware.htm>
- The International Dairy Federation (IDF): <http://www.fil-idf.org/>
- Managing of dairy heifers: <http://www3.das.psu.edu/dcn/calfmgt/385/index.html>
- Management Practices Associated with High-Producing U.S. Dairy Herds (USDA): http://www.aphis.usda.gov/vs/ceah/cahm/Dairy_Cattle/drymgmt.htm
- A beginners guide to raising sheep <http://www.sheep101.info/201/feedwaterequip.html>
- <http://www.thepoultrysite.com/>
- <http://www.worldpoultry.net/>

Course Coordinator:

Head of Department:

Dr/ Mustafa Shukry

Prof.Dr/ Shawky Abdelhady Mahmoud



Gastrointestinal motility, Defecation and GIT hormones	10						✓			✓											
Digestion in ruminant	23										✓										
Energy balance and metabolic rate	10						✓														
Control of food intake, Estimation of body Gain and fat.	5						✓														
Evaluate and analysis of rumen samples	5								✓				✓					✓		✓	
Evaluate and analysis of stomach samples	10									✓				✓					✓		✓
Examination of saliva	5										✓				✓				✓		✓
Examination of gastric juice	5										✓					✓			✓		✓
Examination of pancreatic juice	5										✓					✓			✓		✓
Examination of intestinal juice	4															✓		✓			✓

DEPARTMENT OF PHYSIOLOGY

Course specification
(2021 / 2022)

1 - Basic Information:

Code number123/2

Course Title: Physiology of mammalian endocrine glands and reproduction

Academic Year: Ph.D. of Veterinary Medical Sciences (Animal physiology).

Total teaching hours: 192 hrs

Lectures: 96hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

a-To ensure that students reserve a comprehensive theoretical base in veterinary endocrinology and reproduction

b-To provide students with the opportunities to develop communication, practical scientific research and teaching skills

c- To deliver student with basic knowledge and skills concerning the hormone nature, types of hormones, hormonal cycle, types of hormone receptors and hormone functions.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Realize the hormone secretion mechanism.
- a.2. Recognize hormones classification.
- a.3. record the hormone action.
- a.4. Describe the control of hormone secretion.
- a.5. Identify hormonal functions.
- a.6. State the reproductive pattern in different mammals.
- a.7. Define fertilization mechanism.
- a.8. Label mechanism and Control of parturition.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Interpret hormonal physiological functions.
- b.2. Investigate the hormonal control of pregnancy & parturition
- b.3. Analyses hormonal control of estrus cycle.

b.4. Assess semen samples

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

c.1. Perform techniques for hormone level measurement.

c.2. Asses sperm samples.

c.3. report pregnancy diagnosis.

c.4. Investigate estrus detection methods

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1-Coach and work in group.

D2-Classify different duties.

D3-Utilize computer and internet skills.

D4-Develop the ethical behaviours between students and staff members as well as among the students themselves

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lect.	Pract.	Total
Hormone nature, mode of action, classification	8	-	8
Pituitary hormones.	10	-	10
Thyroid, adrenal, pineal Hormones	15	-	15
Pancreatic hormones, leptin	10	-	10
Hormones control calcium level in the blood	15	-	15
Reproductive hormones	18	-	18
Reproductive patterns in different mammals	10	-	10
Pregnancy and parturition	10	-	10
Different methods of hormonal assay	-	40	40
Estrus cycle detection	-	20	20
Pregnancy diagnosis	-	16	16
Semen analysis	-	20	20
Total	96	96	192

5- TEACHING & LEARNING METHODS:

***Lectures**

(using data show, white board, overhead projector and brain storming)

***Practical and small group sessions:**

1: Practical training.

(Practical demonstrations, practice of skills, and discussions)

*** Self learning**

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

* **Audiovisual :** Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year
7.c grads	50	20	20	10

Evaluation Intended learning out comes

Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written examination	A1.A2.A3.A4.A5.A 6.A7.A8	B1.B2.B3, B4		D3
Oral examination	A1.A2.A3.A4.A5.A 6.A7.A8	B1.B3,B4		D4
Practical examination			C1.C2.C 3.C4	D1-D2

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills. KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

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- Essentials of Animal Physiology, (2007) [S. C. Rastogi](#)
- Equine Exercise Physiology (2002), [David Marlin](#), [Kathryn J. Nankervis](#)
- Guyton and Hall Textbook of Medical Physiology (Guyton Physiology) (2022) 14th Edition, by [John E. Hall PhD](#), [Michael E. Hall MD MSc](#).
- Sturkie's Avian Physiology (2015) • Sixth Edition • 2015
- The Physiology of Fishes (2016), By Suzanne Currie, David H. Evans

8-2: Recommended books:

- **Ruchebusch, Y., Phaneuf, I. and Dunlop, R (1991) Physiology of small and large Animals. B.C. Decker, Inc, Philadelphia, Hamilton.**
- Swenson M.J, Reece, W.O. and Comstock (1993) Duke's Physiology of Domestic Animals. 11th edition, publishing Associates a division of Cornell University press. Ithaca and London.
- Gunningham, J. (1992) Text book of Veterinary Physiology. W.B. Saunders Company, Toronto, Montreal, Tokyo.
- Guyton, A. (1991) Text book of Medical physiology. 8th, W.B. Saunders Company.
- - Ganong, W.F. (1989) Review of Medical Physiology. 9th (Middle East edition) Appleton and Lang.
- 8.2.f- Periodicals, Web Sites, ... etc.

8-3: Egyptian Knowledge Bank:

- **[Animal Physiology](#), [Beaver](#), BV and [Höglund](#), DL. 2016. Academic Press, Elsevier Inc.**
- **[Animal Physiology: An Environmental Perspective](#)**, by Patrick J. Butler, J. Anne Brown, et al. | Sep 23, 2020. Academic Press, Elsevier Inc.
- Principles of Animal Physiology, by Christopher Moyes and Patricia Schulte | Jan 15, 2015. Academic Press, Elsevier Inc.
- **[Animal Physiology: From Genes to Organisms](#)**, by [Lauralee Sherwood](#), Hillar Klandorf, et al. | Jan 1, 2012. Academic Press, Elsevier Inc

- [Anatomy and Physiology of Farm Animals](#), by Anna Dee Fails and Christianne Magee | Jul 11, 2018. Academic Press, Elsevier Inc.
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- Functional Anatomy and Physiology of Domestic Animals. by William O. Reece and Eric W. Rowe | Aug 14, 2017, Academic Press, Elsevier Inc
- Introduction to Animal and Veterinary Anatomy and Physiology, by Victoria Aspinall and Melanie Cappello | Dec 12, 2019. Academic Press, Elsevier Inc
- [Eckert Animal Physiology: Mechanisms and Adaptations](#), by David Randall | Nov 1, 2001, Academic Press, Elsevier Inc
- Animal Physiology: Adaptation and Environment. by Knut Schmidt-Nielsen | Apr 10, 1997. Academic Press, Elsevier Inc.
- Das, DN. Paul, D. and Mondal, S. 2022. Emerging Issues in Climate Smart Livestock Production. Biological Tools and Techniques. Academic Press, Elsevier Inc.
- Avian (Poultry) Production: 2nd Revised and Enlarged Edition, by D. Sapkota, D. Narahari, J.D. Mahanta, 2017.
- Poultry Health: A Guide for Professionals, by Paul Barrow, Venugopal Nair, Susan Baigent, Robert Atterbury, Michael Clark, 2021.
- Poultry Science, 5th Edition, by Colin G. Scanes, Karen D. Christensen, 2019.

8.4. Scientific Journals

- Animals
- Animal physiology and biochemistry
- Cells
- Life science
- Fish physiology and biochemistry
- Stress
- Biomedicine
- Animal reproduction science
- Aquaculture
- Veterinary sciences
- Scientific report
- .frontier in veterinary science
- Journal of Animal Science.
- Livestock Production Science.
- British Journal of Animal Science.
- Egyptian Poultry Science
- Poultry Science Association
- American journal of poultry science
- British Poultry Science
- International journal of Poultry Science.
- Journal of Applied Poultry Research

8.5. Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <https://animalphys4e.sinauer.com/>



- <https://teachmephysiology.com/>
- <https://www.nature.com/subjects/animal-physiology>
- <https://sites.msudenver.edu/haysc/biology-courses/animal-physiology-bio-3360/>
- <https://www.acsedu.com/Courses/animal-biology-animal-husbandry-i-599.aspx>
- <https://animalphys4e.sinauer.com/quiz/>
- <https://askabiologist.asu.edu/explore/animal-physiology>
- <https://www.sinauer.com/media/wysiwyg/tocs/AnimalPhysiology3.pdf>
- <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/animal-physiology>
- <https://library.ivytech.edu/c.php?g=869309&p=6239318>
- DeLaval Dairy Supply. <http://www.delaval.com/en/-/Dairy-knowledge-and-advice/>
- **Lactation Biology:** <http://classes.aces.uiuc.edu/ansci308/index.html>
- Heat Detection and Timing of Insemination for Cattle. Penn State, College of Agricultural Sciences, Cooperative Extension. <https://extension.psu.edu/heat-detection-and-timing-of-insemination-for-cattle> accessed 08/09/2017.
- **National Dairy Database:** <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>
- **The Babcock Institute:** <http://babcock.cals.wisc.edu>
- WWW Virtual Library for Dairy Production* (Oklahoma).
<http://www.ansi.okstate.edu/library/dairy/>
- US Dairy Export Council: <http://www.usdec.org/about/whoweare.htm>
- The International Dairy Federation (IDF): <http://www.fil-idf.org/>
- Managing of dairy heifers: <http://www3.das.psu.edu/dcn/calfmgt/385/index.html>
- Management Practices Associated with High-Producing U.S. Dairy Herds (USDA):
http://www.aphis.usda.gov/vs/ceah/cahm/Dairy_Cattle/drymgmt.htm
- A beginners guide to raising sheep
<http://www.sheep101.info/201/feedwaterequip.html>
- <http://www.thepoultrysite.com/>
<http://www.worldpoultry.net/>

Course Coordinator:

Head of Department:

Dr/ Mustafa Shukry

Prof.Dr/ Shawky Abdelhady Mahmoud

Course Matrix for the achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding (K.U)										Intellectual Skills (b)					Practical & Professional Skills (c)					General & Transferable Skills (d)						
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	1	2	3	4	5	1	2	3	4			
		Hormone nature, mode of action, classification	10	✓	✓	✓	✓																					
Pituitary hormones.	30		✓	✓	✓																							
Thyroid, adrenal, pineal Hormones	29		✓	✓		✓																						
Pancreatic hormones, leptin	16		✓	✓																								
Hormones control calcium level in the blood	15		✓			✓																						
Reproductive hormones	10						✓																					
Reproductive patterns in different mammals	23						✓				✓																	
Pregnancy and parturition	10							✓																				
Different methods of hormonal assay	5											✓					✓											✓
Estrus cycle detection	5													✓													✓	
Pregnancy diagnosis	10												✓					✓					✓					
Semen analysis	5													✓				✓		✓								✓

DEPARTMENT OF PHYSIOLOGY

Course specification
(2021 / 2022)



1 - Basic Information:

Course title: Physiology of environment, adaptation and cell

Code: 127/2

Academic Year: Ph.D. of Veterinary Medical Sciences (Animal physiology).

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

a-To provides students with basic knowledge and skills concerning the ability of an animal to cope with new environments.

b-To offer students with a deep understanding of the capacity to respond to environmental variables and maintain body equilibrium (homeostasis).

c-Students will have the basic knowledge about the severity (intensity and duration) of an environmental change relative to the animal's capacity

d-To know the different responses of animals to cold stress. Behavioral opportunities.

e-Deep knowledge about the establishing and maintain suitable environments for our farm animals

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Describe the cell physiology and hemostasis.
- a.2. Define any information about cell "Homeostasis".
- a.3. Identify the role of cell membrane in transmission between cell and the surrounding environment.
- a.4. Realize the role of environment in managing cell function
- a.5. memorize the role of adaptation to the environment conditions
- a.6. recognize the modifications in the cell function due to stress.
- a.7. state Apoptosis

2-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Interpret methods for body fluids sampling from different animal species
- b.2. Judge body Physiological parameters related to environmental adaptation.
- b.3. Analyze the effect of different solutions on cell membrane.



3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Perform methods for body fluids sampling from different animal species.
- c.2. Asses body Physiological parameters related to environmental adaptation.
- c.3. Determine the effect of different solutions on cell membrane (erythrocyte osmotic fragility test).

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able:

- D1-Coach and work in group.
- D2-Classify different duties.
- D3-Utilize computer and internet skills.
- D4-Develop the ethical behaviours between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lect.	Pract.	Total
Introduction to cell physiology and hemostasis	6	-	6
The physiological function of cell organelles	6	-	6
Transmission through the cell membrane	5	-	5
Apoptosis	8	-	8
of the different cells to its functionAdaptation	8	-	8
Environmental stressors and its effects on cellular function	12	-	12
in the cell function due to stressModifications	8	-	8
analysisStress	8	-	8
Examples of adaptation in different cells, in different species	15	-	15
The biological effects of exposure to stress	8	-	8
stressors and systemic impactsEnvironmental	10	-	10
Effect of different solution on cell membrane (erythrocyte osmotic fragility test).		30	30
Methods for body fluids samples from different animal species.		28	28
Analysis of body fluid samples to environmental adaptation.		38	38



Total	96	96	192
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5- TEACHING & LEARNING METHODS:

*Lectures

(using data show, white board, overhead projector and brain storming)

*Practical and small group sessions:

1: Practical training.

(Practical demonstrations, practice of skills, discussions Microscopes and other facilities as Data show)

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

* Audiovisual

Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

Evaluation Intended learning out comes

Methods	7. Student Assessment
	Intended Learning Outcomes Covered



	KU	IS	PPS	GTS
Written examination	A1-A7	b1-3		D4
Oral examination			c1-2-3	D1-2
Practical examination	A1-A7	b1-3		D3

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills. KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

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8-1: Essential Books

- **Animal Physiology**. Richard W Hill, Gordon A Wyse, Margaret Anderson (4th Ed) ISBN: 9781605357379 Edition: 4 Paperback Oct 2017
- Principles of Animal Physiology (2016) 3rd edition. Christopher D. Moyes, Patricia M. Schulte
- Principles of Animal Physiology (2018) 3rd edition, Christopher D. Moyes, Patricia M. Schulte
- Eckert Animal Physiology: Mechanisms and Adaptations (1997) 4th Ed, [David Randall](#), [Warren Burggren](#)
- Functional Anatomy and Physiology of Domestic Animals, (2017) 5th Edition, [William O. Reece](#), [Eric W. Rowe](#)
- Cunningham's Textbook of Veterinary Physiology, 6th Edition - January 3, 2019
- Dukes' Physiology of Domestic Animals, (2015) 13th Edition, [William O. Reece](#) (Editor), [Jesse P. Goff](#), [Etsuro E. Uemura](#)
- COMPARATIVE ANIMAL PHYSIOLOGY (2020) 1st Edition, by Philip C. Withers
- Anatomy and Physiology of Farm Animals, 8th Edition, [Anna Dee Fails](#), [Christianne Magee](#)
- Essentials of Animal Physiology, (2007) [S. C. Rastogi](#)
- Equine Exercise Physiology (2002), [David Marlin](#), [Kathryn J. Nankervis](#)
- Guyton and Hall Textbook of Medical Physiology (Guyton Physiology) (2022) 14th Edition, by [John E. Hall PhD](#), [Michael E. Hall MD MSc](#).
- Sturkie's Avian Physiology (2015) • Sixth Edition • 2015
- The Physiology of Fishes (2016), By Suzanne Currie, David H. Evans

8-2: Recommended books:

- Ruchebusch, Y., Phaneuf, I. and Dunlop, R (1991) Physiology of small and large Animals. B.C. Decker, Inc, Philadelphia, Hamilton.



- Swenson M.J, Reece, W.O. and Comstock (1993) Duke's Physiology of Domestic Animals. 11th edition, publishing Associates a division of Cornell University press. Ithaca and London.
- Gunningham, J. (1992) Text book of Veterinary Physiology. W.B. Saundero Company, Toronto, Montreal, Tokyo.
- Guyton, A. (1991) Text book of Medical physiology. 8th, W.B. Saundero Company.
- - Ganong, W.F. (1989) Review of Medical Physiology. 9th (Middle East edition) Appleton and Lang.
- 8.2.f- Periodicals, Web Sites, ... etc.

8-3: Egyptian Knowledge Bank:

- [Animal Physiology, Beaver, BV and Höglund, DL. 2016. Academic Press, Elsevier Inc.](#)
- [Animal Physiology: An Environmental Perspective](#), by Patrick J. Butler, J. Anne Brown, et al. | Sep 23, 2020. Academic Press, Elsevier Inc.
- Principles of Animal Physiology ,by Christopher Moyes and Patricia Schulte | Jan 15, 2015. Academic Press, Elsevier Inc.
- [Animal Physiology: From Genes to Organisms](#), by [Lauralee Sherwood](#) , Hillar Klandorf, et al. | Jan 1, 2012. Academic Press, Elsevier Inc
- [Anatomy and Physiology of Farm Animals](#), by Anna Dee Fails and Christianne Magee | Jul 11, 2018. Academic Press, Elsevier Inc.
- Veterinary Anatomy Coloring Book: Animal Anatomy and Veterinary Physiology Coloring Book Vet Tech, Summer Sparks | Sep 22, 2020. Academic Press, Elsevier Inc
- Functional Anatomy and Physiology of Domestic Animals. by William O. Reece and Eric W. Rowe | Aug 14, 2017, Academic Press, Elsevier Inc
- Introduction to Animal and Veterinary Anatomy and Physiology, by Victoria Aspinall and Melanie Cappello | Dec 12, 2019. Academic Press, Elsevier Inc
- [Eckert Animal Physiology: Mechanisms and Adaptations](#), by David Randall | Nov 1, 2001, Academic Press, Elsevier Inc
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- Stress
- Biomedicine
- Animal reproduction science



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- Veterinary sciences
- Scientific report
- .frontier in veterinary science
- Journal of Animal Science.
- Livestock Production Science.
- British Journal of Animal Science.
- Egyptian Poultry Science
- Poultry Science Association
- American journal of poultry science
- British Poultry Science
- International journal of Poultry Science.
- Journal of Applied Poultry Research

8.5. Scientific websites

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- <https://animalphys4e.sinauer.com/>
- <https://teachmephysiology.com/>
- <https://www.nature.com/subjects/animal-physiology>
- <https://sites.msudenver.edu/haysc/biology-courses/animal-physiology-bio-3360/>
- <https://www.acsedu.com/Courses/animal-biology-animal-husbandry-i-599.aspx>
- <https://animalphys4e.sinauer.com/quiz/>
- <https://askabiologist.asu.edu/explore/animal-physiology>
- <https://www.sinauer.com/media/wysiwyg/tocs/AnimalPhysiology3.pdf>
- <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/animal-physiology>
- <https://library.ivytech.edu/c.php?g=869309&p=6239318>
- DeLaval Dairy Supply. <http://www.delaval.com/en/-/Dairy-knowledge-and-advice/>
- **Lactation Biology:** <http://classes.aces.uiuc.edu/ansci308/index.html>
- Heat Detection and Timing of Insemination for Cattle. Penn State, College of Agricultural Sciences, Cooperative Extension. <https://extension.psu.edu/heat-detection-and-timing-of-insemination-for-cattle> accessed 08/09/2017.
- **National Dairy Database:** <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>
- **The Babcock Institute:** <http://babcock.cals.wisc.edu>
- WWW Virtual Library for Dairy Production* (Oklahoma).
<http://www.ansi.okstate.edu/library/dairy/>
- US Dairy Export Council: <http://www.usdec.org/about/whoweare.htm>
- The International Dairy Federation (IDF): <http://www.fil-idf.org/>
- Managing of dairy heifers: <http://www3.das.psu.edu/dcn/calfmgt/385/index.html>
- Management Practices Associated with High-Producing U.S. Dairy Herds (USDA):
http://www.aphis.usda.gov/vs/ceah/cahm/Dairy_Cattle/drymgmt.htm
- A beginners guide to raising sheep
<http://www.sheep101.info/201/feedwaterequip.html>
- <http://www.thepoultrysite.com/>
- <http://www.worldpoultry.net/>



Kafrelsheikh University
Faculty of Veterinary Medicine

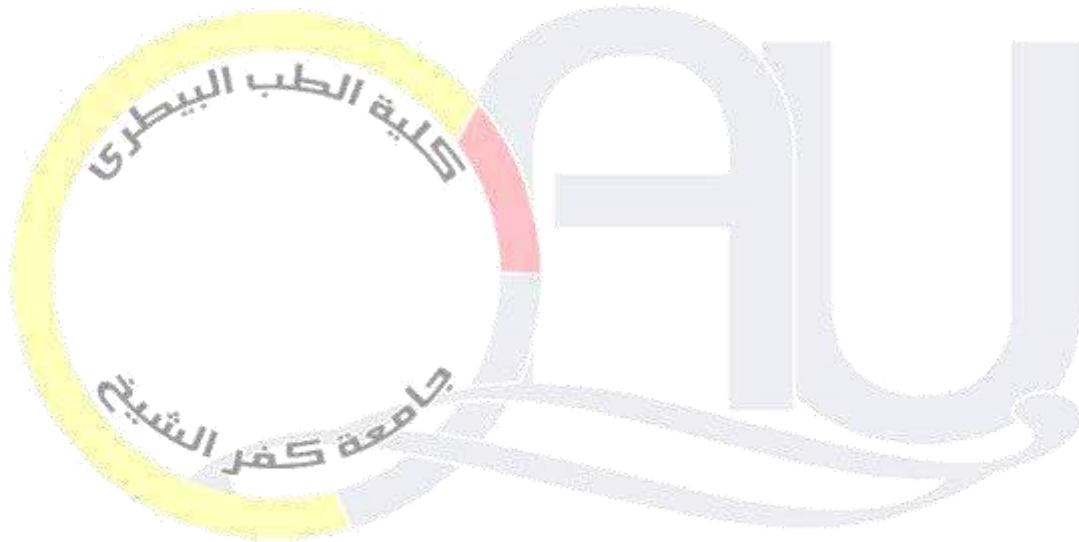


Course Coordinator:

Dr/ Mustafa Shukry

Head of Department:

Prof.Dr/ Shawky Abdelhady Mahmoud



Course Matrix for the achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding(K.U)										Intellectual Skills(b)					Practical & Professional Skills(c)					General & Transferable Skills(d)						
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	1	2	3	4	5	1	2	3	4			
Introduction to cell physiology and hemostasis	10	✓	✓																									
Physiological function of cell organells	10		✓																									
Transmission through cell membrane	20			✓																								
Apoptosis	29																											
of the different Adaptation cells to its function	16					✓																						
Environmental stressors and its effects on cellular function	15				✓		✓																					
in the cell Modifications function due to stress	10																				✓							
analysisStress	23																											
Examples of adaptation in different cells, in different species	15					✓								✓								✓						
The biological effects of	10						✓							✓							✓					✓		✓



Course specification (2020 / 2021)

1 - Basic Information:

Code number: 133/2

Course title : Fish physiology

Academic Year: PhD Degree of Veterinary Medical Sciences.

Total teaching hours: 144 hrs

Lectures: 48

Practical: 96

2 - OVERALL AIMS OF THE COURSE:

a. To provide students with deep understanding of the structure of endocrine gland and different types of hormones secreted from fish glands

The student will understand the role gills and gas bladder in gas exchange in fishes

b. To know the different hormones and enzymes secreted from digestive tract and their functions and control

c. Deep knowledge about reproductive hormones and mode of action of each of them. To understand how vitellogenesis and egg formation is hormonally regulated in different fishes

e. The student should understand the stress hormones and how they affect autonomic nervous system, immunity and other hormones

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

a.1. Define hormonal action, secretion, regulation, and disorders in fish.

a.2. Describe digestion in fish in comparison with mammals and birds.

a.3. Recognize respiration in fish and its regulation and factors affecting it.

a.4. Identify Osmoregulation and stress in fish and factors affecting it.

a.5. Describe blood and cardiovascular system in fish in comparison with mammals and birds.

a.6. Realize reproductive patterns in fish and its hormonal control.

a.7. categorize the vitellogenesis in fish.

a.8. Recognize induced spawning and sex reversal in fish.

a.9. Describe nervous system in Fish.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

b.1. Interpret hormonal assay in fish.

b.2. Asses the hormonal control of artificial reproduction in fish



- b.3.** Interpret hematological findings in fish.\
- b.4.** Analyze semen samples in fish.
- b.5.** Correlate the effect of some environmental factors on fish physiology (respiration and reproduction).

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1.** Utilize techniques for effect of some environmental factors on fish physiology.
- c.2.** Asses fish semen samples.
- c.3.** Perform steps of artificial reproduction in fish.
- c.4.** Asses methods of hormonal assay in fish.
- c.5.** Analyze fish blood sample.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1-Coach and work in group.
- D2-Classify different duties.
- D3-Utilize computer and internet skills.
- D4-Develop the ethical behaviours between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lect.	Pract.	Total
Nervous system in Fish	4	-	4
Endocrine glands, hormones functions in fish	8	-	8
Respiration in fish and role of gas bladder	6	-	6
Digestive system in fish	4	-	4
Cardiovascular system in fish.	4	-	4
Osmoregulation in fish	4	-	4
Male reproductive system in fish	6	-	6
Female reproductive system in fish	12	-	12
Semen analysis in fish	-	20	20
Hormones assay	-	20	20
Fish blood pictures examination	-	20	20
Effect of some environmental factors on fish physiology (respiration and reproduction)	-	16	16
Steps of artificial reproduction of fish	-	20	20
Total	48	96	144



5- TEACHING & LEARNING METHODS:

Advanced lectures: PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

***Practical and small group sessions:**

1: Practical training. (Practical demonstrations, practice of skills, discussions Microscopes and other facilities as Data show)

*** Self learning**

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

*** Distance Teaching and Learning:**

Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons.

Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	A1..A9	B1		D3
Practical sessions	A1. A5.	B1.B5.	C1-C5.	D4
Self-Learning activities			C1-C5.	D1.D2.
Distance Teaching and Learning	A1.A8.	B1- B4		D4

* **Audiovisual** :Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination	Activities
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
<u>7.c grads</u>	50	20	20	10



Evaluation Intended learning out comes

Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written examination	A1- A9.	B1-B5		D3
Oral examination	A1- A9.	B1.B2.B4		D4
Practical examination			C1.C2.C3.C4 .C5	D1-D2

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills. KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

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- Principles of Animal Physiology (2018) 3rd edition, Christopher D. Moyes, Patricia M. Schulte
- Eckert Animal Physiology: Mechanisms and Adaptations (1997) 4th Ed, David Randall , Warren Burggren
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- COMPARATIVE ANIMAL PHYSIOLOGY (2020) 1st Edition, by Philip C. Withers Anatomy and Physiology of Farm Animals, 8th Edition, Anna Dee Fails, Christianne Magee
- Essentials of Animal Physiology, (2007)
- The Physiology of Fishes (2016), By Suzanne Currie, David H. Evans

8-2: Recommended books:

- Ruchebusch, Y., Phaneuf, I. and Dunlop, R (1991) Physiology of small and large Animals. B.C. Decker , Inc, Philadelphia, Hamilton.
- Swenson M.J, Reece, W.O. and Comstock (1993) Duke's Physiology of Domestic Animals. 11th edition, publishing Associates a division of Cornell University press. Ithaca and London.
- Gunningham, J. (1992) Text book of Veterinary Physiology. W.B. Saunders Company, Toronto, Montreal, Tokyo.

8-3: Egyptian Knowledge Bank:

- Physiology, Beaver, BV and Höglund, DL. 2016. Academic Press, Elsevier Inc.
- Perspective, by Patrick J. Butler, J. Anne Brown, et al. | Sep 23, 2020. Academic Press, Elsevier Inc.
- Principles of Animal Physiology, by Christopher Moyes and Patricia Schulte | Jan 15, 2015. Academic Press, Elsevier Inc.



- Veterinary Anatomy Coloring Book: Animal Anatomy and Veterinary Physiology Coloring Book Vet TechSummit Sparks | Sep 22, 2020. Academic Press, Elsevier Inc
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- Introduction to Animal and Veterinary Anatomy and Physiology, by Victoria Aspinall and Melanie Cappello | Dec 12, 2019. Academic Press, Elsevier Inc
- Adaptations, by David Randall | Nov 1, 2001, Academic Press, Elsevier Inc
- Animal Physiology: Adaptation and Environment. by Knut Schmidt-Nielsen | Apr 10, 1997. Academic Press, Elsevier Inc.

8.4. Scientific Journals

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- Animal reproduction science
- Aquaculture
- Veterinary sciences
- Scientific report
- .frontier in veterinary science
- Journal of Animal Science..
- British Journal of Animal Science.

8.5. Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <https://animalphys4e.sinauer.com/>
- <https://teachmephysiology.com/>
- <https://www.nature.com/subjects/animal-physiology>
- <https://sites.msudenver.edu/haysc/biology-courses/animal-physiology-bio-3360/>
- <https://www.acsedu.com/Courses/animal-biology-animal-husbandry-i-599.aspx>
- <https://animalphys4e.sinauer.com/quiz/>
- <https://askabiologist.asu.edu/explore/animal-physiology>
- <https://www.sinauer.com/media/wysiwyg/tocs/AnimalPhysiology3.pdf>
- <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/animal-physiology>
- <https://library.ivytech.edu/c.php?g=869309&p=6239318>
- National Dairy Database: <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>

Course Coordinator:

Head of Department:

Prof. Dr/ Michel Fahmy Saad

Prof. Dr/ Shawky Abdelhady Mahmoud



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding(a)									Intellectual Skills(b)					Practical & Professional Skills©					General & Transferable Skills(d)			
		1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	1	2	3	4
Nervous system in Fish	4									✓						✓				✓	✓	✓	✓	✓
Endocrine system in fish	8	✓									✓	✓				✓				✓	✓	✓	✓	✓
Respiration in fish and its regulation	6			✓											✓	✓				✓	✓	✓	✓	✓
Digestive system in fish	4		✓													✓				✓	✓	✓	✓	✓
Cardiovascular system in fish disease	4					✓								✓		✓				✓	✓	✓	✓	✓
Osmoregulation in fish	4				✓											✓				✓	✓	✓	✓	✓
Male reproductive system in fish	6						✓	✓	✓	✓					✓						✓	✓	✓	✓
Female reproductive system	12						✓	✓	✓	✓					✓						✓	✓	✓	✓
Semen analysis in fish	20													✓		✓					✓	✓	✓	✓
Reproductive hormones assay	20										✓	✓			✓				✓		✓	✓	✓	✓
Fish blood pictures examination	20													✓						✓	✓	✓	✓	✓
Effect of some environmental factors on fish physiology	16														✓	✓					✓	✓	✓	✓
Steps of artificial reproduction of fish	20													✓						✓	✓	✓	✓	✓



DEPARTMENT OF PHYSIOLOGY

**Course specification
(2021 / 2022)**

1 - Basic Information:

Code number 132/2

Course title: **Physiology of high altitude**

Academic Year: PhD Degree of Veterinary Medical Sciences

Total teaching hours: 96hrs

Lectures: 48

Practical: 48

2 - OVERALL AIMS OF THE COURSE:

Deep understanding of high altitude, its effect on blood components, respiration, heart functions and excretion as well as study adaptation of the body to high altitude

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1-Describe the mechanism of the adaptation of different organs of the animal to high altitude
- A2-identify effect of high altitude on respiratory system
- A3-recognize the response of different glands to high altitude
- A4- Know the response of Blood response to high altitude

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b1- Interpret results obtained
- b2-Formulate different parameters

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1- Check heart rate, respiration rate and pulse of animals live in high altitude
- c2-Assessment of the role of different endocrine gland in high altitude
- c3-Examination of the ability of the animal to cope with a subsequent challenge
- c4- count blood picture of animals live in high altitude
- c5- Analyze hormones and some metabolites affected by high altitude

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1-Coach and work in group.
- D2-Classify different duties.
- D3-Utilize computer and internet skills.
- D4-Develop the ethical behaviours between students and staff members as well as among the students themselves

4 - COURSE CONTENTS:

TOPIC	No of hours
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	Total hours	lecture	practical
Introduction	12	8	4
Adaptional mechanism of the animal body to high altitude	12	4	2
Haematological response to high altitude	14	8	4
Endocrinological modification in response to high altitude	12	8	12
Respiratory response to high altitude	11	5	6
cardiovascular response to high altitude	8	2	6
Renal functional modification to high altitude	12	4	8
Immunological responses to high altitude	15	4	6
Total	96	48	48

5- TEACHING & LEARNING METHODS:

*Lectures

(using data show, white board, overhead projector and brain storming)

*Practical and small group sessions:

1: Practical training.

(Practical demonstrations, practice of skills, discussions Microscopes and other facilities as Data show)

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

* Audiovisual : Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination	Activities
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	At the end of the academic year	At the end of the academic year	At the end of the academic year	At the end of the academic year
7.c grads	50	20	20	10

Evaluation Intended learning out comes

Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written examination	A1.A2.A3.A4.	B1		D3
Oral examination	A1.A2.A3.A4	B1.B2.		D4
Practical examination		-	C1.C2.C3. C4.C5	D1-2

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills. KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Animal Physiology. Richard W Hill , Gordon A Wyse , Margaret Anderson (4th Ed) ISBN: 9781605357379 Edition: 4 Paperback Oct 2017
- Principles of Animal Physiology (2016) 3rd edition. Christopher D. Moyes, Patricia M. Schulte
- Principles of Animal Physiology (2018) 3rd edition, Christopher D. Moyes, Patricia M. Schulte
- Eckert Animal Physiology: Mechanisms and Adaptations (1997) 4th Ed, David Randall , Warren Burggren
- Functional Anatomy and Physiology of Domestic Animals, (2017) 5th Edition, William O. Reece, Eric W. Rowe
- Cunningham's Textbook of Veterinary Physiology, 6th Edition - January 3, 2019
- Dukes' Physiology of Domestic Animals, (2015) 13th Edition, William O. Reece (Editor), , Jesse P. Goff , Etsuro E. Uemura
- COMPARATIVE ANIMAL PHYSIOLOGY (2020) 1st Edition, by Philip C. Withers
- Anatomy and Physiology of Farm Animals, 8th Edition, Anna Dee Fails, Christianne Magee
- Essentials of Animal Physiology, (2007) S. C. Rastogi
- Equine Exercise Physiology (2002), David Marlin, Kathryn J. Nankervis
- Guyton and Hall Textbook of Medical Physiology (Guyton Physiology) (2022) 14th Edition, by John E. Hall PhD , Michael E. Hall MD MSc.
- Sturkie's Avian Physiology (2015) • Sixth Edition • 2015
- The Physiology of Fishes (2016), By Suzanne Currie, David H. Evans

8-2: Recommended books:

- Ruchebusch, Y., Phaneuf, I. and Dunlop, R (1991) Physiology of small and large Animals. B.C. Decker, Inc, Philadelphia, Hamilton.
- Swenson M.J, Reece, W.O. and Comstock (1993) Duke's Physiology of Domestic Animals. 11th edition, publishing Associates a division of Cornell University press. Ithaca and London.



Gunningham, J. (1992) Text book of Veterinary Physiology. W.B. Saundero Company, Toronto, Montreal, Tokyo.

- Guyton, A. (1991) Text book of Medical physiology. 8th, W.B. Saundero Company.
- - Ganong, W.F. (1989) Review of Medical Physiology. 9th (Middle East edition) Appleton and Lang.
- 8.2.f- Periodicals, Web Sites, ... etc.

8-3: Egyptian Knowledge Bank:

- Animal Physiology, Beaver, BV and Höglund, DL. 2016. Academic Press, Elsevier Inc.
- Animal Physiology: An Environmental Perspective, by Patrick J. Butler, J. Anne Brown, et al. | Sep 23, 2020. Academic Press, Elsevier Inc.
- Principles of Animal Physiology, by Christopher Moyes and Patricia Schulte | Jan 15, 2015. Academic Press, Elsevier Inc.
- Animal Physiology: From Genes to Organisms, by Lauralee Sherwood, Hillar Klandorf, et al. | Jan 1, 2012. Academic Press, Elsevier Inc
- Anatomy and Physiology of Farm Animals, by Anna Dee Fails and Christianne Magee | Jul 11, 2018. Academic Press, Elsevier Inc.
- Veterinary Anatomy Coloring Book: Animal Anatomy and Veterinary Physiology Coloring Book Vet Tech, Summer Sparks | Sep 22, 2020. Academic Press, Elsevier Inc
- Functional Anatomy and Physiology of Domestic Animals, by William O. Reece and Eric W. Rowe | Aug 14, 2017, Academic Press, Elsevier Inc
- Introduction to Animal and Veterinary Anatomy and Physiology, by Victoria Aspinall and Melanie Cappello | Dec 12, 2019. Academic Press, Elsevier Inc
- Eckert Animal Physiology: Mechanisms and Adaptations, by David Randall | Nov 1, 2001, Academic Press, Elsevier Inc
- Animal Physiology: Adaptation and Environment, by Knut Schmidt-Nielsen | Apr 10, 1997. Academic Press, Elsevier Inc.
- Das, DN. Paul, D. and Mondal, S. 2022. Emerging Issues in Climate Smart Livestock Production. Biological Tools and Techniques. Academic Press, Elsevier Inc.
- Avian (Poultry) Production: 2nd Revised and Enlarged Edition, by D. Sopcota, D. Narahari, J.D. Mahanta, 2017.
- Poultry Health: A Guide for Professionals, by Paul Barrow, Venugopal Nair, Susan Baigent, Robert Atterbury, Michael Clark, 2021.
- Poultry Science, 5th Edition, by Colin G. Scanes, Karen D. Christensen, 2019.

8.4. Scientific Journals

- Animals
- Animal physiology and biochemistry
- Cells
- Life science
- Fish physiology and biochemistry
- Stress
- Biomedicine
- Animal reproduction science
- Aquaculture
- Veterinary sciences
- Scientific report
- .frontier in veterinary science
- Journal of Animal Science.
- Livestock Production Science.



- Egyptian Poultry Science
- Poultry Science Association
- American journal of poultry science
- British Poultry Science
- International journal of Poultry Science.
- Journal of Applied Poultry Research

8.5. Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <https://animalphys4e.sinauer.com/>
- <https://teachmephysiology.com/>
- <https://www.nature.com/subjects/animal-physiology>
- <https://sites.msudenver.edu/haysc/biology-courses/animal-physiology-bio-3360/>
- <https://www.acsedu.com/Courses/animal-biology-animal-husbandry-i-599.asp>
- <https://animalphys4e.sinauer.com/quiz/>
- <https://askabiologist.asu.edu/explore/animal-physiology>
- <https://www.sinauer.com/media/wysiwyg/tocs/AnimalPhysiology3.pdf>
- <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/animal-physiology>
- <https://library.ivytech.edu/c.php?g=869309&p=6239318>
- DeLaval Dairy Supply. <http://www.delaval.com/en/-/Dairy-knowledge-and-advice/>
- Lactation Biology: <http://classes.aces.uiuc.edu/ansci308/index.html>
- Heat Detection and Timing of Insemination for Cattle. Penn State, College of Agricultural Sciences, Cooperative Extension. <https://extension.psu.edu/heat-detection-and-timing-of-insemination-for-cattle> accessed 08/09/2017.
- National Dairy Database: <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>
- The Babcock Institute: <http://babcock.cals.wisc.edu>
- WWW Virtual Library for Dairy Production* (Oklahoma). <http://www.ansi.okstate.edu/library/dairy/>
- US Dairy Export Council: <http://www.usdec.org/about/whoweare.htm>
- The International Dairy Federation (IDF): <http://www.fil-idf.org/>
- Managing of dairy heifers: <http://www3.das.psu.edu/dcn/calfmgt/385/index.html>
- Management Practices Associated with High-Producing U.S. Dairy Herds (USDA): http://www.aphis.usda.gov/vs/ceah/cahm/Dairy_Cattle/drymgmt.htm
- A beginners guide to raising sheep <http://www.sheep101.info/201/feedwaterequip.html>
- <http://www.thepoultrysite.com/>
- <http://www.worldpoultry.net/>

Course Coordinator:

Head of Department:

Prf.Dr/ Zein Shaban Ibrahim

Prof.Dr/ Shawky Abdelhady



Course Matrix for the achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding(K.U)				Intellectual Skills(b)					Practical & Professional Skills(c)					General & Transferable Skills(d)				
		1	2	3	4	1	2	3	4	5	1	2	3	4	5	1	2	3	4	
		Introduction	12	✓															✓	
Adaptional mechanism of the animal body to high altitude	12				✓	✓	✓					✓		✓				✓		
Haematological response to high altitude	14	✓		✓		✓	✓				✓		✓	✓	✓				✓	
Endocrinological modification in response to high altitude	12		✓			✓	✓				✓		✓	✓	✓					✓
Respiratory response to high altitude	11				✓	✓	✓				✓		✓	✓			✓			
cardiovascular response to	8				✓	✓	✓				✓		✓	✓	✓					



high altitude																				
Renal functional modification to high altitude	12	✓	✓	✓	✓									✓	✓	✓	✓			
Immunological responses to high altitude		✓	✓	✓	✓	✓	✓							✓	✓	✓	✓			

DEPARTMENT OF PHYSIOLOGY

Course specification (2020 / 2021)

1 - Basic Information:

Code number:130/2

Course title: Physiology of Pollution

Academic Year: **PhD Degree of Veterinary Medical Sciences.**

Total teaching hours: 144 hrs

Lectures:48

Practical:96

2 - OVERALL AIMS OF THE COURSE:

Provide student with basic knowledge and skills concerning the pollution, sources of pollution, its effect on body functions.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1-Recognize sources of pollution

A2-Illustrate types of pollution

A3-Describe effect of pollution on some body functions

A 4- identify the basic knowledge about mode of action of some pollutants

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

b1- Interpret any disturbance in the animal body

b2- Interpret some Hormonal disorders



3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c1- analyses blood parameters concerned with pollution
- c2-Assess the level of some pollutants
- c3- Evaluate some organ function tests affected by pollutants

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1-Coach and work in group.
- D2-Classify different duties.
- D3-Utilize computer and internet skills.
- D4-Develop the ethical behaviours between students and staff members as well as among the students themselves

4 - COURSE CONTENTS:

TOPIC	No of hours		
	Total hours	Lectures	Practicals
Meaning and impact of pollution	6	6	-
Environmental pollutants	18	8	10
Mechanism of action of different type of pollution	14	6	8
Effect of pollutants on body functions	26	6	20
Metabolic effect of pollutants	30	8	22
hormonal effect of pollutants	28	6	22
Body defense against pollutants	22	8	14
Total	144	48	96

5- TEACHING & LEARNING METHODS: 5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard



***Practical and small group sessions:**

1: Practical training. (Practical demonstrations, practice of skills, discussions Microscopes and other facilities as Data show)

*** Self learning**

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

*** Distance Teaching and Learning:**

Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons.

Distance teaching may be offered synchronous or non-synchronous

Teaching and Learning Methods*	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	A1.A2.A3.A4.	B1		D3
Practical sessions	A1.A2.A3.A4	B1.B2.		D4
Self-Learning activities		B1.B2.	C1.C2.C3.	D1.D2
Distance Teaching and Learning	A1.A2.A3.A4.	B1		D3

* **Audiovisual** :Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination	Activities
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
<u>7.c grads</u>	50	20	20	10

Evaluation Intended learning out comes

Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written examination	A1.A2.A3.A4.	B1		D3
Oral examination	A1.A2.A3.A4	B1.B2.		D4
Practical examination		B1.B2.	C1.C2.C3.	D1.D2



KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills. KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

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- Principles of Animal Physiology (2016) 3rd edition. Christopher D. Moyes, Patricia M. Schulte
- Principles of Animal Physiology (2018) 3rd edition, Christopher D. Moyes, Patricia M. Schulte
- Eckert Animal Physiology: Mechanisms and Adaptations (1997) 4th Ed, David Randall , Warren Burggren
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- Cunningham's Textbook of Veterinary Physiology, 6th Edition - January 3, 2019
- Dukes' Physiology of Domestic Animals, (2015) 13th Edition, William O. Reece (Editor), , Jesse P. Goff , Etsuro E. Uemura
- COMPARATIVE ANIMAL PHYSIOLOGY (2020) 1st Edition, by Philip C. Withers Anatomy and Physiology of Farm Animals, 8th Edition, Anna Dee Fails, Christianne Magee
- Essentials of Animal Physiology, (2007) S. C. Rastogi
- Equine Exercise Physiology (2002), David Marlin, Kathryn J. Nankervis

- Guyton and Hall Textbook of Medical Physiology (Guyton Physiology) (2022) 14th Edition, by John E. Hall PhD , Michael E. Hall MD MSc.
- Sturkie's Avian Physiology (2015) • Sixth Edition • 2015
- The Physiology of Fishes (2016), By Suzanne Currie, David H. Evans

8-2: Recommended books:

- Ruchebusch, Y., Phaneuf, I. and Dunlop, R (1991) Physiology of small and large Animals. B.C. Decker , Inc, Philadelphia, Hamilton.
- Swenson M.J, Reece, W.O. and Comstock (1993) Duke's Physiology of Domestic Animals. 11th edition, publishing Associates a division of Cornell University press. Ithaca and London.
- Gunningham, J. (1992) Text book of Veterinary Physiology. W.B. Saunderson Company, Toronto, Montreal, Tokyo.
- Guyton, A. (1991) Text book of Medical physiology. 8th, W.B. Saunderson Company.
- - Ganong, W.F. (1989) Review of Medical Physiology. 9th (Middle East edition) Appleton and Lang.
- 8.2.f- Periodicals, Web Sites, ... etc.

8-3: Egyptian Knowledge Bank:

- Animal Physiology, Beaver, BV and Höglund, DL. 2016. Academic Press, Elsevier Inc.
- Animal Physiology: An Environmental Perspective, by Patrick J. Butler, J. Anne Brown, et al. | Sep 23, 2020. Academic Press, Elsevier Inc.



- Animal Physiology: From Genes to Organisms, by Lauralee Sherwood, Hillar Klandorf, et al. | Jan 1, 2012. Academic Press, Elsevier Inc
- Anatomy and Physiology of Farm Animals, by Anna Dee Fails and Christianne Magee | Jul 11, 2018. Academic Press, Elsevier Inc.
- Veterinary Anatomy Coloring Book: Animal Anatomy and Veterinary Physiology Coloring Book Vet Tech, Summer Sparks | Sep 22, 2020. Academic Press, Elsevier Inc
- Functional Anatomy and Physiology of Domestic Animals. by William O. Reece and Eric W. Rowe | Aug 14, 2017, Academic Press, Elsevier Inc
- Introduction to Animal and Veterinary Anatomy and Physiology, by Victoria Aspinall and Melanie Cappello | Dec 12, 2019. Academic Press, Elsevier Inc
- Eckert Animal Physiology: Mechanisms and Adaptations, by David Randall | Nov 1, 2001, Academic Press, Elsevier Inc
- Animal Physiology: Adaptation and Environment, by Knut Schmidt-Nielsen | Apr 10, 1997. Academic Press, Elsevier Inc.
- Das, DN. Paul, D. and Mondal, S. 2022. Emerging Issues in Climate Smart Livestock Production. Biological Tools and Techniques. Academic Press, Elsevier Inc.
- Avian (Poultry) Production: 2nd Revised and Enlarged Edition, by D. Sapat, D. Narahari, J.D. Mahanta, 2017.
- Poultry Health: A Guide for Professionals, by Paul Barrow, Venugopal Nair, Susan Baigent, Robert Atterbury, Michael Clark, 2021.
- Poultry Science, 5th Edition, by Colin G. Scanes, Karen D. Christensen, 2019.

8.4. Scientific Journals

- Animals
- Animal physiology and biochemistry
- Cells
- Life science
- Fish physiology and biochemistry
- Stress
- Biomedicine
- Animal reproduction science
- Aquaculture
- Veterinary sciences
- Scientific report
- .frontier in veterinary science
- Journal of Animal Science.
- Livestock Production Science.
- British Journal of Animal Science.
- Egyptian Poultry Science
- Poultry Science Association
- American journal of poultry science
- British Poultry Science
- International journal of Poultry Science.
- Journal of Applied Poultry Research

8.5. Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <https://animalphys4e.sinauer.com/>



Kafrelsheikh University
Faculty of Veterinary Medicine



<https://teachmeanatomy.com/>
<https://www.nature.com/subjects/animal-physiology>

- <https://sites.msudenver.edu/haysc/biology-courses/animal-physiology-bio-3360/>
- <https://www.acsedu.com/Courses/animal-biology-animal-husbandry-i-599.aspx>
- <https://animalphys4e.sinauer.com/quiz/>
- <https://askabiologist.asu.edu/explore/animal-physiology>
- <https://www.sinauer.com/media/wysiwyg/tocs/AnimalPhysiology3.pdf>
- <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/animal-physiology>
- <https://library.ivytech.edu/c.php?g=869309&p=6239318>
- DeLaval Dairy Supply. <http://www.delaval.com/en/-/Dairy-knowledge-and-advice/>
- Lactation Biology: <http://classes.aces.uiuc.edu/ansci308/index.html>
- Heat Detection and Timing of Insemination for Cattle. Penn State, College of Agricultural Sciences, Cooperative Extension. <https://extension.psu.edu/heat-detection-and-timing-of-insemination-for-cattle> accessed 08/09/2017.
- National Dairy Database: <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>
- The Babcock Institute: <http://babcock.cals.wisc.edu>
- WWW Virtual Library for Dairy Production* (Oklahoma). <http://www.ansi.okstate.edu/library/dairy/>
- US Dairy Export Council: <http://www.usdec.org/about/whoweare.htm>
- The International Dairy Federation (IDF): <http://www.fil-idf.org/>
- Managing of dairy heifers: <http://www3.das.psu.edu/dcn/calfmgt/385/index.html>
- Management Practices Associated with High-Producing U.S. Dairy Herds (USDA): http://www.aphis.usda.gov/vs/ceah/cahm/Dairy_Cattle/drymgmt.htm
- A beginners guide to raising sheep <http://www.sheep101.info/201/feedwaterequip.html>
- <http://www.thepoultrysite.com/>
- <http://www.worldpoultry.net/>

Course Coordinator:

Head of Department:

Prf.Dr/ Zein Shaban Ibrahim

Prof.Dr/ Shawky Abdelhady



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding(a)					Intellectual Skills(b)				Practical & Professional Skills(c)			General & Transferable Skills(d)				
		1	2	3	4	5	1	2	3	4	1	2	3	1	2	3	4	
		Meaning and impact of pollution	6	✓	✓		✓		✓	✓						✓		
Environmental pollutants	18		✓												✓			
Mechanism of action of different type of pollution	14				✓		✓	✓										✓
Effect of pollutants on body functions	26			✓			✓	✓		✓	✓	✓						
Metabolic effect of pollutants	30			✓			✓	✓		✓	✓	✓						
hormonal effect of pollutants	28			✓			✓	✓		✓	✓	✓						
Body defense against pollutants	22			✓			✓	✓		✓	✓	✓						



(2021 / 2022)

1 - Basic Information:

Course Title: **Poultry physiology**

Code number: **124/2**

Academic Year: **Ph.D. of Veterinary Medical Sciences (Animal physiology).**

Total teaching hours: .. **192hrs**

Lectures: **96**

Practical: **96**

2 - OVERALL AIMS OF THE COURSE:

a-To ensures that students reserve a comprehensive theoretical base in poultry physiology.

b-To provides students with knowledge, skills, and confidence to enable them to pursue a career in the field of birds and rabbits production.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Realize the digestion and the endocrine system in birds in comparison with that of other mammals.
- a.2. Recognize respiration in birds and the factors affecting it.
- a.3. Describe thermoregulation and stress in birds.
- a.4. Memorize the cardiovascular system in birds.
- a.5. Identify reproductive patterns in birds and hormonal control of reproduction.
- a.6. Distinguish the egg production.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Interpret hormonal assay in birds.
- b.2. Discriminate the hormonal control of egg production
- b.3. Interpret hematological findings.
- b.4. Analyze semen samples.
- b.5. Interpret digestive enzymes in birds.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1 investigate hormone level.
- c.2. Analyze sperm samples.
- c.3. examine blood picture in birds.



c.4. Asses digestive enzymes activity

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1-Coach and work in group.

D2-Classify different duties.

D3-Utilize computer and internet skills.

D4-Develop the ethical behaviours between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

4.A:- First semester topics (physiology A):-

Topic	No. of hours		
	Lect.	Pract.	Total
Digestion in Bird	12	-	12
The endocrine system in bird	12	-	12
Cardiovascular system in bird	15	-	15
Thermoregulation in bird	10	-	10
Avian respiration	10	-	10
Egg production	7	-	7
Male Reproduction	15	-	15
female Reproduction	15	-	15
Hormonal assay in poultry	-	30	30
Poultry blood picture	-	30	30
Semen analysis	-	20	20
Examination of digestive enzymes activity	-	16	16
Total	96	96	192

5- TEACHING & LEARNING METHODS:

***Lectures**

(using data show, white board, overhead projector and brain storming)

***Practical and small group sessions:**

1: Practical training.

(Practical demonstrations, practice of skills, and discussions)

*** Site visits**

Two visits (one each term) to the dairy farm in the first term and to the dairy plant in the second term for practical application

*** Self learning**

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.



- Preparation of posters
- Preparation of scientific reports.

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

* **Audiovisual: Video show.**

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination	Activities
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
<u>7.c grads</u>	50	20	20	10

Evaluation Intended learning out comes

Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written examination	A1.A2.A3.A4.A5.A6.	B1-B5		
Oral examination	A1.A2. A6.	B1.B2.B3,B5		D1-4
Practical examination			C1.C2.C3. C4.	

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills. KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Animal Physiology. Richard W Hill, Gordon A Wyse, Margaret Anderson (4th Ed) ISBN: 9781605357379 Edition: 4 Paperback Oct 2017
- Principles of Animal Physiology (2016) 3rd edition. Christopher D. Moyes, Patricia M. Schulte
- Principles of Animal Physiology (2018) 3rd edition, Christopher D. Moyes, Patricia M. Schulte



- Eckert Animal Physiology: Mechanisms and Adaptations (1997) 4th Ed, [David Randall](#) ,[Warren Burggren](#)
- Functional Anatomy and Physiology of Domestic Animals,(2017) 5th Edition, [William O. Reece](#), [Eric W. Rowe](#)
- Cunningham's Textbook of Veterinary Physiology,6th Edition - January 3, 2019
- Dukes' Physiology of Domestic Animals, (2015)13th Edition,[William O. Reece \(Editor\)](#) , [Jesse P. Goff](#) , [Etsuro E. Uemura](#)
- COMPARATIVE ANIMAL PHYSIOLOGY (2020)1st Edition,by Philip C. Withers
Anatomy and Physiology of Farm Animals, 8th Edition,[Anna Dee Fails](#), [Christianne Magee](#)
- Essentials of Animal Physiology,(2007) [S. C. Rastogi](#)
- Equine Exercise Physiology (2002),[David Marlin](#), [Kathryn J. Nankervis](#)
- Guyton and Hall Textbook of Medical Physiology (Guyton Physiology) (2022)14th Edition,by [John E. Hall PhD](#) , [Michael E. Hall MD MSc](#).
- Sturkie's Avian Physiology (2015)• Sixth Edition • 2015

8-2: Recommended books:

- Ruchebusch, Y., Phaneuf, I. and Dunlop, R (1991) Physiology of small and large Animals. B.C.Decker ,Inc, Philadelphia, Hamilton.
- Swenson M.J, Reece, W.O. and Comstock (1993) Duke's Physiology of Domestic Animals. 11th edition, publishing Associates a division of Cornell University press. Ithaca and London.
- Gunningham, J. (1992) Text book of Veterinary Physiology. W.B. Saundero Company, Toronto, Montreal, Tokyo.
- Guyton, A. (1991) Text book of Medical physiology. 8th, W.B. Saundero Company.
- - Ganong, W.F. (1989) Review of Medical Physiology. 9th (Middle East edition) Appleton and Lang.
- 8.2.f- Periodicals, Web Sites, ... etc.

8-3: Egyptian Knowledge Bank:

- [Animal Physiology,Beaver](#), BV and [Höglund](#), DL. 2016. Academic Press, Elsevier Inc.
- [Animal Physiology: An Environmental Perspective](#),by Patrick J. Butler, J. Anne Brown, et al. | Sep 23, 2020. Academic Press, Elsevier Inc.
- Principles of Animal Physiology ,by Christopher Moyes and Patricia Schulte | Jan 15, 2015. Academic Press, Elsevier Inc.
- [Animal Physiology: From Genes to Organisms](#),by [Lauralee Sherwood](#) , Hillar Klandorf, et al. | Jan 1, 2012. Academic Press, Elsevier Inc
- Veterinary Anatomy Coloring Book: Animal Anatomy and Veterinary Physiology Coloring Book Vet Tech,Summer Sparks | Sep 22, 2020. Academic Press, Elsevier Inc
- Functional Anatomy and Physiology of Domestic Animals.by William O. Reece and Eric W. Rowe | Aug 14, 2017, Academic Press, Elsevier Inc
- Introduction to Animal and Veterinary Anatomy and Physiology,by Victoria Aspinall and Melanie Cappello | Dec 12, 2019. Academic Press, Elsevier Inc
- [Eckert Animal Physiology: Mechanisms and Adaptations](#),by David Randall | Nov 1, 2001, Academic Press, Elsevier Inc
- Animal Physiology: Adaptation and Environment.by Knut Schmidt-Nielsen | Apr 10, 1997. Academic Press, Elsevier Inc.



- Das, DN. Paul, D. and Mondal, S. 2022. Emerging Issues in Climate Smart Livestock Production. Biological Tools and Techniques. Academic Press, Elsevier Inc.
- Avian (Poultry) Production: 2nd Revised and Enlarged Edition, by D. Sapkota, D. Narahari, J.D. Mahanta, 2017.
- Poultry Health: A Guide for Professionals, by Paul Barrow, Venugopal Nair, Susan Baigent, Robert Atterbury, Michael Clark, 2021.
- Poultry Science, 5th Edition, by Colin G. Scanes, Karen D. Christensen, 2019.

8.4. Scientific Journals

- Animals
- Animal physiology and biochemistry
- Cells
- Life science
- Stress
- Biomedicine
- Animal reproduction science
- Veterinary sciences
- Scientific report
- .frontier in veterinary science
- Journal of Animal Science.
- Livestock Production Science.
- British Journal of Animal Science.
- Egyptian Poultry Science
- Poultry Science Association
- American journal of poultry science
- British Poultry Science
- International journal of Poultry Science.
- Journal of Applied Poultry Research

8.5. Scientific websites

- The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>
- <https://animalphys4e.sinauer.com/>
- <https://teachmephysiology.com/>
- <https://www.nature.com/subjects/animal-physiology>
- <https://sites.msudenver.edu/haysc/biology-courses/animal-physiology-bio-3360/>
- <https://www.acsedu.com/Courses/animal-biology-animal-husbandry-i-599.aspx>
- <https://animalphys4e.sinauer.com/quiz/>
- <https://askabiologist.asu.edu/explore/animal-physiology>
- <https://www.sinauer.com/media/wysiwyg/tocs/AnimalPhysiology3.pdf>
- <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/animal-physiology>
- <https://library.ivytech.edu/c.php?g=869309&p=6239318>
- <http://www.thepoultrysite.com/>
- <http://www.worldpoultry.net/>

Course Coordinator:

Head of Department:

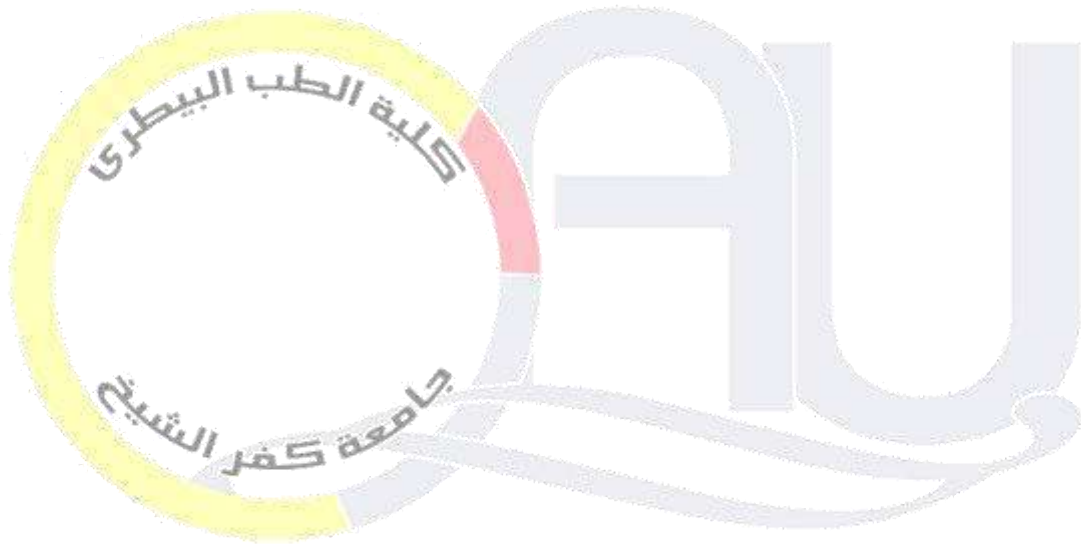


Kafrelsheikh University
Faculty of Veterinary Medicine



Dr/ Mustafa Shukry

Prof.Dr/ Shawky Abdelhady Mahmoud



Course Matrix for the achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding (K.U)										Intellectual Skills (b)					Practical & Professional Skills (c)					General & Transferable Skills (d)						
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	1	2	3	4	5	1	2	3	4			
Digestion in Bird	10	✓																										
Endocrine system in bird	20	✓																										
Cardiovascular system in bird	29				✓																							
Thermoregulation in bird	16			✓																								
Avian respiration	15		✓																									
Egg production	10						✓					✓																
Male Reproduction	23					✓																						
Female Reproduction	19					✓																						
Hormonal assay in poultry	15											✓						✓								✓	✓	
Poultry blood picture	15													✓					✓						✓	✓		
Semen analysis	10													✓				✓							✓			
Examination of digestive enzymes activity	10													✓						✓				✓	✓			

DEPARTMENT OF PHYSIOLOGY

**Course specification
(2021 / 2022)**

1 - Basic Information:

Course Title: **Physiology of Ruminants.**

Code: 126/2

Academic Year: Ph.D. of Veterinary Medical Sciences (Animal physiology).

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

a-To ensures that students reserve a comprehensive theoretical base in veterinary physiology.

b-To provide students with knowledge, skills, and confidence to enable them to pursue a career in the field of nutrition of farm animals.

C-To delivers students with basic knowledge and skills concerning the anatomy of the ruminant digestive system, understanding of microbial digestion, and the mechanism of digestion in ruminants.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Describe digestive physiology in ruminant..
- a.2. Recognizes reproduction of ruminant.
- a.3. Realize endocrinology of ruminant.
- a.4. Identify the blood physiology of ruminant.
- a.5. recite the urinary system physiology of ruminant.

2-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Interpret rumination process.
- b.2. Dissect endocrine function in ruminant.
- b.3 Analyze the body fluids of ruminant.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1 Perform microbial Fermentation examination.
- c.2. Analyze digestive enzymes activity.
- c.3. Asses estrus cycle detection.
- c.4. Investigate the methods of hormonal assay.
- c.5. Perform blood picture in ruminant.

c.6. Analyze urine, kidney function test.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able:

D1-Coach and work in group.

D2-Classify different duties.

D3-Utilize computer and internet skills.

D4-Develop the ethical behaviours between students and staff members as well as among the students themselves.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lect.	Pract.	Total
Digestive physiology in ruminant	24	-	24
Reproduction of ruminant	20	-	20
Endocrinology of ruminant	20	-	20
Blood physiology of ruminant	20	-	20
Urinary system physiology of ruminant	10	-	10
Microbial Fermentation examination	-	14	14
Examination of digestive enzymes activity	-	24	24
Estrus cycle detection	-	10	10
Methods of hormonal assay	-	18	18
Ruminant blood examination	-	20	20
Kidney function test	-	10	10
Total	96	96	192

5- TEACHING & LEARNING METHODS:

***Lectures**

(using data show, white board, overhead projector and brain storming)

***Practical and small group sessions:**

1: Practical training.

(Practical demonstrations, practice of skills, discussions Microscopes and other facilities as Data show)

*** Self learning**

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous

* **Audiovisual : Video show.**

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

Evaluation Intended learning out comes

Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written examination	A1.A2.A3.A4,A5	B1,B2,B3		D3
Oral examination	A1.A2.A3.A4,A5	B1,B2,B3		D4
Practical examination			C1-C6	D1-D2

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- Essentials of Animal Physiology, (2007) [S. C. Rastogi](#)
- Equine Exercise Physiology (2002), [David Marlin](#), [Kathryn J. Nankervis](#)
- Guyton and Hall Textbook of Medical Physiology (Guyton Physiology) (2022) 14th Edition, by [John E. Hall PhD](#), [Michael E. Hall MD MSc](#).
- Sturkie's Avian Physiology (2015) • Sixth Edition • 2015
- The Physiology of Fishes (2016), By Suzanne Currie, David H. Evans

8-2: Recommended books:

- [Ruchebusch, Y., Phaneuf, I. and Dunlop, R \(1991\) Physiology of small and large Animals. B.C. Decker, Inc, Philadelphia, Hamilton.](#)
- Swenson M.J, Reece, W.O. and Comstock (1993) Duke's Physiology of Domestic Animals. 11th edition, publishing Associates a division of Cornell University press. Ithaca and London.
- Gunningham, J. (1992) Text book of Veterinary Physiology. W.B. Saunders Company, Toronto, Montreal, Tokyo.
- Guyton, A. (1991) Text book of Medical physiology. 8th, W.B. Saunders Company.
- - Ganong, W.F. (1989) Review of Medical Physiology. 9th (Middle East edition) Appleton and Lang.
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- [Animal Physiology: An Environmental Perspective](#), by Patrick J. Butler, J. Anne Brown, et al. | Sep 23, 2020. Academic Press, Elsevier Inc.
- Principles of Animal Physiology, by Christopher Moyes and Patricia Schulte | Jan 15, 2015. Academic Press, Elsevier Inc.
- [Animal Physiology: From Genes to Organisms](#), by [Lauralee Sherwood](#), Hillar Klandorf, et al. | Jan 1, 2012. Academic Press, Elsevier Inc
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- [Eckert Animal Physiology: Mechanisms and Adaptations](#), by David Randall | Nov 1, 2001, Academic Press, Elsevier Inc
- Animal Physiology: Adaptation and Environment. by Knut Schmidt-Nielsen | Apr 10, 1997. Academic Press, Elsevier Inc.

8.4. Scientific Journals

- Animals
- Animal physiology and biochemistry
- Cells
- Life science
- Fish physiology and biochemistry
- Stress

- Biomedicine
- Animal reproduction science
- Veterinary sciences
- Scientific report
- .frontier in veterinary science
- Journal of Animal Science.
- Livestock Production Science.
- British Journal of Animal Science.

8.5. Scientific websites

- The Egyptian Knowledge Bank:
- <https://www.ekb.eg/web/guest/home>
- <https://animalphys4e.sinauer.com/>
- <https://teachmephysiology.com/>
- <https://www.nature.com/subjects/animal-physiology>
- <https://sites.msudenver.edu/haysc/biology-courses/animal-physiology-bio-3360/>
- <https://www.acsedu.com/Courses/animal-biology-animal-husbandry-i-599.aspx>
- <https://animalphys4e.sinauer.com/quiz/>
- <https://askabiologist.asu.edu/explore/animal-physiology>
- <https://www.sinauer.com/media/wysiwyg/tocs/AnimalPhysiology3.pdf>
- <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/animal-physiology>
- <https://library.ivytech.edu/c.php?g=869309&p=6239318>
- DeLaval Dairy Supply. <http://www.delaval.com/en/-/Dairy-knowledge-and-advice/>
- **Lactation Biology:** <http://classes.aces.uiuc.edu/ansci308/index.html>
- Heat Detection and Timing of Insemination for Cattle. Penn State, College of Agricultural Sciences, Cooperative Extension. <https://extension.psu.edu/heat-detection-and-timing-of-insemination-for-cattle> accessed 08/09/2017.
- **National Dairy Database:** <http://www.inform.umd.edu:8080/edres/topic/agr/ndd>
- **The Babcock Institute:** <http://babcock.cals.wisc.edu>
- WWW Virtual Library for Dairy Production* (Oklahoma).
<http://www.ansi.okstate.edu/library/dairy/>
- US Dairy Export Council: <http://www.usdec.org/about/whoweare.htm>
- The International Dairy Federation (IDF): <http://www.fil-idf.org/>
- Managing of dairy heifers: <http://www3.das.psu.edu/dcn/calfmgt/385/index.html>
- Management Practices Associated with High-Producing U.S. Dairy Herds (USDA):
http://www.aphis.usda.gov/vs/ceah/cahm/Dairy_Cattle/drymgmt.htm
- A beginners guide to raising sheep
-
-
-

• **Course Coordinator:**

Head of Department:

Dr/ Mustafa Shukry

Prof.Dr/ Shawky Abdelhady M

كلية الطب البيطري

وحدة ضمان الجودة

Program Spc. For Ph.D in Theriogenology



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Theriogenology

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy

(Theriogenology)



Kafrelsheikh University

Faculty of Veterinary Medicine

Department of Theriogenology

Program Specification for PhD Degree

(2021-2022)

A- Administrative information:

- 1- Awarding Body:** Kafr El-Sheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Theriogenology
- 4- Program Title:** PhD Degree in Veterinary Science (Theriogenology)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years
- 7- Program Coordinator:** Prof. Dr. Adel A. Ramoun
- 8- External evaluator:** Prof. Dr. Kamal Kamal Metwally

B- Professional information:

1- Aims of the Program:

This PhD program aim is to render the postgraduate able to:

- Achieve capability in modern laboratory technology to develop practical research project.
- Supply the PhD students with the most recent knowledge in science and technological applications of reproduction.
- Demonstrate an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and present their own research data for the protection and promotion of the animal health.



- perform data statistical analysis, results interpretation and dissertation, presentation skills.
- increase his knowledge in the field of animal reproduction and achieve continuous self-learning and experience transfer.
- Exhibit awareness about current veterinary animal reproduction problems and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of animal reproduction.

2- Academic standards:

**Academic reference standards (ARS) adopted by the faculty committee No(1)
14/9/2014**

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 3.1. Apply the gained specific knowledge and the relevant ones in professional practice.
- 3.2. Identify the professional problems and suggest solutions of the focus area.
- 3.3. Show satisfactory interpersonal and communication skills in his professional practice.
- 3.4. Communicate effectively and lead work team through professional scale.
- 3.5. Make decision according to the available information
- 3.6. Use of the available resources efficiently



3.7. Awareness with his role in society development and community preservation.

3.8. Reflects the commitment to act with integrity, credibility, and the rules of profession

3.9. Realize the importance of self and life-long learning.

4-Programme outcomes [intended learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

- a.1. Recognize the recent theriogenology scientific research principles, regulations, ethics and its different tools.
- a.2. Recognize the latest concepts, programs and techniques for improving fertility of both farm and pet animals.
- a.3. up to date with the advanced techniques in the reproductive biotechnology.
- a.4. Apply their knowledge and understanding in the field of theriogenology to suggest solutions for the reproductive problems in the surrounding environment.
- a.5. Recognize the infectious and non-infectious causes of male and female infertility in farm and pet animals.
- a.6. Recognize the different procedures that improve the fertility status of the herd.
- a.7. Up to date veterinary professional practice regulations and ethics in the field of animal reproduction.

b. Intellectual skills:



At the end of the program, graduate must be able to:

- b.1.** Realize and/or evaluate research troubles and questions and ordering them according to their priority.
- b.2.** Make an experimental design for a research work and detect the requirements for conducting the suggested plan..
- b.3.** Deal with problems that may face him during the conducting of his research work.
- b.4.** Asses risks of infertility problems in the community and make professional decisions to solve these disorders according to the latest scientific materials either via the network connection or the contact with more professional experts and by utilizing the available resources.
- b.5.** Perform scientific research studies that can give significant impact on the field of animal reproduction.
- b.6.** Critically evaluate their own research data and develop new approach to solve their research questions.
- b.7.** Chair and lead scientific open discussion in the field of animal based on evidence.
- b.8.** Plan for the improvement of animal reproduction performance.

c. Practical and professional skills:

At the end of the program, postgraduate will inquire the ability of:

- c.1.** Up to date latest skills in the field of animal reproduction research.
experimental designing and analysis of their own research project.
- c.2.** Write professional reports with special emphasis to understanding and interpretation of data which help in improving the economic values following introduction of a new reproductive policy.



c.3. Plan and improvement of research project in the field of theriogenology with a consideration to the technical, ethical and safety issues and associated costs.

c.4. Exploitation of the up to date reproductive technology in professional and research practice.

C.5. Mastery of research skills such as use of libraries and relevant indexing

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1.** Effective communication with students and veterinarians.
- d.2.** Utilizing information technology to serve development of theriogenology practice
- d.3.** Teaching others and evaluating their performance
- d.4.** Self-assessment and continuous learning
- d.5.** Using different resources to obtain knowledge and information
- d.6.** Team working and leading a team in familiar professional contexts
- d.7.** Management of scientific meetings with the ability to manage time efficiently

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, field visits and seminars.

6-Assessments:

The program depends on different assessment ways:

- a. Course assessment:
 - 1. Final written exam
 - To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
 - 2. Practical exam
 - To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
 - 3. Oral exam



- To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.
- b. Qualifying examination
- The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work
- c. PhD Thesis assessment
- Annual reports adopted by the Faculty.
 - Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
 - Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1-3; b1,2
Oral	a1-3; b1,2
Practical	c1-5
Qualifying Exam	a1-7; b1-8
Thesis	a4-7; b1-8; c1-5; d1-7

7. Program structure

a. Program duration (years):

PhD degree from 3-5 years and it should not exceed a period of six years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law.

b. Program courses:

Pre-doctor study



In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council so that include 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c-Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d-Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion .

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Theriogenology includes:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet	2	2



		animals)		
251/2		151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
252/2		152- Genital diseases.	1	1
253/2		153 - obstetrics (special specific courses in farm and pet Animals)	2	2
254/2		153- reproduction and immunity	1	2
255/2		155- artificial insemination in ruminants	2	2
256/2		156- artificial insemination in equine	2	2
257/2		157- artificial insemination in pet animals	1	2
258/2		158- embryo transfer	1	2

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular	2	2



		system		
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2



	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2



	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2



	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology				
	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology				
	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology				
	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology				
	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
		81- Advanced immunology	2	2
Parasitology				
	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2



	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1
Hygiene and control of milk and dairy products	208/2	108- Hygienic control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and	2	2



		their product		
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/2	134- Stress diseases during animals transport.		
Infectious diseases	235/2	135- Infectious diseases of cattle	2	2
	236/2	136- Infectious diseases of sheep and goat	2	2
	237/2	137- Infectious diseases camel	2	2
	238/2	138 Infectious diseases of equine	2	2
	239/2	139- Infectious diseases of pet animals	2	2
	240/	140- Infectious diseases lab animals	1	2



	2			
	241/2	141- Infectious diseases of udder and newly born animals	2	2
	242/2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their	2	2



		evaluation in polutry		
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2



engineering	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1



8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (Theriogenology) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medical science lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.
3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.
5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.



7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.
8. The applicant should submit a seminar(Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).
9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met:Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.
10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and incase of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.
11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards bit to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.



12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**



b- The final degree of each course which has 3 hours (lecture and practical) per week is 100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.

12. Marking scale as follow:-

Grade		Percentage
Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
1	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	5
3	Alumni	Questioners	5
4	External examiners	Questioners	1
5	External evaluators	reports	1

كلية الطب البيطري

وحدة ضمان الجودة

Program Spc. For Ph.D in Theriogenology



program Co-ordinator:

Prof. Dr. Adel A. Ramoun

Head of Department:

Prof. Dr. Esam Elmaadaly



Matching program ILOs with ARS - Matrix

Program ILOs	ARS																												
	K&U (a)						I.S. (b)									P.P. (c)					G.T. (d)								
	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7		
K&U	1 2	3 4	5	6	7	7																							
I.S.							1	2	3	4	5	6	7	8	8														
P.P.																1	2	3	4	5									
G.T.																													

كلية الطب البيطري

وحدة ضمان الجودة

Program Spc. For Ph.D in Theriogenology



Program Specification Matrix

PhD in Veterinary Medical Sciences (Theriogenology)

Courses		Total Contact hours/course	No. of hours / week			K.U (a)							I.S (b)								P.P (c)					G.T (d)															
Cod e	Na m e		Lec t.	La b.	Tot al	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	1	2	3	4	5	1	2	3	4	5	6	7									
Predoc toral courses (10-12 theoretical and practical hours weekly for 12 months)						x	x							x	x	x								x	x	x									x	x	x	x	x	x	x
Qualification exam								x	x	x	x	x		x	x	x	x	x	x	x	x		x	x	x	x	x							x	x	x	x	x	x	x	
Thesis								x	x	x	x	x		x	x	x	x	x	x	x	x		x	x	x	x	x							x	x	x	x	x	x	x	



ARS for PhD in Veterinary Medical Sciences (Theriogenology)

1) Graduate attributes

The graduate should have the ability for:

- 1) Mastering the basics and methodologies of scientific research.
- 2) Making continuous effort to add knowledge in the field of Theriogenology.
- 3) Application of analytical and criticizing method in Theriogenology and related areas.
- 4) Integrating specialized knowledge with related information and extrapolating their interrelationship.
- 5) Showing deep awareness with the ongoing problems and modern theories in Theriogenology.
- 6) Identification of professional problems and suggesting innovative solutions of the focus area.
- 7) Mastering a wide range of professional skills in Theriogenology.
- 8) Acquiring trends towards developing modern methods and tools in professional practice.
- 9) Using appropriate technological means to serve professional practice.
- 10) Effective communication and leading work team through professional scale.
- 11) Decision making in different professional situations.
- 12) Employment and development of available resources efficiently and working on finding new ones.
- 13) Awareness with his role in society development and community preservation.
- 14) Acting with integrity, credibility and according to the rules of profession.
- 15) Commitment with continuous self and life-long development and transferring of his knowledge and experience to others.

A) Knowledge and understanding

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Recent theories, principles and knowledge about causes of infertility and recurrent abortion in male and female animals	Recent theories, principles and knowledge in the field of specialization and related areas
2)	Principles and ethics of scientific research in the field of andrology, gynecology and obstetrics.	Basics, methodologies and ethics of scientific research and its different tools
3)	Legal and ethical principles of combating and eradicating infectious diseases affecting reproductive performance of animals.	Legal and ethical principles of professional practice in the area of specialization
4)	Application of his knowledge of theriogenology research methods by evaluating the utility of those techniques to specific research question about diagnosis of certain pathogens	Principles and the basics of quality assurance in the area of professional practice in the field of specialization



5)	Awareness with the effect of reproductive diseases on the animal health and production of milk and meat.	Awareness with the effect of professional practice on the environment and methods of its maintain and development
6)	Recognize the different molecular and serological protocols for identification of reproductive problems	

B) Intellectual skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analyzing and evaluating information in Theriogenology and the eliciting from them	Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solving professional problems in diagnosis and control of fertility problems	Solving professional problems using available data
3)	Performing scientific research studies that add to knowledge in Theriogenology	Conducting scientific research studies that add to knowledge
4)	Formulating scientific papers that can give significant impact on the field of animal reproduction.	Formulating scientific papers
5)	Risk assessment of infertility problems in the community and make professional decisions to solve these disorders according to the latest scientific materials either via the network connection or the contact with more professional experts and by utilizing the available resources.	Risk-assessment in the field of specialization
6)	Planning to enhance the performance in the laboratory diagnosis of reproductive problems using molecular techniques.	Planning to enhance the performance in field of specialization
7)	Recognize the problems in the field of Theriogenology and conclude the perfect decision in the perfect time.	Making professional decisions under different professional contexts
8)	Creation and innovative in the area of animal reproduction.	Creation and innovative in the area of specialization
9)	Development of evidence based learning and practice in scientific research	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills



Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills in isolation and identification of infectious and non-infectious causes of infertility	Mastering basic and modern professional skills in the area of specialization
2)	Write professional reports with special emphasis on understanding and interpretation of data which help in improving the economic values following introduction of a new reproductive policy.	Writing and evaluating professional reports
3)	Evaluating and modernizing methods and tools in the Theriogenology lab.	Evaluating and modernizing methods and tools in the area of specialization
4)	Using modern technological means to serve protect animals against new viral strains	Using modern technological means to serve professional practice
5)	Planning and improvement of research project in the field of theriogenology with a consideration to the technical, ethical and safety issues and associated costs	Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Effective communication with theriogenologists, students and veterinarians.	Effective communication
2)	Using the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.	Utilizing information technology to serve development of professional practice
3)	Presenting information clearly in written, electronic and oral forms	Teaching others and evaluating their performance
4)	Establishment of life-long self-learning required for continuous professional development.	Self-assessment and continuous learning
5)	Using different resources to obtain knowledge and information	Using different resources to obtain knowledge and information
6)	Team working and leading a team in familiar professional contexts	Team working and leading a team in familiar professional contexts
7)	Management of time and open discussions in the professional field	Management of scientific meetings with the ability to manage time efficiently



ثالثا: برامج الدكتوراه

١- مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستتبطا و مطورا للعلاقات البينية بينها
٥. إظهار و عيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حلولاً مبتكرة لحلها
٧. إتقان نطاقا و اسعا من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تنميتها و العمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصادقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢- المعايير القياسية العامة

المعرفة و الفهم:

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا علي الفهم و الدراية بكل من:
أ- النظريات و الأساسيات و الحديث من المعارف في مجال التخصص و المجالات ذات العلاقة

- ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
- ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
- ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
- ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و طرق تنمية البيئة و صيانتها

المهارات الذهنية

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

- أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
- ب- حل المشاكل المتخصصة استنادا علي المعطيات المتاحة
- ج- إجراء دراسات بحثية تضيف إلى المعارف
- د- صياغة أوراق علمية
- هـ- تقييم المخاطر في الممارسات المهنية
- و- التخطيط لتطوير الأداء في مجال التخصص
- ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة
- ح- الابتكار/ الإبداع
- ط- الحوار و النقاش المبني علي البراهين و الأدلة

المهارات المهنية

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

- أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
- ب- كتابة و تقييم التقارير المهنية
- ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
- د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
- هـ- التخطيط لتطوير الممارسة المهنية و تنمية أداء الآخرين

كلية الطب البيطري

وحدة ضمان الجودة

Program Spc. For Ph.D in Theriogenology



المهارات العامة و المنتقلة

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

- أ- التواصل الفعال بأنواعه المختلفة
- ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية
- ت- تعليم الآخرين وتقييم أداءهم
- ث- التقييم الذاتي والتعلم المستمر
- ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
- ح- العمل في فريق وقيادة فرق العمل
- خ- إدارة اللقاءات العلمية والقدرة علي إدارة الوقت



COURSE SPECIFICATION

(2021 / 2022)

1- Basic Information:

Code number: **250/2**

Course title: **Female infertility**

Academic Year: **PhD of Veterinary Medicine Program (Pre-doctor year)**

Total teaching hours: **192 h**

Lectures: **96 h (48 weeks- 2h/week)**

Practical: **96 h (48 weeks- 2h/week)**

2- OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to Gynecology, Obstetrics, and Rreproductive Technologies in farm and pet animals.

3- INTENDED LEARNING OUTCOMES (I.L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Memorize the genetic, environmental, pathological and immunological causes of female infertility in farm and pet animals.
- a.2. Describe the reproductive performance in female of farm and pet animals.
- a.3. Demonstrate the advanced methods for diagnosis of female infertility in farm and pet animals.
- a.4. Enable the students to be updated with the new reproductive technologies.
- a.5. Explore the fertility management programs.
- a.6. Identify the infertility problems occurring during pregnancy, parturition and puerperium.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Interpret the relative efficiency of different methods for pregnancy diagnosis and heat detection.
- b.2. Make differential diagnosis among the different causes of infertility.
- b.3. Construct the appropriate reproductive health measures to reduce the incidence of the infertility
- b.4. Prepare and write a scientific research plan in the field of female reproduction.



b.5. To develop creative approaches for solving the technical problems or issues associated with the sustained research projects.

b.6. identify, summarize and evaluate previous researches adopted in the field of female reproduction.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

c.1. Handle those recent techniques and tools adopted to evaluate the fertility status and diagnose causes of the reproductive failure in farm animals.

c.2. Apply the principles of good experimental design and analysis to their own research project.

c.3. Select and perform relevant programs of statistical analysis on data obtained for their own research.

c.4. Design a plan and execute a research project in the field of theriogenology with a consideration to the technical, ethical and safety issues and associated costs.

c.5. Achieve practical skills that underpins techniques associated with estrous detection and enhances the animal expression of signs of heat.

c.6. Perform laboratory skills related to the recent techniques used to diagnose female infertility.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

d.1. Participate in workshops and seminars assigned on theriogenology at level of the stockholders and veterinary practitioners

d.2. Demonstrate information retrieval and library skills.

d.3. Use information technology to serve the professional practice.

d.4. Manage time efficiently.

d.5. Recognize interpersonal skills and team working ability by successful completion of collaborative learn assignment and researches project.

d.6. Has the ability to learn independently in preparation for career of lifelong learning.

4- COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
Hormonal regulation of reproduction	3	4	7
Normal cyclicity of estrus	10	10	20



Theories of ovulation & fertilization	15	16	31
Congenital causes of infertility	12	12	24
Pathological causes of infertility	12	12	24
Environmental causes of infertility	15	14	29
Hormonal causes of infertility	15	15	30
Estrous detection & synchronization	14	13	27
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard

Discussion and brain storming.

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a6	b1 to b6		d1, d6
Practical sessions		b1 to b6	c1 to c7	d3, d6
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b6	c1 to c7	d1 to d6

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written	Oral examination	Practical	Activities
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	examination		examination	
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b6		d4
Practical exams			c1 to c7	d2, d3
Oral exams	a1 to a6	b1 to b6		d1
Student activities	a1, a6			d1 to d6

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential books (text books)

- Veterinary Andrology and Artificial Insemination (2019).
- Reproductive Technologies in Farm Animals, Ian Gordon (2004).
- Ruminant and Camelid Reproductive Ultrasonography, Luc Des Coteaux (2010).
- Equine Reproduction, Physiology, breeding and stud management (2016).

8.2. Recommended books

- Veterinary reproduction & obstetrics, G.H. Arthur, et al., (2006)
- Veterinary obstetrics & genital diseases, G.R. Riberts (1986).
- Current therapy in Theriogenology, D.A. Morrow (1984)
- Practical Manual of Veterinary Gynecology (2015).

8.3.: web sites and journals

- google.Com
- arabvet.com
- esarf.tripod.com/index.html.

8.4. Periodicals, Web sites, etc.....

- Reproduction in Domestic Animals.

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- Biology of Reproduction.
- Theriogenology Journal.
- Zygote.
- Animal Reproduction Science.
- Reproduction.

Course Coordinator

Prof. Dr. Ismail I. EL-Kon

Head of Department

Dr. Essam A. Almadaly



Course Matrix for achievement of Intended Learning Outcomes

No.	Topics	Hours	Knowledge & Understanding						Intellectual Skills						Practical & Professional Skills							General & Transferable Skills										
			1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	1	2	3	4	5	6					
1	Hormonal regulation of reproduction	7	X														X										X	X	X	X	X	X
2	Normal cyclicity of estrus	20	X						X	X	X			X						X							X	X	X	X	X	X
3	Theories of ovulation & fertilization	31		X					X	X	X			X		X											X	X	X	X	X	X
4	Congenital causes of infertility	24										X	X			X											X	X	X	X	X	X
5	Pathological causes of infertility	24			X				X	X	X			X		X											X	X	X	X	X	X
6	Environmental causes of infertility	29			X				X	X	X			X			X										X	X	X	X	X	X
7	Hormonal causes of infertility	30						X				X															X	X	X	X	X	X
8	Estrous detection & synchronization	27										X					X										X	X	X	X	X	X



COURSE SPECIFICATION

(2021 / 2022)

1- Basic Information:

Code number: **251/2**

Course title: **Male infertility**

Academic Year: **PhD of Veterinary Medicine Program (Pre-doctor year)**

Total teaching hours: **192 h**

Lectures: **96 hrs (48 weeks- 2hrs/week)**

Practical: **96 hrs (48 weeks- 2hrs/week)**

2- OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to Andrology, artificial insemination, and assisted Reproductive Technologies in farm and pet animals.

3- INTENDED LEARNING OUTCOMES (I.L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Describe the more advanced research techniques and concepts about physiology of reproduction in males.
- a.2. Recognize the bases and recent concepts of spermatogenesis, spermiogenesis and male sexual behavior.
- a.3. Apply their knowledge and understanding of different types of infertility in males.
- a.4. Enable the students to be updated with the new reproductive technologies.
- a.5. Explore the different forms of male infertility in farm and pet animals.
- a.6. Identify how each form of infertility interfere with male.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Interpret the results of semen analysis to reach the exact cause of reduced conception rate after using the male for breeding.



- b.2. Make differential diagnosis among the different causes of infertility.
- b.3. Construct the appropriate reproductive health measures to reduce the incidence of the infertility
- b.4. Prepare and write a scientific research plan in the field of female reproduction.
- b.5. To develop creative approaches for solving the technical problems or issues associated with the sustained research projects.
- b.6. identify, summarize and evaluate previous researches adopted in the field of female reproduction.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Handle those recent techniques and tools adopted to evaluate the fertility status and diagnose causes of the reproductive failure in farm animals.
- c.2. Apply the principles of good experimental design and analysis to their own research project.
- c.3. Select and perform relevant programs of statistical analysis on data obtained for their own research.
- c.4. Design a plan and execute a research project in the field of theriogenology with a consideration to the technical, ethical and safety issues and associated costs.
- c.5. Achieve practical skills that underpins techniques associated with estrous detection and enhances the animal expression of signs of heat.
- c.6. Perform laboratory skills related to the recent techniques used to diagnose female infertility.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Participate in workshops and seminars assigned on theriogenology at level of the stockholders and veterinary practitioners
- d.2. Demonstrate information retrieval and library skills.
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently.
- d.5. Recognize interpersonal skills and team working ability by successful completion of collaborative learn assignment and researches project.
- d.6. Has the ability to learn independently in preparation for career of lifelong learning.

4- COURSE CONTENTS:



Topic	No. of hours		
	Lectures	Practical	Total
Spermatogenesis & spermiogenesis	3	4	7
Male sexual behavior	10	10	20
Impotentia Erengenti	15	16	31
Impotentia Coeundi	12	12	24
Impotentia Generundi	12	12	24
Sire breeding soundness examination	15	14	29
Sire genetic improvement	15	15	30
Spermatogenesis & spermiogenesis	14	13	27
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard

Discussion and brain storming.

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a6	b1 to b6		d1, d6
Practical sessions		b1 to b6	c1 to c7	d3, d6
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b6	c1 to c7	d1 to d6

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.



7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
6.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b6		d4
Practical exams			c1 to c7	d2, d3
Oral exams	a1 to a6	b1 to b6		d1
Student activities	a1, a6			d1 to d6

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential books (text books)

- Veterinary Andrology and Artificial Insemination (2019).
- Reproductive Technologies in Farm Animals, Ian Gordon (2004).
- Ruminant and Camelid Reproductive Ultrasonography, Luc Des Coteaux (2010).
- Equine Reproduction, Physiology, breeding and stud management (2016).

8.2. Recommended books

- Veterinary reproduction & obstetrics, G.H. Arthur, et al., (2006)
- Veterinary obstetrics & genital diseases, G.R. Riberts (1986).
- Current therapy in Theriogenology, D.A. Morrow (1984)
- Practical Manual of Veterinary Gynecology (2015).

8.3.: web sites and jouranls

- google.Com
- arabvet.com

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- esarf.tripod.com/index.html.

8.4. Periodicals, Web sites, etc.....

- Reroduction in Domestic Animals.
- Biology of Reproduction.
- Theriogenology Journal.
- Zygote.
- Animal Reproduction Science.
- Reproduction.

Course Coordinator

Prof. Dr. Ismail I. EL-Kon

Head of Department

Dr. Essam A. Almadaly



Course Matrix for achievement of Intended Learning Outcomes

No.	Topics	Hours	Knowledge & Understanding						Intellectual Skills						Practical & Professional Skills							General & Transferable Skills									
			1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	1	2	3	4	5	6				
1	Spermatogenesis & spermiogenesis	7	X													X										X	X	X	X	X	X
2	Male sexual behavior	20	X						X	X	X			X						X						X	X	X	X	X	X
3	Impotentia Eregenti	31		X					X	X	X			X		X										X	X	X	X	X	X
4	Impotentia Coeundi	24										X	X		X											X	X	X	X	X	X
5	Impotentia Generundi	24			X				X	X	X			X		X										X	X	X	X	X	X
6	Sire breeding soundness examination	29			X				X	X	X			X			X									X	X	X	X	X	X
7	Sire genetic improvement	30						X				X														X	X	X	X	X	X



COURSE SPECIFICATION

(2021 / 2022)

1- Basic Information:

Code number: 252/2

Course title: Infectious Genital diseases

Academic Year: PhD of Veterinary Medicine Program (Pre-doctor year)

Total teaching hours: 96 h

Lectures: 48 hrs (48 weeks- 1hrs/week)

Practical: 48 hrs (48 weeks- 1hrs/week)

2- OVERALL AIMS OF THE COURSE:

- *By the end of this course, the student should acquire the concepts, principles and skills related to the possible causes and optimum methods for handling infertility problems due to infectious causes in males and females Understand the advanced methods for the diagnosis, prophylaction, treatment and control of genital diseases.*

3- INTENDED LEARNING OUTCOMES (I.L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Describe the most advanced concepts and research techniques and methods used to diagnose infectious causes of infertility in males and females..
- a.2. Recognize the pathogenesis, course and role of the reproductive diseases in reducing the reproductive performance of farm animals.
- a.3. Understand the advanced methods for the diagnosis, prophylaction, treatment and control of genital diseases.
- a.4. Know the risks of some genital diseases to human health (zootic importance).

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. To be acquainted with and define the available information about infectious reproductive problems.



- b.2.** Evaluate their own research data and develop new approach to solve infectious causes of abortion by integration of different knowledge in spite of inadequacy of some resources.
- b.3.** Prepare and write a scientific research plan in the field of female reproduction.
- b.4.** Design creative approaches for solving the technical problems or issues associated with the sustained research projects.
- b.5.** Identify, summarize and evaluate previous researches adopted in the field of female reproduction.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1.** Handle those recent techniques and tools adopted to evaluate the fertility status and diagnose causes of the reproductive failure in farm animals.
- c.2.** Apply the principles of good experimental design and analysis to their own research project.
- c.3.** Select and perform relevant programs of statistical analysis on data obtained for their own research.
- c.4.** Design a plan and execute a research project in the field of theriogenology with a consideration to the technical, ethical and safety issues and associated costs.
- c.5.** Achieve practical skills that underpins techniques associated with estrous detection and enhances the animal expression of signs of heat.
- c.6.** Perform laboratory skills related to the recent techniques used to diagnose female infertility.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1.** Participate in workshops and seminars assigned on theriogenology at level of the stockholders and veterinary practitioners
- d.2.** Demonstrate information retrieval and library skills.
- d.3.** Use information technology to serve the professional practice.
- d.4.** Manage time efficiently.
- d.5.** Recognize interpersonal skills and team working ability by successful completion of collaborative learn assignment and researches project.
- d.6.** Has the ability to learn independently in preparation for career of lifelong learning.

4- COURSE CONTENTS:



Topic	No. of hours		
	Lectures	Practical	Total
Bacterial causes	6	10	16
Viral causes of abortion	10	6	16
Parasitic causes of abortion	8	8	16
Mycotic causes of abortion	8	8	16
Common diagnostic techniques	8	8	16
Control & treatment and eradication of infectious diseases causing abortion	8	8	16
Total	48	48	96

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard

Discussion and brain storming.

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b5		d1, d6
Practical sessions		b1 to b5	c1 to c6	d3, d6
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b5	c1 to c6	d1 to d6

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-



7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b5		d4
Practical exams			c1 to c6	d2, d3
Oral exams	a1 to a4	b1 to b5		d1
Student activities	a1, a4			d1 to d6

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential books (text books)

- Veterinary Andrology and Artificial Insemination (2019).
- Reproductive Technologies in Farm Animals, Ian Gordon (2004).
- Ruminant and Camelid Reproductive Ultrasonography, Luc Des Coteaux (2010).
- Equine Reproduction, Physiology, breeding and stud management (2016).

8.2. Recommended books

- Veterinary reproduction & obstetrics, G.H. Arthur, et al., (2006)
- Veterinary obstetrics & genital diseases, G.R. Riberts (1986).
- Current therapy in Theriogenology, D.A. Morrow (1984)
- Practical Manual of Veterinary Gynecology (2015).

8.3.: web sites and jounrnl

- google.Com
- arabvet.com



- esarf.tripod.com/index.html.

8.4. Periodicals, Web sites, etc.....

- Reroduction in Domestic Animals.
- Biology of Reproduction.
- Theriogenology Journal.
- Zygote.
- Animal Reproduction Science.
- Reproduction.

Course Coordinator

Prof. Dr. Ismail I. EL-Kon

Head of Department

Dr. Essam A. Almadaly



Course Matrix for achievement of Intended Learning Outcomes

No.	Topics	Hours	Knowledge & Understanding						Intellectual Skills						Practical & Professional Skills							General & Transferable Skills									
			1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	1	2	3	4	5	6				
1	Bacterial causes	16	X												X											X	X	X	X	X	X
2	Viral causes of abortion	16	X						X	X	X			X						X						X	X	X	X	X	X
3	Parasitic causes of abortion	16		X					X	X	X			X		X										X	X	X	X	X	X
4	Mycotic causes of abortion	16										X	X		X											X	X	X	X	X	X
5	Common diagnostic techniques	16			X				X	X	X			X		X										X	X	X	X	X	X
6	Control & treatment and eradication of infectious diseases causing abortion	16			X				X	X	X			X			X									X	X	X	X	X	X



COURSE SPECIFICATION

(2021 / 2022)

1- Basic Information:

Code number: 253/2

Course title: Obstetrics

Academic Year: PhD of Veterinary Medicine Program (PrePhD year)

Total teaching hours: 240 h

Lectures: **96 hrs (48 weeks- 2hrs/week)**

Practical: **144 hrs (48 weeks- 3hrs/week)**

2- OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to Normal and abnormal pregnancy, parturition, puerperium and neonatology in farm and pet animals.

3 - INTENDED LEARNING OUTCOMES (I. L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1.** Memorize normal pregnancy, parturition and puerperium in both farm and pet animals.
- a.2.** Identify obstetrical problems occurring during pregnancy, parturition (Dystocia).
- a.3.** Describe post parturient problems that may occur during puerperium.
- a.4.** Know about the manipulations of dystocia cases in both farm and pet animals.
- a.5.** Demonstrate advanced research techniques used in the field of theriogenology.
- a.6.** Define bases of theriogenology research techniques by evaluating the utility of those techniques to specific research question.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1.** Correlate between obstetrical problems and other problems in other specialization.
- b.2.** Minimize the incidence of fetal anomalies, abortion and hydropsy in farm and pet animals.
- b.3.** Select the efficient proper reproductive technologies necessary for managing obstetrics problems.



- b.4. Design a plan to avoid post parturient problems in the herd.
- b.5. Develop creative approaches for solving technical problems or issues associated with running and researches project.
- b.6. Survey, conceptualize and define research problems and questions.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Apply advanced techniques for pregnancy diagnosis in farm and pet animals.
- c.2. Differentiate between normal and abnormal pregnancy, parturition and puerperium.
- c.3. Diagnose and treat the obstetrical problems.
- c.4. Perform the recent advanced reproductive technologies such reproductive ultrasonography. etc.
- c.5. Establish prophylactic measures against wide spread of retained placenta , fetal anomalies...etc
- c.6. Follow the principles of good experimental design, perform relevant statistical analysis and write scientific paper and dissertation.
- c.7. Plan and execute a research project in the field of theriogenology with a consideration to the technical, ethical and safety issues and associated costs.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Participate in workshops and seminars assigned on theriogenology at level of the stockholders and veterinary practitioners
- d.2. Demonstrate information retrieval and library skills.
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently.
- d.5. Recognize interpersonal skills and team working ability by successful completion of collaborative learn assignment and researches project.
- d.6. Has the ability to learn independently in preparation for career of lifelong learning.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Introduction and course description	4	6	10



2. Normal and abnormal pregnancy	28	-	28
3. Pregnancy diagnosis	-	48	48
4. Normal parturition	12	18	30
5. Dystocia: causes & manipulations	22	45	67
6. Normal puerperium	10	9	19
7. Post-parturient problems	20	18	38
Total	96	144	240

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming.

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a6	b1 to b6		d1, d6
Practical sessions		b1 to b6	c1 to c7	d3, d6
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b6	c1 to c7	d1 to d6

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-



7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
6.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b6		d4
Practical exams			c1 to c7	d2, d3
Oral exams	a1 to a6	b1 to b6		d1
Student activities	a1, a6,			d1 to d6

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential books (text books)

- Veterinary Andrology and Artificial Insemination, (2019).
- Reproductive Technologies in Farm Animals, Ian Gordon (2004).
- Ruminant and Camelid Reproductive Ultrasonography, Luc Des Coteaux (2010).
- Equine Reproduction, Physiology, breeding and stud management (2016).

8.2. Recommended books

- Veterinary reproduction & obstetrics, G.H. Arthur, et al., (2006)
- Veterinary obstetrics & genital diseases, G.R. Riberts (1986).
- Current therapy in Theriogenology, D.A. Morrow (1984)
- Practical Manual of Veterinary Gynecology (2015).

8.3.: web sites and jouranls

- google.com
- arabvet.com
- esarf.tripod.com/index.html.



8.4. Periodicals, Web sites, etc.....

- Reroduction in Domestic Animals.
- Biology of Reproduction.
- Theriogenology Journal.
- Zygote.
- Animal Reproduction Science.
- Reproduction.

Course Coordinator

Prof. Dr. Adel A. Ramoun

Head of Department

Dr. Essam A. Almadaly



Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding						Intellectual Skills						Practical & Professional Skills							General & Transferable Skills							
			1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	1	2	3	4	5	6		
1	Introduction and course description	10					X	X													X	X	X	X	X	X	X	X	
2	Normal and abnormal pregnancy	28	X	X					X	X	X			X		X							X	X	X	X	X	X	X
3	Pregnancy diagnosis.	48										X	X		X				X				X	X	X	X	X	X	X
4	Normal parturition	30	X						X	X	X			X									X	X	X	X	X	X	X
5	Dystocia: causes & manipulations	67		X	X	X			X	X	X			X				X					X	X	X	X	X	X	X
6	Normal puerperium	19	X					X				X											X	X	X	X	X	X	X
7	Post-parturient problems	38			X							X				X	X			X			X	X	X	X	X	X	X



COURSE SPECIFICATION

(2021 / 2022)

1- Basic Information:

Code number: 254/2

Course title: Reproduction and immunity

Academic Year: PhD of Veterinary Medicine Program (Pre-PhD year)

Total teaching hours: 144 h

Lectures: **48 hrs (48 weeks- 1hrs/week)**

Practical: **96 hrs (48 weeks- 2hrs/week)**

2- OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to

The relationship between the immunology and reproduction

3- INTENDED LEARNING OUTCOMES (I.L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Illustrate the advanced concepts about general immunology.
- a.2. Identify the relation between the hormonal profile and immune status during different reproductive stages.
- a.3. Understand various immune status during different reproductive stages in female and male animals.
- a.4. Define Immune status during various reproductive problems.
- a.5. Recognize the proteins produced during early pregnancy in farm animals.
- a.6. Know the sperm iso- and auto-immunization and its role in reproductive failure of male and/or female origin.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Identify relation between postpartum immune status and infection of the genitalia.
- b.2. Differentiate between infertility problems arise due to immunological and non immunological



causes.

- b.3.** Apply the immunological techniques as diagnostic tools for genital infection
- b.4.** Develop creative approaches for solving technical problems in the field of reproductive immunology.
- b.5.** Summarize previous researches adopted in the field of reproductive immunology.
- b.6.** Evaluate their own research data and develop new approach to solve their immunological causes of reproductive failure.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1.** Manage essential laboratory skills related to the diagnosis of immunological causes lowering fertility in male and female animals.
- c.2.** Use Advanced diagnostic immunological techniques.
- c.3.** Handle recent techniques and tools adopted to evaluate the fertility status and diagnose immunological infertility problems in farm animals.
- c.4.** Apply the principles of good experimental design and analysis to their own research project.
- c.5.** Plan and execute a research project in the field of reproductive immunity with a consideration to the technical, ethical and safety issues and associated costs.
- c.6.** Perform relevant statistical analysis and write scientific paper and dissertation.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1.** Participate in workshops and seminars assigned on theriogenology at level of the stockholders and veterinary practitioners
- d.2.** Demonstrate information retrieval and library skills.
- d.3.** Use information technology to serve the professional practice.
- d.4.** Manage time efficiently.
- d.5.** Recognize interpersonal skills and team working ability by successful completion of collaborative learn assignment and researches project.
- d.6.** Has the ability to learn independently in preparation for career of lifelong learning.

4 - COURSE CONTENTS:

Topic	No. of hours
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	Lectures	Practical	Total
1. An introduction on general immunology	2	4	6
2. Specific proteins for pregnancy diagnosis	4	16	20
3. Immune status during normal reproductive stages in females	8	14	22
4. Immune status during various reproductive problems	9	12	21
5. Immunological causes of infertility in male	8	16	24
6. Advanced diagnostic immunological techniques	10	20	30
7. Hormonal profile and immune status	7	14	21
Total	48	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard

Discussion and brain storming.

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a6	b1 to b6		d1, d6
Practical sessions		b1 to b6	c1 to c6	d3, d6
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b6	c1 to c6	d1 to d6

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.



7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b6		d4
Practical exams			c1 to c6	d2, d3
Oral exams	a1 to a6	b1 to b6		d1
Student activities	a1, a6,			d1 to d6

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential books (text books)

- Veterinary Andrology and Artificial Insemination (2019).
- Reproductive Technologies in Farm Animals, Ian Gordon (2004).
- Ruminant and Camelid Reproductive Ultrasonography, Luc Des Coteaux (2010).
- Equine Reproduction, Physiology, breeding and stud management (2016).

8.2. Recommended books

- Veterinary reproduction & obstetrics, G.H. Arthur, et al., (2006)
- Veterinary obstetrics & genital diseases, G.R. Riberts (1986).
- Current therapy in Theriogenology, D.A. Morrow (1984)
- Practical Manual of Veterinary Gynecology (2015).

8.3.: web sites and jouranls

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8.4. Periodicals, Web sites, etc.....

- Reroduction in Domestic Animals.
- Biology of Reproduction.
- Theriogenology Journal.
- Zygote.
- Animal Reproduction Science.
- Reproduction.

Course Coordinator

Prof. Dr. Adel A. Ramoun

Head of Department

Dr. Essam A. Almadaly

Course Matrix for achievement of Intended Learning Outcomes

No	Topics	Hours	Knowledge & Understanding						Intellectual Skills						Practical & Professional Skills						General & Transferable Skills						
			1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	
1	An introduction on general immunology	6	X																X	X	X	X	X	X	X	X	X
2	Specific proteins for pregnancy diagnosis	20					X		X	X	X			X								X	X	X	X	X	X
3	Immune status during normal reproductive stages in females	22			X				X	X	X			X								X	X	X	X	X	X
4	Immune status during various reproductive problems	21				X			X	X	X			X								X	X	X	X	X	X
5	Immunological causes of infertility in male	24						X	X	X	X			X	X		X					X	X	X	X	X	X
6	Advanced diagnostic immunological techniques	30										X				X						X	X	X	X	X	X
7	Hormonal profile and immune status	21		X								X										X	X	X	X	X	X



COURSE SPECIFICATION

(2021 / 2022)

1 - Basic Information:

Code number: 255/2

Course title: Artificial Insemination in Ruminants

Academic Year: PhD of Veterinary Medicine Program (Pre-PhD year)

Total teaching hours: 192 h

Lectures: **96 hrs (48 weeks - 2hrs/week)**

Practical: **96 hrs (48 weeks - 2hrs/week)**

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to semen composition, collection, evaluation, processing and preservation in ruminants as well as insemination techniques in different animals.

3 - INTENDED LEARNING OUTCOMES (I. L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1.** Memorize the basics of artificial insemination such as semen composition and metabolism.
- a.2.** Know the advanced technology in the field of semen collection and evaluation.
- a.3.** Identify the advanced biotechnology in the field of ruminant semen.
- a.4.** Be updated with the advanced techniques in semen preservation.
- a.5.** Demonstrate the different insemination techniques and improving conception in artificially inseminated farms.
- a.6.** Apply their knowledge to improve the fertility status of ruminants.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1.** Interpret the causes of lower conception rate and possible role of semen as a contributing factor in such problem.
- b.2.** innovate solutions for disadvantages of semen collection methods.



- b.3.** Correlate between traditional and advanced technique of semen evaluation and judge the applicability and efficiency of each of them.
- b.4.** Select the best advanced reproductive technique that can overcome infertility in superior genetic animal.
- b.5.** Identify limitations of semen preservation efficiency and try to provide recommendations to avoid them.
- b.6.** Design a plan to widely spread the application of advanced reproductive techniques.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1.** Choose an adequate method for collection of semen.
- c.2.** Apply perfectly semen evaluation tests.
- c.3.** Select the appropriate diluents during semen processing.
- c.4.** Use recent techniques for preservation of semen.
- c.5.** Perform proper insemination in each species of ruminants.
- c.6.** Conduct essential laboratory skills that underpin techniques associated with semen biology.
- c.7.** Consider the principles of good experimental design, perform relevant statistical analysis and write scientific paper and dissertation.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1.** Participate in workshops and seminars assigned on theriogenology at level of the stockholders and veterinary practitioners.
- d.2.** Demonstrate information retrieval and library skills.
- d.3.** Use information technology to serve the professional practice.
- d.4.** Manage time efficiently.
- d.5.** Recognize interpersonal skills and team working ability by successful completion of collaborative learn assignment and researches project.
- d.6.** Has the ability to learn independently in preparation for career of lifelong learning.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total



1. Introduction and course description	4	2	6
2. Semen composition and biochemistry	16	-	16
3. Semen collection	-	24	24
4. Semen evaluation	-	34	34
5. Semen processing and freezing	36	16	52
6. Insemination techniques	14	8	22
7. Evaluation of frozen semen.	26	12	38
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming.

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a6	b1 to b6		d1, d6
Practical sessions		b1 to b6	c1 to c7	d3, d6
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b6	c1 to c7	d1 to d6

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-



7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

7. Student Assessment				
Intended Learning Outcomes Covered				
6.1. Methods	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b6		d4
Practical exams			c1 to c7	d2, d3
Oral exams	a1 to a6	b1 to b6		d1
Student activities	a1, a6,			d1 to d6

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential books (text books)

- Veterinary Andrology and Artificial Insemination, (2019).
- Reproductive Technologies in Farm Animals, Ian Gordon (2004).
- Ruminant and Camelid Reproductive Ultrasonography, Luc Des Coteaux (2010).
- Equine Reproduction, Physiology, breeding and stud management (2016).

8.2. Recommended books

- Veterinary reproduction & obstetrics, G.H. Arthur, et al., (2006)
- Veterinary obstetrics & genital diseases, G.R. Riberts (1986).
- Current therapy in Theriogenology, D.A. Morrow (1984)
- Practical Manual of Veterinary Gynecology (2015).

8.3.: web sites and jounrnl

- google.Com
- arabvet.com
- esarf.tripod.com/index.html.

8.4. Periodicals, Web sites, etc.....

- Reroduction in Domestic Animals
- Biology of Reproduction



- Theriogenology Journal
- Zygote
- Animal Reproduction Science
- Reproduction

Course Coordinator

Prof. Dr. Adel A. Ramoun

Head of Department

Dr. Essam A. Almadaly

Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding						Intellectual Skills						Practical & Professional Skills							General & Transferable Skills						
			1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	1	2	3	4	5	6	
1	Introduction and course description	6	X																		X	X	X	X	X	X	X	X
2	Semen composition and biochemistry	16	X						X	X	X			X							X		X	X	X	X	X	X
3	Semen collection	24		X					X	X	X			X	X								X	X	X	X	X	X
4	Semen evaluation	34		X								X	X			X							X	X	X	X	X	X
5	Semen processing and freezing	52			X	X			X	X	X			X			X	X					X	X	X	X	X	X
6	Insemination techniques	22					X		X	X	X			X					X				X	X	X	X	X	X
7	Evaluation of frozen semen.	38						X				X								X			X	X	X	X	X	X



COURSE SPECIFICATION

(2021 / 2022)

1- Basic Information:

Code number: **256/2**

Course title: **Artificial insemination (AI) in Equines**

Academic Year: **PhD of Veterinary Medicine Program (Pre-PhD year)**

Total teaching hours: **192 h**

Lectures: **96 hrs (48 weeks- 2hrs/week)**

Practical: **96 hrs (48 weeks- 2hrs/week)**

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to semen composition, collection, evaluation, processing and preservation in equines.

3 - INTENDED LEARNING OUTCOMES (I.L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Define sperm morphology and semen composition in stallion.
- a.2. Describe the methods of semen collection and evaluation in stallion.
- a.3. Understand the methods of semen, processing and recent diluents for the semen preservation in stallion.
- a.4. Identify the advanced techniques for evaluation of frozen semen.
- a.5. Demonstrate the methods of insemination techniques.
- a.6. Recognize sexing of semen and associated biotechnology.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Design a plan to widely spread the application of Artificial insemination in equines.
- b.2. Interpret the causes of lower conception rate and possible role of semen as a contributing factor in such problem..



- b.3. innovate solutions for disadvantages of semen collection methods.
- b.4. Identify a plan to overcome infertility in superior genetic animal or to improve the genetic character and/or productivity of the equine herd.
- b.5. Evaluate previous researches adopted in the field of advanced reproductive techniques.
- b.6. Understand areas where further researches necessary and be aware of any which would be beyond current ethical codes..

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Collect the representative semen sample from the stallion.
- c.2. Evaluate raw and frozen equine semen.
- c.3. Select the appropriate diluents during semen processing.
- c.4. Conduct a short- term preservation of equine semen.
- c.5. Perform proper insemination technique.
- c.6. Construct a proper semen report.
- c.7. Consider the principles of good experimental design, perform relevant statistical analysis and write scientific paper and dissertation.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Participate in workshops and seminars assigned on theriogenology at level of the stockholders and veterinary practitioners
- d.2. Demonstrate information retrieval and library skills.
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently.
- d.5. Recognize interpersonal skills and team working ability by successful completion of collaborative learn assignment and researches project.
- d.6. Has the ability to learn independently in preparation for career of lifelong learning.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Introduction and course description	4	2	6



2. Equine semen composition and biochemistry	16	-	16
3. Collection of equine semen	-	24	24
4. Evaluation of equine semen	-	34	34
5. Processing and preservation of equine semen	36	16	52
6. Insemination techniques in mares	14	8	22
7. Evaluation of frozen semen	26	12	38
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming.

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a6	b1 to b6		d1, d6
Practical sessions		b1 to b6	c1 to c7	d3, d6
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b6	c1 to c7	d1 to d6

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

• No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
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7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b6		d4
Practical exams			c1 to c7	d2, d3
Oral exams	a1 to a6	b1 to b6		d1
Student activities	a1, a6,			d1 to d6

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential books (text books)

- Veterinary Andrology and Artificial Insemination, (2019).
- Reproductive Technologies in Farm Animals, Ian Gordon (2004).
- Ruminant and Camelid Reproductive Ultrasonography, Luc Des Coteaux (2010).
- Equine Reproduction, Physiology, breeding and stud management (2016).

8.2. Recommended books

- Veterinary reproduction & obstetrics, G.H. Arthur, et al., (2006)
- Veterinary obstetrics & genital diseases, G.R. Riberts (1986).
- Current therapy in Theriogenology, D.A. Morrow (1984)
- Practical Manual of Veterinary Gynecology (2015).

8.3.: web sites and jouranls

- google.com
- arabvet.com
- esarf.tripod.com/index.html.

8.4. Periodicals, Web sites, et cetra for instance:

- Reroduction in Domestic Animals.
- Biology of Reproduction.
- Theriogenology Journal.



- Zygote.
- Animal Reproduction Science.
- Reproduction.

Course Coordinator

Prof. Dr. Ismail I. El-Kon

Head of Department

Dr. Essam A. Almadaly



Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding						Intellectual Skills						Practical & Professional Skills							General & Transferable Skills					
			1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	1	2	3	4	5	6
1	Introduction and course description	6	X																X	X	X	X	X	X	X		
2	Equine semen composition and biochemistry	16	X						X	X	X			X							X	X	X	X	X	X	
3	Collection of equine semen	24		X					X	X	X			X	X						X	X	X	X	X	X	
4	Evaluation of equine semen	34		X								X	X			X					X	X	X	X	X	X	
5	Processing and preservation of equine semen	52			X			X	X	X	X			X			X	X			X	X	X	X	X	X	
6	Insemination techniques in mares	22					X		X	X	X			X					X		X	X	X	X	X	X	
7	Evaluation of frozen semen	38				X						X				X					X	X	X	X	X	X	



COURSE SPECIFICATION

(2021 / 2022)

1- Basic Information:

Code number: **257/2**

Course title: **Artificial insemination (AI) in Pet Animals**

Academic Year: **PhD of Veterinary Medicine Program (Pre-PhD year)**

Total teaching hours: 144 h

Lectures: 48 hrs (48 weeks- 1 h/week)

Practical: 96 hrs (48 weeks- 2 h/week)

2- OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to semen composition, collection, evaluation, processing and preservation in pet animals.

3 - INTENDED LEARNING OUTCOMES (I. L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Know the basics of semen composition, breeding soundness examinations and care of males in pet animals.
- a.2. Describe the methods of semen collection and evaluation in pets.
- a.3. Identify the advanced types of diluents used for pet semen.
- a.4. Be updated with the advanced techniques in semen preservation in pets.
- a.5. Demonstrate the different insemination techniques in pets.
- a.6. Apply the advanced biotechnology in the field of pets semen.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Construct semen evaluation sheets in pets.
- b.2. Interpret the results of tests used for semen evaluation.
- b.3. Design a plan to widely spread the application of AI in pets.
- b.4. Make judgment on quality of the semen in pets.



- b.5. Understand areas where further researches necessary and be aware of any which would be beyond current ethical codes.
- b.6. summarize and evaluate previous researches adopted in the field of advanced reproductive techniques.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Perform proper semen collection in pet animals.
- c.2. Use advanced techniques for fresh and frozen semen evaluation such as CASA in pet animals.
- c.3. Select the appropriate diluents during semen processing.
- c.4. Adopt recent techniques for preservation of semen.
- c.5. Apply proper insemination techniques in pet animals.
- c.6. Conduct essential laboratory skills that underpin techniques associated with semen biology.
- c.7. Consider the principles of good experimental design, perform relevant statistical analysis and write scientific paper and dissertation.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Participate in workshops and seminars assigned on theriogenology at level of the stockholders and veterinary practitioners
- d.2. Demonstrate information retrieval and library skills.
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently.
- d.5. Recognize interpersonal skills and team working ability by successful completion of collaborative learn assignment and researches project.
- d.6. Has the ability to learn independently in preparation for career of lifelong learning.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Introduction and course description	4	2	6
2. Semen composition and biochemistry	5	-	5
3. Breeding soundness examinations and care of males in pet animals	8	12	20



4. Semen collection in pets	-	24	24
5. Semen evaluation in pets	-	34	34
6. Semen processing and preservation in pets	22	16	38
7. Insemination technique	9	8	17
Total	48	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard

Discussion and brain storming.

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a6	b1 to b6		d1, d6
Practical sessions		b1 to b6	c1 to c7	d3, d6
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b6	c1 to c7	d1 to d6

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

• No disabled students until now, but if present the methods are:-

*Activation of office hours.

*Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
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7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b6		d4
Practical exams			c1 to c7	d2, d3
Oral exams	a1 to a6	b1 to b6		d1
Student activities	a1, a6,			d1 to d6

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential books (text books)

- Veterinary Andrology and Artificial Insemination, (2019).
- Reproductive Technologies in Farm Animals, Ian Gordon (2004).
- Ruminant and Camelid Reproductive Ultrasonography, Luc Des Coteaux (2010).
- Equine Reproduction, Physiology, breeding and stud management (2016).

8.2. Recommended books

- Veterinary reproduction & obstetrics, G.H. Arthur, et al., (2006)
- Veterinary obstetrics & genital diseases, G.R. Riberts (1986).
- Current therapy in Theriogenology, D.A. Morrow (1984)
- Practical Manual of Veterinary Gynecology (2015).

8.3.: web sites and jouranls

- google.com
- arabvet.com
- esarf.tripod.com/index.html.

8.4. Periodicals, Web sites, etc.....

- Reroduction in Domestic Animals
- Biology of Reproduction
- Theriogenology Journal



-
- Zygote
 - Animal Reproduction Science
 - Reproduction

Course Coordinator

Prof. Dr. Adel A. Ramoun

Head of Department

Dr. Essam A. Almadaly



Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding						Intellectual Skills						Practical & Professional Skills							General & Transferable Skills					
			1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	1	2	3	4	5	6
1	Introduction and course description	6	X																		X	X	X	X	X	X	
2	Semen composition and biochemistry	5	X						X	X	X			X								X	X	X	X	X	X
3	Breeding soundness examinations and care of males in pet animals	20	X						X	X	X			X					X		X	X	X	X	X	X	
4	Semen collection in pets	24		X								X	X		X							X	X	X	X	X	X
5	Semen evaluation in pets	34		X					X	X	X			X		X						X	X	X	X	X	X
6	Semen processing and preservation in pets	38			X	X		X	X	X	X			X			X	X				X	X	X	X	X	X
7	Insemination technique	17					X					X							X			X	X	X	X	X	X



COURSE SPECIFICATION

(2021 / 2022)

1 - Basic Information:

Code number: **258/2**

Course title: **Embryo transfer**

Academic Year: **PhD of Veterinary Medicine Program (Pre-PhD year)**

Total teaching hours: **144 h**

Lectures: **48 hrs (48 weeks- 1h/week)**

Practical: **96 hrs (48 weeks- 2h/week)**

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to

In-vitro maturation, In-vitro fertilization and embryos evaluation, transfer and cryopreservation in both farm and pet animals.

3 - INTENDED LEARNING OUTCOMES (I. L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Demonstrate advantages and disadvantages of embryo transfer.
- a.2. Describe the technology concerning micromanipulation of gametes, zygotes, and embryos.
- a.3. Recognize the different methods for evaluation and grading of embryo and judge its validity for transfer.
- a.4. Define principals of sperm capacitation and in-vitro fertilization.
- a.5. Know bases of oocyte and embryo metabolism, metabolic controls, and in vitro maturation, culture and preservation of embryo.
- a.6. Apply knowledge and understanding of the utility of embryo and associated techniques to improve the fertility status of the herd.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Construct a program for embryo transfer.



- b.2. Identify different techniques used to achieve in vitro fertilization and intra cytoplasmic injection.
- b.3. Perform genetic improvement for good genetic traits through application of E.T.
- b.4. Design a plan to widely spread the application of embryo transfer in both farm and pet animals.
- b.5. Develop creative approaches for solving technical problems or issues associated with running and researches project.
- b.6. Evaluate their own research data and develop new approach to solve their research questions related to embryo transfer.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- c.1. Select an adequate method for collection of ova from living animal(OPU) and abattoir.
- c.2. perform essential laboratory skills that underpin techniques of oocyte evaluation, classification and preparation for IVF.
- c.3. apply techniques used to achieve fertilization: zona drilling, partial zona dissection and intracytoplasmic sperm injection.
- c.4. Utilize tools necessary to identify and correct fertilization abnormalities in farm animals.
- c.5. Use recent techniques for preservation of embryo.
- c.6. Assess the transfer of embryo in both farm and pet animals.
- c.7. Plan and execute a research project in the field of assisted reproductive technologies with a consideration to the technical, ethical and safety issues and associated costs.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Participate in workshops and seminars assigned on theriogenology at level of the stockholders and veterinary practitioners
- d.2. Demonstrate information retrieval and library skills.
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently.
- d.5. Recognize interpersonal skills and team working ability by successful completion of collaborative learn assignment and researches project.



d.6. Has the ability to learn independently in preparation for career of lifelong learning.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Introduction and course description	2	2	4
2. Advantages & disadvantages of E.T.	4	-	4
3. Collection of ova from living(OPU) and abattoir.	6	14	20
4. Evaluation of ova and conducting IVM	10	18	28
5. Sperm capacitation	5	12	17
6. In-vitro Fertilization	8	20	28
7. Preservation of embryo	7	16	23
8. Evaluation the transfer of embryo	6	14	20
Total	48	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming.

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about poultry or dairy operations

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a6	b1 to b6		d1, d6
Practical sessions		b1 to b6	c1 to c7	d3, d6
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a6	b1 to b6	c1 to c7	d1 to d6

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-



- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a6	b1 to b6		d4
Practical exams			c1 to c7	d2, d3
Oral exams	a1 to a6	b1 to b6		d1
Student activities	a1, a6,			d1 to d6

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8.1. Essential books (text books)

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- Reproductive Technologies in Farm Animals, Ian Gordon (2004).
- Ruminant and Camelid Reproductive Ultrasonography, Luc Des Coteaux (2010).
- Equine Reproduction, Physiology, breeding and stud management (2016).

8.2. Recommended books

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- Veterinary obstetrics & genital diseases, G.R. Riberts (1986).
- Current therapy in Theriogenology, D.A. Morrow (1984)
- Practical Manual of Veterinary Gynecology (2015).

8.3.: web sites and jouranls

- google.com



-
- arabvet.com
 - esarf.tripod.com/index.html.

8.4. Periodicals, Web sites, etc.....

- Reroduction in Domestic Animals
- Biology of Reproduction
- Theriogenology Journal
- Zygote
- Animal Reproduction Science
- Reproduction

Course Coordinator

Prof. Dr. Adel A. Ramoun

Head of Department

Dr. Essam A. Almadaly



Course Matrix for achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge & Understanding						Intellectual Skills						Practical & Professional Skills							General & Transferable Skills						
			1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	1	2	3	4	5	6	
1	Introduction and course description	4						X														X	X	X	X	X	X	X
2	Advantages & disadvantages of E.T.	4	X						X	X	X			X									X	X	X	X	X	X
3	Collection of ova from living (OPU) and abattoir.	20		X					X	X	X			X	X								X	X	X	X	X	X
4	Evaluation of ova and conducting IVM	28					X					X	X			X	X						X	X	X	X	X	X
5	Sperm capacitation	17				X			X	X	X			X					X				X	X	X	X	X	X
6	In-vitro Fertilization	28				X			X	X	X			X				X	X				X	X	X	X	X	X
7	Preservation of embryo	23					X					X								X			X	X	X	X	X	X
8	Evaluation the transfer of embryo	20			X							X									X		X	X	X	X	X	X

كلية الطب البيطري
وحدة ضمان الجودة
Program Spc. For Ph.D in Virology



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Virology

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy

(Virology)



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Virology

Program Specification for PhD Degree **(2021-2022)**

A- Administrative information:

- 1- Awarding Body:** Kafr El-Sheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Virology
- 4- Program Title:** PhD Degree in Veterinary Science (Virology)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years
- 7- Program Coordinator:** Dr. Noraa Fiesel
- 8- External evaluator:** Prof. Dr. Kamal kamal metwally

B- Professional information:

1- Aim of the Program:

- Allow graduate to create new knowledge and understanding Virology through the process of research and inquiry.
- Enable graduate to achieve competency in modern technology
- Provide the graduate with the opportunity to develop communication skills, recent techniques and tools in the field of Virology and experience of scientific research skills.
- Giving the graduate the ability to be creative to advance in the field Virology through new scientific research.
- Achievement of capability in modern laboratory technology to develop

practical research project.

- Demonstrating an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and present their own research data for the protection and promotion of the animal health.
- Giving the student the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibiting awareness about current field Virology problems and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of Virology.

2- Academic standards:

**Academic reference standards (ARS) adopted by the faculty committee No (1)
14/9/2014**

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Mastering the basics and methodologies of scientific research in advanced Virology branches for better dealing with virological problems professionally and hence the better understanding of the specific immune response for each case.
- 2) Performing continuous effort to add knowledge about detection of causes of most common viral causes of animal diseases and validating of new methods of isolation and identification including introducing new molecular techniques.
- 3) Analysis and characterization of information in fields related to Virology including Animal Infectious diseases, Poultry and Fish medicine, Pathology, pharmacology, biochemistry, physiology, clinical pathology, etc.
- 4) Showing deep awareness with the ongoing viral problems and modern theories in isolation and identification and controlling cases of viral

- diseases.
- 5) Mastering of a wide range of professional skills in virological laboratory investigation.
 - 6) Acquiring trends towards developing modern methods and tools in isolation and identification of various causative agents of diseases among farm animals such as viral causes in addition the immune response of infected animals.
 - 7) Using appropriate technological means including molecular biology to serve professional practice.
 - 8) Communicating effectively with virologists, students and colleagues and leading work team through professional scale.
 - 9) Making decision in different professional situations especially under field conditions to deal with the viral cause of animal death or less productivity.
 - 10) Using of the available resources efficiently in the development of new techniques and work to find new resources.
 - 11) Being aware with his role in society development and community preservation from the viral contamination of the environment.
 - 12) Acting with integrity, credibility and according to the rules of profession.
 - 13) Realizing the importance of self and life-long learning and progress.

4-Programme Intended Learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

By the end of this program the graduate should be able to:

- a.1. Recognize theories, principles, and the recent data in the field of virlogy
- a.2. Describe the general rules for diagnosis of viral diseases through sampling, isolation and identification of viruses..
- a.3. Realize Appling the basics and ethics of veterinary practice concerning virology.
- a.4. Recognize Principles and the basics of quality assurance in laboratory examination of samples from infected animals.
- a.5. Recognize the effect of infectious diseases on the environment and methods of prevention of spreading of such diseases.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1.** Evaluate data about important viral causative agents and about immune responses.
- b.2.** Solve problems in virology using available data under field or laboratory conditions.
- b.3.** Perform scientific researches that can give significant impact on the control of pathogens and their response to vaccination.
- b.4.** Publish scientific papers in virology.
- b.5.** Assess virulence of viral agents in environment.
- b.6.** Apply their knowledge and understanding of molecular structure of viruses to the critical analysis and discussion of the scientific literature.
- b.7.** Take the right decision in virology.
- b.8.** Trying new molecular means of isolation and identification.
- b.9.** Lead a discussion based microbiologic evidences.

c. Practical and professional skills:

By the end of this program the graduate should be able to:

- c.1.** Mastering basic and modern professional skills about most important viral causative agent that affecting farm animals and how to isolate and identify them. Moreover, the immune response (humoral and cellular) of the animal was investigated.
- c.2.** Write and evaluate professional virological reports and matching the values with normal reference values.
- c.3.** Creation of new tests in vitro and in vivo for determining the immune response under various conditions of viral challenge.
- c.4.** Use modern technological means to serve professional practice.
- c.5.** Planning for the improvement of veterinary medicine by applying recent molecular techniques in virology and developing performance of veterinarians in the field.

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1. Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology in the improvement of professional practice.
- d.2. Utilize information technology to serve professional practice.
- d.3. Teach others and evaluate their performance.
- d.4. Self-evaluate and identify personal learning requirements
- d.5. Lead team under different professional circumstances.
- d.6. Use of different sources for obtaining information and knowledge.
- d.7. Manage scientific meetings with the ability to manage time efficiently.

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, and seminars.

6-Assessments:

The program depends on different assessment ways:

- a. Course assessment:
 - 1. Final written exam
 - To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
 - 2. Practical exam
 - To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
 - 3. Oral exam
 - To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.
- b. Qualifying examination
The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work
- c. PhD Thesis assessment
 - Annual reports adopted by the Faculty.
 - Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
 - Final evaluation and approval by a judging committee of at least three

professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1-2; b2,3;
Oral	a1-2; b2,3;
Practical	C1-5
Qualifying Exam	a1-5; b1-9
Thesis	a3-5; b1-9; c1-5; d1-7

7. Program structure

a. Program duration (years):

PhD degree duration at least 3 years and it should not exceed a period of 5 years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law (article 18).

b. Program structure:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council should include at least 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. These courses must not be previously studied in the Mater program. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c-Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d-Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met.

Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Virology include:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2

.2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week
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			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2

	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		

Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2

	162/2	62- Fish nutrition	1	2
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
		81- Advanced immunology	2	2
Parasitology	188/1	89- Veterinary medical entomology	2	2

		and acarology		
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2
	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1
Hygiene and control of milk and dairy products	208/2	108- Hygienic control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2

	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/2	134- Stress diseases during animals transport.		

Infectious diseases	235/ 2	135- Infectious diseases of cattle	2	2
	236/ 2	136- Infectious diseases of sheep and goat	2	2
	237/ 2	137- Infectious diseases camel	2	2
	238/ 2	138 Infectious diseases of equine	2	2
	239/ 2	139- Infectious diseases of pet animals	2	2
	240/ 2	140- Infectious diseases lab animals	1	2
	241/ 2	141- Infectious diseases of udder and newly born animals	2	2
	242/ 2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet	2	2

		animals)		
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in polutry	2	2
	275/2	175- Laboratory diagnosis of		

poultry diseases.				
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-

	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (Virology) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medical science lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.
3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.
5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.

7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.

8. The applicant should submit a seminar (Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).

9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met: Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.

10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and incase of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.

11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards bit to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.

12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**

b- The final degree of each course which has 3 hours (lecture and practical) per week is 100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.

12. Marking scale as follow:-

Grade		Percentage
Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
I	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5



Program Co-ordinator:

Dr. Noraa Fiesel

Head of Department:

Prof. Dr. Bassiony Heliel

Matching program ILOs with ARS - Matrix

Program ILOs	ARS																											
	K&U (a)					I.S. (b)									P.P. (c)					G.T. (d)								
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7		
K&U	1	2	3	4	5																							
I.S.						1	2	3	4	5	6	7	8	9														
P.P.															1	2	3	4	5									
G.T.																				1	2	3	4	5	6	7		



Program Specification Matrix

PhD in Veterinary Medical Sciences (Virology)

Courses		Total Contact hours/course	No. of hours / week			K.U (a)					I.S (b)									P.P (c)					G.T (d)								
Code	Name		Lect.	Lab.	Total	1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7		
Predocloral courses (10-12 theoretical and practical hours weekly for 12 months)						x	x														x	x	x										
Qualification exam								x	x	x											x	x	x	x	x								
Thesis								x	x	x											x	x	x	x	x								



ARS for PhD in Veterinary Medical Sciences (Virology)

1) Graduate attributes

The graduate should have the ability for:

- 14) Mastering the basics and methodologies of scientific research.
- 15) Making continuous effort to add knowledge in the field of Virology.
- 16) Application of analytical and criticizing method in Virology and related areas.
- 17) Integrating specialized knowledge with related information and extrapolating their interrelationship.
- 18) Showing deep awareness with the ongoing problems and modern theories in Virology.
- 19) Identification of professional problems and suggesting innovative solutions of the focus area.
- 20) Mastering a wide range of professional skills in Virology.
- 21) Acquiring trends towards developing modern methods and tools in professional practice.
- 22) Using appropriate technological means to serve professional practice.
- 23) Effective communication and leading work team through professional scale.
- 24) Decision making in different professional situations.
- 25) Employment and development of available resources efficiently and working on finding new ones.
- 26) Awareness with his role in society development and community preservation.
- 27) Acting with integrity, credibility and according to the rules of profession.
- 28) Commitment with continuous self and life-long development and transferring of his knowledge and experience to others.

A) Knowledge and understanding

Adopted ARS		NARS (PhD)	
	<i>By the end of this program the graduate should understand and accommodate the following:</i>		<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Recent theories, principles and knowledge in mechanisms of viral infections, immune responses to viral diseases and pathogenesis of viral diseases.		Recent theories, principles and knowledge in the field of specialization and related areas
2)	Basics, methodologies and ethics of scientific research in the field of Virology and its different		Basics, methodologies and ethics of scientific research and its different



	tools	tools
3)	Legal and ethical principles of vaccination against viral diseases in addition to control, prevention and eradication of viral diseases.	Legal and ethical principles of professional practice in the area of specialization
4)	Application of his knowledge of virology research methods by evaluating the utility of those techniques to specific research question about diagnosis of certain viruses	Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Awareness with the effect of viruses on the animal body and production of milk and meat.	Awareness with the effect of professional practice on the environment and methods of its maintain and development

B) Intellectual skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analyzing and evaluating information in Virology and the eliciting from them	Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solving professional problems in diagnosis and control o viral diseases using available data	Solving professional problems using available data
3)	Performing scientific research studies that add to knowledge in virology	Conducting scientific research studies that add to knowledge
4)	Formulating scientific papers	Formulating scientific papers
5)	Risk-assessment in the field of Virology	Risk-assessment in the field of specialization
6)	Planning to enhance the performance in the laboratory diagnosis of viruses using molecular techniques and other techniques.	Planning to enhance the performance in field of specialization
7)	Making professional decisions and suggestion for dealing with field problem under different contexts in the field of virology.	Making professional decisions under different professional contexts
8)	Creating new ideas, methods, techniques and new solutions of in all areas of animal virology	Creation and innovative in the area of specialization

9)	Development of evidence based learning and practice in scientific research	Dialogue and discussion based on evidences and proofs
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C) Professional and practical skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills in isolation and identification of viruses	Mastering basic and modern professional skills in the area of specialization
2)	Writing and evaluating professional reports about specimens in Virology	Writing and evaluating professional reports
3)	Evaluating and modernizing methods and tools in immunology and vaccine preparation	Evaluating and modernizing methods and tools in the area of specialization
4)	Using modern technological means to serve protect animals against new viral strains	Using modern technological means to serve professional practice
5)	Planning for the improvement of veterinary medicine by applying molecular techniques and developing performance of others	Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Effective communication with virologists, students and veterinarians.	Effective communication

2)	Utilizing information technology to serve development of Virology practice	Utilizing information technology to serve development of professional practice
3)	Teaching others and evaluating their performance	Teaching others and evaluating their performance
4)	Self-assessment and continuous learning	Self-assessment and continuous learning
5)	Using different resources to obtain knowledge and information	Using different resources to obtain knowledge and information
6)	Team working and leading a team in familiar professional contexts	Team working and leading a team in familiar professional contexts
7)	Management of scientific meetings with the ability to manage time efficiently	Management of scientific meetings with the ability to manage time efficiently

ثالثا: برامج الدكتوراه

١- مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطا و مطورا للعلاقات البيئية بينها
٥. إظهار وعيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حلول مبتكرة لحلها
٧. إتقان نطاقا واسعا من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تنميتها والعمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢- المعايير القياسية العامة

المعرفة و الفهم:

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا علي الفهم والدراية بكل من:
أ- النظريات و الأساسيات والحديث من المعارف في مجال التخصص والمجالات ذات العلاقة

- ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
- ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص

ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و وطرق تنمية البيئة وصيانتها

المهارات الذهنية

بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها

ب- حل المشاكل المتخصصة استنادا علي المعطيات المتاحة

ج- إجراء دراسات بحثية تضيف إلى المعارف

د- صياغة أوراق علمية

هـ- تقييم المخاطر في الممارسات المهنية

و- التخطيط لتطوير الأداء في مجال التخصص

ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة

ح- الابتكار/ الإبداع

ط- الحوار و النقاش المبني علي البراهين والأدلة

المهارات المهنية

بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص

ب- كتابة و تقييم التقارير المهنية

ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص

د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية

هـ- التخطيط لتطوير الممارسة المهنية و تنمية أداء الآخرين

المهارات العامة و المنتقلة

بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

أ- التواصل الفعال بأنواعه المختلفة

ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية

ت- تعليم الآخرين و تقييم أداءهم

ث- التقييم الذاتي و التعلم المستمر

ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف

ح- العمل في فريق و قيادة فرق العمل

خ- إدارة اللقاءات العلمية و القدرة علي إدارة الوقت

Course specification (2021 / 2022)

1 - Basic Information:

Code number 180 (2)

Course title: Advanced General Virology

Academic Year: Postgraduate: DOCTOR. *Program*

Total teaching hours: 144 hrs

Lectures: 48 hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

- To educate students about the virion , viroid and prion ,devective virus
- Provide students with an understanding of the specific and non specific immune response to viral infection with special emphasis on the viral immune evasion strategiesand virus pathogenesis
- To enable the students to practice the advanced techniques of viral cultivation , propagation and serological diagnosis..
- To familiarize the students with modern principles of molecular virology and biotechnology.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1 state the general viral morphology, genome organization and genetics , Describe the host viral relationship and viral pathogenesis
- A2 Illusterate the virus host interaction and immune evasion strategies as humeral and cell mediated , Describe the virus antigenic and physical structures as well as the viral virulence factors
- A3 Identify the most important methods of elimination and principles of infection
- A4 memorize the modern viral vaccine strategies like DNA recombinant vaccine , study the oncogenic viruses.

3-B: INTELLECTUAL SKILLS:

By the end of the cour12se, students should be able to:

- B1 Appreciate the danger of handling and use of infectious viruses on community and environment as a part of their ethical heritage
- B2 relate the virus according to international taxonomy of viruses, Report and appraise a concise scientific activity according to standard scientific thinking and integrity

- B3 select the most appropriate and cost-effective tool leading to the identification of the causative viral agents. Evaluate according to evidence the causal relationship of microbes and diseases
- B4 Assise the results of virological,using modern molecular techniques

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to

- C1 apply the most efficient laboratory practices and bio-safety precautionswhile sampling andvirus propagation .
- C2 Model modern methods for virus isolation via embryonated chicken egg inoculation,labe animal and cell culture .
- C3 Analyze the different strategies of viral titration, Prepare Serological identification of viruses using different serological tests and rapid modern molecular techniques as PCR ,RT –PCR . .

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1-** Experience in team work and critical analyses of diseases cases , develop the ethical behaviors between students and staff members as well as among the students themselves.
- D2-** Use the different computer skills ,classify different duties,how to make a research or power point .
- D3-** Work under stress and can solve large number of virological problems.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
Science of virology	23	7	16
Molecular biology of viruses	15	4	11
Virus host interaction	12	3	9
Virus replication	33	10	23
Virus pathogenesis	26	11	15
Virus control and vaccination	17	8	9
Virus evolution and emergence	18	5	13
Total	144	48	96

5- TEACHING & LEARNING METHODS:

*Lectures

(using data show, white board and brain storming)

*Practical and small group sessions:

Practical training.

(Practical demonstrations, practice of skills, and discussions)

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of scientific reports.
- Virological drawing.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b time</u>	At the end of the year	At the end of the year	At the end of the year
<u>7.c grads</u>	50	20	30

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- **Department notes:** available for students to purchase from the department.

8-2: Recomednded books:

- 8.2. . Principles of Virology (2 volumes)
- Fields Virology book (2 volumes)
- Veterinary Virology (1 volume)
- Virology a laboratory Manual

8.3: web sites and jouranlsand so on



- International of veterinary information services (IVIS)

<http://www.virology.net/>

<http://www.virology.net/garryfavweb2.html>

<http://www.virology.net/courseware.html>

- o asmnews@asmusa.org
- o <http://www.phage.org/black09.htm>
- o http://www.microbe.org/microbes/virus_or_bacterium.asp
- o <http://www.bact.wisc.edu/Bact330/330Lecturetopics>
- o http://whyfiles.org/012mad_cow/7.html
- o <http://www.microbelibrary.org/>
- o <http://www.hepnet.com/hepb.htm>
- o http://www.tulane.edu/~dmsander/Big_Virology/BVHomePage.html
- o <http://www.mic.ki.se/Diseases/c2.html>
- o <http://www.med.sc.edu:85/book/welcome.htm>

http://www.biology.arizona.edu/immunology/microbiology_immunology.

Intended learning out comes of each topic

TOPIC	K.U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Science of virology	A1-A2	B1-B3-	C1-C2	D1-D2
Molecular biology of viruses	A1-A2	B1-B3	-C1-C2-C3	D1-D2-D3
Virus replication	A1-A2-A3-A4	B3B4-	C1-C2-	D1-D2- -D3
Virus host interaction	A2-A4	1B-B3	C3-C1	D1-D2
Virus pathogenesis and oncogenesis	A2-A3-A4-A1-	B3-B4	-C2-C3-	D1- -D3
Virus control ad vaccination, emergency	A3-A4	B3-B4- B2-	C1-C2-C3-	D2-D3

Intended learning out comes Evaluation

Assessment	ILOs
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	Knowledge and understanding	Intellectual	Professional and practical	General and transferable
Practical exam		-B3-	C1-C2-C3	D1
Oral exam	A1-A2-A3-A4-	B2-B3		D2
Written exam	A1-A2-A3-A4-	B1-B2-B3-B4	-	D3

Course Coordinator:

Dr. Noura Fysal

Head of Department

Prof. Dr. Bassiony Heliel

Course specification (2021 / 2022)

1 - Basic Information:

Code number 181(2)

Course title: **Special Virology**

Academic Year: **DOCTOR degree**Program

Total teaching hours: 240 hrs

Lectures: 96 hrs

Practical: 144 hrs

2 - OVERALL AIMS OF THE COURSE:

- Provided the students with advanced knowledge about the systematic virology .
- To familiarize students with the most important infectious diseases of viral origin affecting different animals like cattle ,sheep ,goat ,equines and poultry and their etiological viruses, to practice the principles of viral cultivation and isolation.
- To familiarize the students with basic principles of serological diagnosis of viral infections,Advanced molecular virology and informatic biotechnology.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1 state the general viral classification and taxonomy, according to the international taxonomy committee .
- A2 , Describe the virus morphology, their antigenic structures as well as the viral virulence factors of each corresponding virus family.inrelation with the host immune response
- A3 Recognize the most important infectious clinical conditions and outline the diagnosis of viruses that causing such diseases, Identify the most important methods of decontamination and principles of infection
- A4 , define the impact of advanced molecular technology in prevention of such virological cases

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1 Appreciate the danger of handling and use of infectious viruses on community and environment as a part of their ethical heritage
- B2 relate the virus according to international taxonomy and nomenclature of viruses, Report and appraise a concise scientific activity according to standard scientific thinking and integrity

- B3 select the most appropriate and cost-effective tool leading to the identification of the causative viral agents. Evaluate according to evidence the causal relationship of microbes and diseases
- B4 Assisement of Virological results by modern biotechnology.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to

- C1 Choose the good laboratory practicesfor sampling and bio-safety precautions .
- C2 Model basic principles for virus isolation via labe animal , embryonated chicken egg inoculation and cell culture , characterize the most diagnostic CPE related to the corosponding virus
- C3 Analyze the different strategies of viral titration, Prepare Serological identification of viruses using different serological tests and modern molecular techniques as PCR,RT-PCR western blotting, REFLP

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1-** Experience in team work and critical analyses of diseases cases , develop the ethical behaviors between students and staff members as well as among the students themselves.
- D2-** Use the different computer skills ,classify different duties,how to make a research or power point .
- D3-** Work under stress and can solve large number of virological problems.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practisccal
Immune response to virus infection - The innate immune - The adaptive immune response - Injury induced by viral infection	57	21	36
- DNA Viruses -Herpesviridae -Poxviridae Adenoviridae- Parvovorodae	65	25	40

RNA viruses -Rhabdoviridae -Paramyxoviridae -Filoviridae- Orthomyxoviridae -Bunyavirid -Coronaviridae -Picornavirudae -Togaviridae Astroviridae -Flaviviridae	65	25	40
Subviral agents and emerging diseases -Deltavirus -Satellites and prions	53	25	28
Total	240	96	144

5- TEACHING & LEARNING METHODS:

*Lectures

(using data show, white board and brain storming)

*Practical and small group sessions:

Practical training.

(Practical demonstrations, practice of skills, and discussions)

* Self learning

Computer researches and faculty library visits to prepare essays and presentations.

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of scientific reports.
- Virological drawing.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
- *Activation of office hours.
- *Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination
7.b time	At the end of each year	At the end of each year	At the end of each year
7.c grads	50	20	30

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:



- **Department notes:** available for students to purchase from the department.

8-2: Recmended books:

- 8.2. . Principles of Virology (2 volumes)
- Fields Virology book (2 volumes)
- Veterinary Virology (1 volume)
- Virology a laboratory Manual

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<http://www.virology.net/>

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<http://www.virology.net/courseware.html>

- o asmnews@asmusa.org
- o <http://www.phage.org/black09.htm>
- o http://www.microbe.org/microbes/virus_or_bacterium.asp
- o <http://www.bact.wisc.edu/Bact330/330Lecturetopics>
- o http://whyfiles.org/012mad_cow/7.html
- o <http://www.microbelibrary.org/>
- o <http://www.hepnet.com/hepb.htm>
- o http://www.tulane.edu/~dmsander/Big_Virology/BVHomePage.html
- o <http://www.mic.ki.se/Diseases/c2.html>
- o <http://www.med.sc.edu:85/book/welcome.htm>

http://www.biology.arizona.edu/immunology/microbiology_immunology.

Intended learning out comes of each topic

TOPIC	K.U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Immune response to virus infection - The innate immune response - The adaptive immune response - Injury induced by viral	A1- A2- A3-A4	B1- B3-	C1-C3	D1-D3-

infection				
- DNA Viruses -Poxviridae-Herpesviridae Adenoviridae Parvovorodae	A1- A2- A3- A4-	B4- B2	C1-C3	D1-D2- D3
RNA viruses -Paramyxoviridae-Rhabdoviridae -Filovirdae-Orthomyxoviridae -Bunyavirid-Coronaviridae -Picornavirudae-Togaviridae Astroviridae -Flavivirdae	A2- A3- -	-B2- B3- B4	C1-C2- C3-	-D2-D3-
Subviral agents - -Satellites and prions Deltavirus	A2- A3- A1-	B1- B2- B3-	-C2-C3-	D1-D2- D3

Evaluation Intended learning out comes

Assessment	ILOs			
	Knowledge and understanding	Intellectual	Professional and practical	General and transferable
Practical exam		-B3-	C1-C2-C3	D1
Oral exam	A1-A2-A3-A4-	B2-B3		D2
Written exam	A1-A2-A3-A4-	B1-B2-B3- B4	-	D3

Course Coordinator:

Dr. Noura Fysal

Head of Department

Prof. Dr. Bassiony Heliel

كلية الطب البيطري
وحدة ضمان الجودة
Program Spc. For Ph.D in Zoonoses



Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Hygiene and Preventive Medicine

Program Specification for PhD Degree

(2021-2022)

Program Title: Doctor of Philosophy

(Zoonoses)



Kafrelsheikh University

Faculty of Veterinary Medicine

Department of Hygiene and Preventive Medicine

**Program Specification for PhD Degree
(2021-2022)**

A- Administrative information:

- 1- Awarding Body:** Kafr El-Sheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Hygiene and Preventive Medicine Department
- 4- Program Title:** PhD Degree in Veterinary Science (Animal and Poultry Hygiene)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years
- 7- Program Coordinator:** Dr. Walied Maged
- 8- External evaluator:** Prof. Dr. Kamal kamal metwally

B- Professional information:

1- Aim of the Program:

- Creation of new knowledge and understanding in zoonoses through the process of research and inquiry.
- Development of communication skills, recent techniques and diagnostic tools in the field of zoonoses and experience of scientific research skills.
- Giving the graduate the ability to be creative to advance zoonoses through new scientific research.
- Achievement of capability in modern laboratory technology to develop practical research project.
- Demonstrating an awareness of the connections between disciplines and

develop the ability to engage critically with scientific literature and to critically review and present their own research data for the protection and promotion of the animal health.

- Giving the student the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibiting awareness about current zoonoses problems and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of zoonoses.

Academic reference standards (ARS) adopted by the faculty committee No(1) 14/9/2014

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Mastering the basics and methodologies of scientific research in advanced **zoonoses** branches for better dealing with zoonotic problems professionally and hence the better understanding of the specific solution for each case.
- 2) Performing continuous effort to add knowledge about detection of causes of most zoonotic diseases and validating of new methods of isolation and identification including introducing new techniques.
- 3) Analysis and characterization of information in fields related to **zoonosis**.
- 4) Showing deep awareness with the ongoing zoonotic problems and modern theories in controlling diseases.
- 5) Mastering of a wide range of professional skills in laboratory investigation.
- 6) Using appropriate technological means including molecular biology to serve professional practice.
- 7) Communicating effectively with students and colleagues and leading work team through professional scale.
- 8) Making decision in different professional situations especially under field

- conditions to deal with the zoonotic diseases.
- 9) Using of the available resources efficiently in the development of new techniques and work to find new resources.
 - 10) Being aware with his role in society development and community preservation from the zoonotic diseases.
 - 11) Acting with integrity, credibility and according to the rules of profession.
 - 12) Realizing the importance of self and life-long learning and progress.

4-Programme Intended Learning outcomes (ILOs)]

a. Knowledge and understanding:

On successful completion of this program, postgraduate will be able to:

- a.1. Recognize theories, principles, and the recent data in the field of zoonoses.
- a.2. Define principle of ethical and law and of professional practice in the field zoonoses.
- a.3. Realize Applying the basics and ethics of veterinary practice concerning zoonoses.
- a.4. Identify the Principles and the basics of quality assurance in laboratory examination of pathogens.
- a.5. Study the effect of zoonotic diseases on the animal wealth and methods for enhancing animal hygiene.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1. Analyze and evaluate information in the field of zoonosis and analogies and inference from it.
- b.2. Solve specialized problem based on the available data.
- b.3. Carrying out research studies that adding to the knowledge.
- b.4. Formulate of scientific papers.
- b.5. Assessment the risks in professional practice.
- b.6. Planning to improve performance in the field of Zoonoses.
- b.7. Take professional decision in the different professional contexts.
- b.8. Innovation/ Creativity.
- b.9. Dialogue and discussion built on evidence.

c. Practical and professional skills:

By the end of this program the graduate should be able to:

- c.1.** Mastering basic professional skills and modern in the area of Zoonoses.
- c.2.** Process professional reports involving the harmful effect of pathogens on different animals and man.
- c.3.** Evaluate and develop the methods and existing tools in the area of zoonotic diseases and management..
- c.4.** Use of technological means to serve the professional practice.
- c.5.** Planning for the development of professional practice and improve of the performance of others.

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1.** Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology in the improvement of professional practice.
- d.2.** Utilize information technology to serve professional practice.
- d.3.** Teach others and evaluate their performance.
- d.4.** Self-evaluate and identify personal learning requirements
- d.5.** Lead team under different professional circumstances.
- d.6.** Use of different sources for obtaining information and knowledge.
- d.7.** Manage scientific meetings with the ability to manage time efficiently.

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, field visits and seminars.

6-Assessments:

The program depends on different assessment ways:

- a. Course assessment:

1. Final written exam
 - To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
 2. Practical exam
 - To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
 3. Oral exam
 - To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.
- b. Qualifying examination
The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work
- c. PhD Thesis assessment
- Annual reports adopted by the Faculty.
 - Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
 - Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1-2; b2,3;
Oral	a1-2; b2,3;
Practical	c1-5
Qualifying Exam	a1-5; b1-9
Thesis	A3-5; b1-9; c1-5; d1-8

7. Program structure

a. Program duration (years):

PhD degree duration at least 3 years and it should not exceed a period of 5 years, an extension could be approved by the faculty council depending on the supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law (article 18).

b. Program courses:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council should include at least 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. These courses must not be previously studied in the Mater program. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c-Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d-Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met.

. Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Zoonoses include:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Zoonoses	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2

	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2
Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of uro-genital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2

	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and biological uses	2	2
	132/2	32- Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2

	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)	2	2
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive	1	2

		diseases		
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
		81- Advanced immunology	2	2
Parasitology	188/1	89- Veterinary medical entomology and acarology	2	2
	189/2	90-helminthology	2	2
	190/2	91- protozoology	2	2
	191/2	92- Avian and rabbits parasitology	2	2
	192/2	93Malacology and its vet. Importance	1	2

	193/2	94- parasitic Immunology	1	2
	194/2	95- Clinical parasitology	2	2
	195/2	96-Wild life parasitology	1	2
	196/2	97-Special vet. Parasitology	2	2
	197/2	98- Physiology and biochemistry of parasites	2	2
	198/2	99- Fish parasitology	1	2
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1
Hygiene and control of milk and dairy products	208/2	108- Hygienic control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	214/2	114- The sanitation of dairy plant	2	2

Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/2	134- Stress diseases during animals transport.		
Infectious diseases	235/2	135- Infectious diseases of cattle	2	2
	236/2	136- Infectious diseases of sheep and goat	2	2
	237/2	137- Infectious diseases camel	2	2

	2			
	238/ 2	138 Infectious diseases of equine	2	2
	239/ 2	139- Infectious diseases of pet animals	2	2
	240/ 2	140- Infectious diseases lab animals	1	2
	241/ 2	141- Infectious diseases of udder and newly born animals	2	2
	242/ 2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2

	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in equine	2	2
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in polutry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and	2	2

		pollution		
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Genetics and genetic engineering	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2
	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2

Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (Zoonoses) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medical science lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.

3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.
5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.
7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.
8. The applicant should submit a seminar (Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).
9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met: Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.

10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and in case of thesis approval by the department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.

11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards it to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.

12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.

13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.

3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.
- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b- The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade		Percentage
Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
I	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5
5	External evaluators	Questioners & Open discussion	5

programCo-ordinator:

Dr. Walied Maged

Head of Department:

Prof. Dr. Tarek Balabel

Matching program ILOs with ARS - Matrix

Program ILOs	ARS																											
	K&U (a)					I.S. (b)									P.P. (c)					G.T. (d)								
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7		
K&U	1	2	3	4	5																							
I.S.						1	2	3	4	5	6	7	8	9														
P.P.															1	2	3	4	5									
G.T.																				1	2	3	4	5	6	7		



Program Specification Matrix

PhD in Veterinary Medical Sciences (Zoonoses)

Courses		Total Contact hours/course	No. of hours / week			K.U (a)					I.S (b)										P.P (c)					G.T (d)							
Code	Name		Lect.	Lab.	Total	1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7		
Predocloral courses (10-12 theoretical and practical hours weekly for 12 months)						x	x														x	x	x										
Qualification exam								x	x	x											x	x	x	x	x								
Thesis								x	x	x											x	x	x	x	x								

ARS for PhD in Veterinary Medical Sciences (Zoonoses)

1) Graduate attributes

The graduate should have the ability for:

- 13) Mastering the basics and methodologies of scientific research in Zoonoses for better dealing with disease problems professionally.
- 14) Performing continuous effort to add knowledge about methods of human infection by diseases of animal origin and methods of control.
- 15) Analysis of information in Zoonoses and fields related to Zoonoses including parasitology, virology, bacteriology, hygiene, etc.
- 16) Integrating data collected from the field with related laboratory findings to reach the correct diagnosis of cause of infection.
- 17) Showing deep awareness with the ongoing disease problems and modern theories in treating animals to control the disease in man.
- 18) Identifying the main causes of infection and suggesting the appropriate methods of animal and human protection.
- 19) Mastering of a wide range of professional skills in Zoonoses, laboratory investigation of infective phases of parasites or pathogens and modern techniques performed for diagnosis.
- 20) Acquiring trends towards developing modern methods and tools in diagnostic procedures.
- 21) Using appropriate technological means including molecular biology, proteomics and immunoaffinity chromatography to serve professional practice.
- 22) Communicating effectively with veterinarians, physicians, students and colleagues and leading work team through professional scale.
- 23) Making decision in different professional situations especially under field conditions to deal with cases of infection.
- 24) Using of the available resources efficiently in the development of new techniques and work to find new resources.
- 25) Being aware with his role in society development and community awareness of zoonotic diseases and pollution of the environment.
- 26) Acting with integrity, credibility and according to the rules of profession.
- 27) Realizing the importance of self and life-long learning and progress.

A) Knowledge and understanding

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Modern principles and knowledge in recognizing the cause of Zoonotic disease in addition to diagnosis and control of such disease.	Recent theories, principles and knowledge in the field of specialization and related areas
2)	Principles methodologies and ethics of scientific research and its tools including using laboratory animals and pathogens in research	Basics, methodologies and ethics of scientific research and its different tools
3)	Legal and ethical principles of dealing with epidemic and endemic diseases of Zoonotic importance.	Legal and ethical principles of professional practice in the area of specialization
4)	Principles and the basics of quality assurance in laboratory examination of pathogens and disease causing agents.	Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Awareness with the effect of pathogens and different losses on the animal wealth and methods for enhancing animal hygiene.	Awareness with the effect of professional practice on the environment and methods of its maintain and development

B) Intellectual skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Interpreting and evaluating information about zoonotic diseases and methods of transmission	Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solving Zoonotic problems using available data	Solving professional problems using available data
3)	Performing scientific research studies that can give significant impact on the role of animals in transmission of disease to man.	Conducting scientific research studies that add to knowledge

4)	Publishing scientific papers in Zoonoses.	Formulating scientific papers
5)	Risk-assessment of virulence of Zoonotic pathogens	Risk-assessment in the field of specialization
6)	Planning to enhance the performance in the laboratory diagnosis of animal or human Zoonotic affections	Planning to enhance the performance in field of specialization
7)	Making professional decisions for selecting the ideal method of controlling zoonotic diseases and condemnation of affected animals	Making professional decisions under different professional contexts
8)	Trying new methods for combating zoonotic diseases.	Creation and innovative in the area of specialization
9)	Open discussion in Zoonosis based on disease evidences and proofs	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills in Zoonotic lab including isolation, culture and identification of the causative pathogen, treatment and prevention of transmission of Zoonotic diseases	Mastering basic and modern professional skills in the area of specialization
2)	Writing and evaluating professional reports involving the harmful effect of Zoonotic pathogens on different animals and man.	Writing and evaluating professional reports
3)	Evaluating and modernizing methods and tools in diagnosis of Zoonotic affections	Evaluating and modernizing methods and tools in the area of specialization
4)	Using modern technological means to combat vectors and intermediates that transmit Zoonotic diseases	Using modern technological means to serve professional practice
5)	Planning for the improvement of veterinary medicine by applying recent molecular techniques in zoonoses and developing performance of others.	Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill

	Adopted ARS	NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Communicating effectively with physicians, other health professionals, and health related agencies.	Effective communication
2)	Using the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.	Utilizing information technology to serve development of professional practice
3)	Presenting information clearly in written, electronic and oral forms	Teaching others and evaluating their performance
4)	Establishment of life-long self-learning required for continuous professional development.	Self-assessment and continuous learning
5)	Using different resources to obtain knowledge and information	Using different resources to obtain knowledge and information
6)	Team working and leading a team in familiar professional contexts	Team working and leading a team in familiar professional contexts
7)	Management of time and open discussions in the professional field	Management of scientific meetings with the ability to manage time efficiently

ثالثاً: برامج الدكتوراه

١- مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادراً على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطاً و مطوراً للعلاقات البينية بينها
٥. إظهار وعيا عميقاً بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حلولاً مبتكرة لحلها
٧. إتقان نطاقاً واسعاً من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية

- ١٠ . التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
- ١١ . اتخاذ القرار في ظل المعلومات المتاحة
- ١٢ . توظيف الموارد المتاحة بكفاءة و تنميتها و العمل على إيجاد موارد جديدة
- ١٣ . الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
- ١٤ . التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة
- ١٥ . الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢ - المعايير القياسية العامة

المعرفة و الفهم:

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا علي الفهم والدرابة بكل من:
أ- النظريات و الأساسيات والحديث من المعارف في مجال التخصص والمجالات ذات العلاقة

- ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
- ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
- ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
- ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و وطرق تنمية البيئة وصيانتها

المهارات الذهنية

- بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
 - ب- حل المشاكل المتخصصة استنادا علي المعطيات المتاحة
 - ج- إجراء دراسات بحثية تضيف إلى المعارف
 - د- صياغة أوراق علمية
 - هـ- تقييم المخاطر في الممارسات المهنية
 - و- التخطيط لتطوير الأداء في مجال التخصص
 - ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة
 - ح- الابتكار/ الإبداع
 - ط- الحوار و النقاش المبني علي البراهين والأدلة

المهارات المهنية

- بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
 - ب- كتابة و تقييم التقارير المهنية
 - ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
 - د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
 - هـ- التخطيط لتطوير الممارسة المهنية و تنمية أداء الآخرين

المهارات العامة و المتنقلة

- بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:
- أ- التواصل الفعال بأنواعه المختلفة
 - ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية
 - ت- تعليم الآخرين و تقييم أداءهم
 - ث- التقييم الذاتي و التعلم المستمر
 - ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
 - ح- العمل في فريق و قيادة فرق العمل
 - خ- إدارة اللقاءات العلمية و القدرة علي إدارة الوقت

DEPARTMENT OF HYGIENE AND PREVENTIVE MEDICINE

Course specification

(2021 - 2022)

1 - Basic Information:

Code number: 285 (2)

Course title: Zoonotic Diseases (Advanced)

Academic Year: PhD Programme

Total teaching hours: 192 hrs

Lectures: 96hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

- To provide basic and detailed knowledge on principles of zoonoses.
- To demonstrate knowledge of the epidemiology of zoonotic disease.
- To implement the basic principles of prevention and control of zoonotic diseases.
- To understand the risks of occupational zoonoses (especially veterinarian) as well as food borne zoonoses and the appropriate methods to avoid these risks.
- To plan and execute research work, evaluate outcomes and draw conclusions

3 - INTENDED LEARNING OUTCOMES (I. L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Describe the principles and concepts of veterinary zoonoses.

A2- Memorize the public health importance of zoonotic diseases.

A3- Recognize the etiology of zoonotic diseases

A4- Define the principles of epidemiology and their role in disease prevention and control.

A5- List appropriate methods for diagnosis of zoonotic diseases in man & animals.

A6- Recite the clinical picture of zoonotic diseases in man & animals.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1- Use principles and concepts of zoonoses in solving zoonotic problems in man and animals.

B2-analyze data about occurrence, distribution and possible risk factors of zoonotic diseases.

B3- design strategy for prevention and control of zoonotic diseases.

B4- recommend the appropriate method for diagnosis of zoonotic diseases.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

- C1- Identify and solve zoonotic problems in man and animals.
- C2- Collect and analyze data of zoonotic diseases.
- C3- diagnose the zoonotic diseases.
- C4- Construct proper surveillance programs for zoonotic diseases.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- D1- Work in team.
- D2- Demonstrate the ability to perform and analyze data, and to write a research report.
- D3- Communicate effectively (in writing, verbally and IT).
- D4- Use IT to prepare, process, present and transmit information.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
Introduction to zoonotic diseases	12	6	6
Bacterial zoonotic diseases	60	30	30
Mycotic zoonotic diseases	12	6	6
Chlamydial and Rickettsial diseases	12	6	6
Parasitic zoonotic diseases	48	24	24
Viral zoonotic diseases	48	24	24
Total	192	96	96

5- TEACHING & LEARNING METHODS:

***Lectures**

- Using data show to display slides, photos and videos, white board

***Practical and small group sessions:**

- Practical training: Practical demonstrations, practice of skills, and discussions

*** Self learning**

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

* **Audiovisual**

- Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

*No disabled students until now, but if present the methods are:-

- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b Time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year
<u>7.c Grades</u>	50	25	25

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Text books: available for students in the faculty library.
- Overhead and slide projectors and data show presentations used during teaching.

8-2: Recmended books:

- Zoonoses and communicable diseases common to man and animals. Pan American Health Organization, 2003.
- Waterborne zoonoses: identification, causes, and control. Cotruvo, J (2004).
- Zoonoses: biology, clinical practice, and public health control. Palmer et al., (1998).

8.4: web sites and jouranlsand so on

- www.pubmed.com
- www.oie.int
- www.who.int
- www.cdc.gov
- Transboundary and emerging diseases (Journal)

- Zoonoses and Public health (Journal)
- Vector Borne and Zoonotic Diseases (Journal)

9.1.Course content ILOs Matrex:

TOPIC	K.U (A)	I.S (B)	P.P.S (C)	G.T.S (D)
Introduction to zoonotic diseases	A1-A2-A3-A4	-	C1	-
Bacterial zoonotic diseases	A2-A3-A4-A5-A6	B1-B2-B3-B4	C1-C2-C3-C4	D1-D2-D3-D4
Mycotic zoonotic diseases	A2-A3-A4-A5-A6	B1-B2-B3-B4	C1-C2-C3-C4	D1-D2-D3-D4
Chlamydial and Rickettsial diseases	A2-A3-A4- A5-A6	B1-B2-B3-B4	C1-C2-C3-C4	D1-D2-D3-D4
Parasitic zoonotic diseases	A2-A3-A4-A5-A6	B1-B2-B3-B4	C1-C2-C3-C4	D1-D2-D3-D4
Viral zoonotic diseases	A2-A3-A4-A5-A6	B1-B2-B3-B4	C1-C2-C3-C4	D1-D2-D3-D4

9.2.Assessment Ilos matrix:

Methods	I.L.O.S Evaluation			Marks allocated	
	K.U (A)	I.S (B)	P.P.S (C)		
Written examination	A1.A2.A3.A4.A5 A6	B1,B2,B3		D2	50
Oral examination	A1.A2.A3.A4. A6	B1.B2.B3.B4		D3.D4	25
Practical examination		B1.B2.B3	C1.C2.C3.C4	D1.D3.D4	25

Course Coordinator:

Dr. Walid Elmonir

Head of Department:

Prof. Dr. Tarek Mousa Balabel

DEPARTMENT OF HYGIENE AND PREVENTIVE MEDICINE
Course specification
(2021 - 2022)

1 - Basic Information:

Code number: 286 (2)
Course title: Rodent-Borne zoonoses
Academic Year: PhD Programme
Total teaching hours: 192hrs
Lectures: 96 hrs
Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

- To provide basic and detailed knowledge on rodent-borne zoonoses.
- To demonstrate knowledge of the epidemiology of rodent-borne zoonoses.
- To implement the basic principles of prevention and control of rodent-borne zoonoses.
- To understand the risks of occupational zoonoses (laboratory animals) and the appropriate methods to avoid these risks.

3 - INTENDED LEARNING OUTCOMES (I. L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Describe the principles and concepts of veterinary zoonoses.
- A2- Memorize the public health importance of rodent-borne zoonoses.
- A3- Recognize the etiology of rodent-borne zoonoses.
- A4- Define the principles of epidemiology and its role prevention and control of rodent-borne zoonoses.
- A5- List appropriate methods for diagnosis of zoonotic diseases transmitted by rodent.
- A6- Recite the clinical picture of zoonotic diseases transmitted by rodent.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Use principles and concepts of zoonoses in solving zoonotic problems caused by rodent.

B2- analyze data about occurrence, distribution and possible risk factors of rodent-borne zoonoses.

B3- design strategy for prevention and control of rodent-borne zoonoses.

B4- recommend the appropriate method for diagnosis of rodent-borne zoonoses.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

C1- Identify and solve zoonotic problems caused by rodent.

C2- Collect and analyze data of rodent-borne zoonoses.

C3-diagnose the rodent-borne zoonoses.

C4- Construct proper surveillance programs for rodent-borne zoonoses.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Work in team.

D2- Demonstrate the ability to perform and analyze data, and to write a research report.

D3- Communicate effectively (in writing, verbally and IT).

D4- Use IT to prepare, process, present and transmit information.

4 - COURSE COTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
Introduction	12	6	6
Rodent-borne Bacterioses	80	40	40
Rodent-borne - Mycoses	20	10	10
Rodent-borne Parasitioses	40	20	20
Rodent-borne Viroses	40	20	20
Total	192	96	96

5- TEACHING & LEARNING METHODS:

***Lectures**

- Using data show to display slides, photos and videos, white board

***Practical and small group sessions:**

- Practical training: Practical demonstrations, practice of skills, and discussions

*** Self learning**

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

*** Audiovisual**

- Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

*No disabled students until now, but if present the methods are:-

- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b Time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year
<u>7.c Grades</u>	50	25	25

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Text books: available for students in the faculty library.
- Overhead and slide projectors and data show presentations used during teaching.

8-2: Recmended books:

- Zoonoses and communicable diseases common to man and animals. Pan American Health Organization, 2003.
- Waterborne zoonoses: identification, causes, and control. Cotruvo, J (2004).
- Zoonoses: biology, clinical practice, and public health control. Palmer et al., (1998).

8.4: web sites and jouranlsand so on

- www.pubmed.com
- www.oie.int

- www.who.int
- www.cdc.gov
- Transboundary and emerging diseases (Journal)
- Zoonoses and Public health (Journal)
- Vector Borne and Zoonotic Diseases (Journal)

9.1.Course content ILOs Matrex:

TOPIC	K.U (A)	I.S (B)	P.P.S (C)	G.T.S (D)
Introduction	A1-A4	-	C1	-
Rodent-borne Bacterioses	A2-A3-A4-A5-A6	B1-B2-B3-B4	C1-C2-C3-C4	D1-D2-D3-D4
Rodent-borne Mycoses	A2-A3-A4-A5-A6	B1-B2-B3-B4	C1-C2-C3-C4	D1-D2-D3-D4
Rodent-borne Parasitioses	A2-A3-A4-A5-A6	B1-B2-B3-B4	C1-C2-C3-C4	D1-D2-D3-D4
Rodent-borne Viroses	A2-A3-A4-A5-A6	B1-B2-B3-B4	C1-C2-C3-C4	D1-D2-D3-D4

9.2.Assessment Ilos matrix:

Methods	I.L.O.S Evaluation				Marks allocated
	K.U (A)	I.S (B)	P.P.S (C)	G.T.S (D)	
Written examination	A1.A2.A3.A4.A5 A6	B1,B2,B3		D2	50
Oral examination	A1.A2.A3.A4.A5 A6	B1.B2.B3.B4		D3.D4	25
Practical examination		B1.B2.B3	C1.C2.C3.C4	D1.D3.D4	25

Course Coordinator:

Head of Department:

Dr. Walid Elmonir
Balabel

Prof. Dr. Tarek Mousa

DEPARTMENT OF HYGIENE AND PREVENTIVE MEDICINE
Course specification
(2021 - 2022)

1 - Basic Information:

Code number: 287 (2)

Course title: Wild animal-Borne zoonoses

Academic Year:PhD Programme

Total teaching hours: 192hrs

Lectures: 96 hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

- To provide basic and detailed knowledge on wild animal-borne zoonoses.
- To demonstrate knowledge of the epidemiology of wild animal-borne zoonoses.
- To implement the basic principles of prevention and control of wild animal-borne zoonoses.
- To understand the risks of occupational zoonoses (zoo keepers) and the appropriate methods to avoid these risks.

3 - INTENDED LEARNING OUTCOMES (I. L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- A1- Describe the principles and concepts of veterinary zoonoses.
- A2- Memorize the public health importance of wild animal-borne zoonoses.
- A3- Recognize the etiology of wild animal-borne zoonoses.
- A4- Define the principles of epidemiology and their role in disease prevention and control.
- A5- List appropriate methods for diagnosis of zoonotic diseases transmitted by wild animal.
- A6- Recite the clinical picture of zoonotic diseases transmitted by wild animal.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- B1- Use principles and concepts of zoonoses in solving zoonotic problems caused by wild animal.

B2-analyze data about occurrence, distribution and possible risk factors of wild animal-borne zoonoses.

B3-design strategy for prevention and control of wild animal-borne zoonoses.

B4- recommend the appropriate method for diagnosis of wild animal-borne zoonoses.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

C1- Identify and solve zoonotic problems caused by wild animal.

C2- Collect and analyze data of wild animal-borne zoonoses.

C3- diagnose the wild animal-borne zoonoses.

C4- Construct proper surveillance programs of wild animal-borne zoonoses.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Work in team.

D2- Demonstrate the ability to perform and analyze data, and to write a research report.

D3- Communicate effectively (in writing, verbally and IT).

D4- Use IT to prepare, process, present and transmit information.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
Introduction	12	6	6
Wild animal-borne Bacterioses	80	40	40
Wild animal-borne Mycoses	20	10	10
Wild animal-borne Parasitioses	40	20	20
Wild animal-borne Viroses	40	20	20
Total	192	96	96

5- TEACHING & LEARNING METHODS:

***Lectures**

- Using data show to display slides, photos and videos, white board

***Practical and small group sessions:**

- Practical training: Practical demonstrations, practice of skills, and discussions

*** Self learning**

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

*** Audiovisual**

- Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

*No disabled students until now, but if present the methods are:-

- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b Time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year
<u>7.c Grades</u>	50	25	25

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Text books: available for students in the faculty library.
- Overhead and slide projectors and data show presentations used during teaching.

8-2: Recmended books:

- Zoonoses and communicable diseases common to man and animals. Pan American Health Organization, 2003.
- Waterborne zoonoses: identification, causes, and control. Cotruvo, J (2004).
- Zoonoses: biology, clinical practice, and public health control. Palmer et al., (1998).

8.4: web sites and jouranlsand so on

- www.pubmed.com
- www.oie.int
- www.who.int
- www.cdc.gov

- Transboundary and emerging diseases (Journal)
- Zoonoses and Public health (Journal)
- Vector Borne and Zoonotic Diseases (Journal)

9.1.Course content ILOs Matrex:

TOPIC	K.U (A)	I.S (B)	P.P.S (C)	G.T.S (D)
Introduction	A1-A4	-	C1	-
Wild animal-borne Bacterioses	A2-A3-A4-A5-A6	B1-B2-B3-B4	C1-C2-C3-C4	D1-D2-D3-D4
Wild animal-borne Mycoses	A2-A3-A4-A5-A6	B1-B2-B3-B4	C1-C2-C3-C4	D1-D2-D3-D4
Wild animal-borne Parasitoses	A2-A3-A4-A5-A6	B1-B2-B3-B4	C1-C2-C3-C4	D1-D2-D3-D4
Wild animal-borne Viroses	A2-A3-A4-A5-A6	B1-B2-B3-B4	C1-C2-C3-C4	D1-D2-D3-D4

9.2.Assessment Ilos matrix:

Methods	I.L.O.S Evaluation				Marks allocated
	K.U (A)	I.S (B)	P.P.S (C)	G.T.S (D)	
Written examination	A1.A2.A3.A4.A5 A6	B1,B2,B3		D2	50
Oral examination	A1.A2.A3.A4.A5 A6	B1.B2.B3.B4		D3.D4	25
Practical examination		B1.B2.B3	C1.C2.C3.C4	D1.D3.D4	25

Course Coordinator:

Dr. Walid Elmonir

Head of Department:

Prof. Dr. Tarek Mousa Balabel

DEPARTMENT OF HYGIENE AND PREVENTIVE MEDICINE

Course specification

(2021 - 2022)

1 - Basic Information:

Code number: 288 (2)

Course title: Poultry-Borne zoonoses

Academic Year: PhD Programme

Total teaching hours: 192 hrs

Lectures: 96 hrs

Practical: 96 hrs

2 - OVERALL AIMS OF THE COURSE:

- To provide basic and detailed knowledge on poultry-borne zoonoses.
- To demonstrate knowledge of the epidemiology of poultry-borne zoonoses.
- To implement the basic principles of prevention and control of poultry-borne zoonoses.
- To understand the risks of occupational zoonoses (farm workers) and the appropriate methods to avoid these risks.

3 - INTENDED LEARNING OUTCOMES (I. L.Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

A1- Describe the principles and concepts of veterinary zoonoses.

A2- Memorize the public health importance of poultry-borne zoonoses.

A3- Recognize the etiology of poultry-borne zoonoses.

A4- Define the principles of epidemiology and its role in prevention and control of poultry zoonoses.

A5- List the appropriate methods for diagnosis of zoonotic diseases transmitted by poultry.

A6- Recite the clinical picture of zoonotic diseases transmitted by poultry.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

B1- Use principles and concepts of zoonoses in solving zoonotic problems caused by poultry.

B2- analyze data about occurrence, distribution and possible risk factors of poultry-borne zoonoses.

B3- design strategy for prevention and control of poultry-borne zoonoses.

B4- recommend the appropriate method for diagnosis of poultry-borne zoonoses.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to:

C1- Identify and solve zoonotic problems caused by poultry.

C2- Collect and analyze data of poultry-borne zoonoses.

C3- Diagnose the poultry-borne zoonoses.

C4- Construct proper surveillance programs for poultry-borne zoonoses.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

D1- Work in team.

D2- Demonstrate the ability to perform and analyze data, and to write a research report.

D3- Communicate effectively (in writing, verbally and IT).

D4- Use IT to prepare, process, present and transmit information.

4 - COURSE CONTENTS:

TOPIC	Total hours	Hours for lecture	Hours for practical
Introduction	12	6	6
Poultry-borne Bacterioses	80	40	40
Poultry-borne Mycoses	20	10	10
Poultry-borne Parasitoses	40	20	20
Poultry-borne Viroses	40	20	20
Total	192	96	96

5- TEACHING & LEARNING METHODS:

***Lectures**

- Using data show to display slides, photos and videos, white board

***Practical and small group sessions:**

- Practical training: Practical demonstrations, practice of skills, and discussions

*** Self learning**

- Library researches.
- Internet researches.
- Discussion in the researches.
- Preparation of posters
- Preparation of scientific reports.

*** Audiovisual**

- Video show.

6. METHODS FOR STUDENTS With limited capabilities:-

*No disabled students until now, but if present the methods are:-

- Activation of office hours.
- Discussion with them during practical session.

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination
<u>7.b Time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year
<u>7.c Grades</u>	50	25	25

8. LEARNING AND REFERENCE MATERIALS:

8-1: BASIC MATERIALS:

- Text books: available for students in the faculty library.
- Overhead and slide projectors and data show presentations used during teaching.

8-2: Recmended books:

- Zoonoses and communicable diseases common to man and animals. Pan American Health Organization, 2003.
- Waterborne zoonoses: identification, causes, and control. Cotruvo, J (2004).
- Zoonoses: biology, clinical practice, and public health control. Palmer et al., (1998).

8.4: web sites and jouranlsand so on

- www.pubmed.com

- www.oie.int
- www.who.int
- www.cdc.gov
- Transboundary and emerging diseases (Journal)
- Zoonoses and Public health (Journal)
- Vector Borne and Zoonotic Diseases (Journal)

9.1.Course content ILOs Matrex:

TOPIC	K.U (A)	IS (B)	P.P.S (C)	G.T.S (D)
Introduction	A1-A4	-	C1	-
Poultry-borne Bacterioses	A2-A3-A4-A5-A6	B1-B2-B3-B4	C1-C2-C3-C4	D1-D2-D3-D4
Poultry-borne Mycoses	A2-A3-A4-A5-A6	B1-B2-B3-B4	C1-C2-C3-C4	D1-D2-D3-D4
Poultry-borne Parasitoses	A2-A3-A4-A5-A6	B1-B2-B3-B4	C1-C2-C3-C4	D1-D2-D3-D4
Poultry-borne Viroses	A2-A3-A4-A5-A6	B1-B2-B3-B4	C1-C2-C3-C4	D1-D2-D3-D4

9.2.Assessment Ilos matrix:

Methods	I.L.O.S Evaluation				Marks allocated
	K.U (A)	IS (B)	P.P.S (C)	G.T.S (D)	
Written examination	A1.A2.A3.A4.A5. A6	B1,B2,B3		D2	50
Oral examination	A1.A2.A3.A4.A5. A6	B1.B2.B3.B4		D3.D4	25
Practical examination		B1.B2.B3	C1.C2.C3.C4	D1.D3.D4	25

Course Coordinator:

Head of Department:

Dr. Walid Elmonir

Prof. Dr. Tarek Mousa Balabel

Kafrelsheikh University
Faculty of Veterinary Medicine
Department of Parasitology

Program Specification for PhD Degree
(2021-2022)

Program Title: Doctor of Philosophy
(Parasitology)

Program Specification for PhD Degree (2021-2022)

A- Administrative information:

- 1- Awarding Body:** Kafrelsheikh University
- 2- Teaching Body:** Faculty of Veterinary Medicine
- 3- Department responsible:** Parasitology
- 4- Program Title:** PhD Degree in Veterinary Medicine (Parasitology)
- 5- Final award:** PhD Degree
- 6- Registration period:** 3-5 years
- 7- Program Coordinator:**
- 8- External evaluator:**
- 9- Date of revision:**
- 10- Date of approval:**

B- Professional information:

1- Aim of the Program:

- Allow graduate to create new knowledge and understanding in parasitology.
- Enable graduate to achieve competency in modern technology
- Provide the graduate with the opportunity to develop communication skills, recent techniques and tools in the field of parasitology and experience of scientific research skills.
- Giving the graduate the ability to be creative to advance parasitology through new scientific research.
- Enable graduate to achieve capability in modern technology to develop practical research project.
- Demonstrate an awareness of the connections between disciplines and develop the ability to engage critically with scientific literature and to critically review and present their own research data for the improvement of

parasitology.

- Have the ability of data statistical analysis, results interpretation and dissertation, presentation skills.
- Exhibit awareness about current parasitological problems and mastering the identification of problems and finding solutions based on sound scientific research concepts by effective utilization of the available resources in addition to improving as well as offering new resources.
- Guarantee of veterinary professional practice regulations and ethics in the field of parasitology.

2- Academic standards:

Academic reference standards (ARS) adopted by the faculty committee No (1) 14/9/2014

3-Graduate attributes:

At the end of the program, graduate must be able to:

- 1) Mastering the basics and methodologies of scientific research in parasitology for better dealing with field problems professionally.
- 2) Performing continuous effort to add knowledge about improvement of parasitological diagnosis and parasitic vaccines.
- 3) Perfect application of scientific research basics and methodologies in Parasitology, and using its various tools.
- 4) Application and use of analytical methodology in the field of Parasitology.
- 5) Application of gained specialized knowledge and integrating them with the relevant knowledge in Parasitology.
- 6) Awareness with current problems and recent visions in Parasitology.
- 7) Identification of parasitological problems suggesting suitable and economic solutions.
- 8) Mastering an appropriate scale of specific professional skills, and using suitable technological means to serve professional practice.
- 9) Effective communication with students, animal breeders and owners of animal and poultry farms and leading work team.
- 10) Decision making in various parasitological contexts.
- 11) Employment of the available parasitological techniques efficiently to improve diagnostic ability and control of parasitic diseases.
- 12) Awareness with his role in society development and using improved diagnostic techniques for preservation of a clean environment.
- 13) Reflection of the commitment to act with integrity, credibility and the

rules of profession.

14) Realizing the importance of self and life-long learning and progress.

4-Programme Intended Learning outcomes (ILOs)]

a. Knowledge and understanding:

By the end of this program the graduate should be able to:

- a.1. Recognize recent theories, principles and knowledge in the field of parasitology and related fields..
- a.2. Apply Principles methodologies and ethics of scientific research and its tools in in the field of parasitology.
- a.3. Define legal and ethical principles of the area of parasitology
- a.4. Recognize Principles and the basics of quality assurance the field of parasitology.
- a.5. Apply knowledge and understanding in the field of parasitology for enhancing animal health.
- a.6. Illustrate the host parasite relationship and microbial pathogenesis and their impact on environment.
- a.7. Describe the principles, methodologies and ethics of scientific research of parasitology.

b. Intellectual skills:

At the end of the program, graduate must be able to:

- b.1. Assess and criticize different data and information in parasitology
- b.2. Analyze and evaluate information about parasitology and the eliciting from them
- b.3. Solve professional problems in parasitology using available data under field or laboratory conditions.
- b.4. Perform scientific research studies in parasitology that can give significant impact on the animal health.
- b.5. Conduct scientific research studies in parasitology aiming at enhance animal health.
- b.6. Formulating scientific papers in parasitology with the ability to match and discuss his own findings with those of other scientists.
- b.7. Asses risks in the field of parasitology.
- b.8. Share and lead scientific open discussion in the field of parasitology based on evidences and proofs.
- b.9. Planning to enhance the performance in the field of parasitology.
- b.10. Make professional decisions and suggestions for improvement of

animal health under different professional contexts

- b.11.** Innovate new method or technique for improvement of parasitology.
- b.12.** Perform evidence-based discussion and conversation for his PhD defense

c. Practical and professional skills:

By the end of this program the graduate should be able to:

- c.1.** Master the fundamental and recent professional skills in the field of parasitology including experimental design, data collection, presentation and analysis.
- c.2.** Write and evaluate professional parasitology reports.
- c.3.** Evaluate and modernize methods and tools in improvement of diagnostic parasitology
- c.4.** Use modern technological means to serve improvement control of parasitic diseases.
- c.5.** Plan for the development of a research project in the field of parasitology taking in consideration the methodology, ethical and bio- safety with precise cost estimation and time frame required.

d. General and transferable skills:

At the end of the programme, graduate must be able to:

- d.1.** Communicate effectively in different ways, including participation in workshops and seminars and utilizing the advanced information technology in the improvement parasitology professional practice.
- d.2.** Utilize information technology to serve professional practice.
- d.3.** Teach others and evaluate their performance.
- d.4.** Self-evaluate and identify personal learning requirements
- d.5.** Lead team under different professional circumstances.
- d.6.** Use of different sources for obtaining information and knowledge.
- d.7.** Manage scientific meetings with the ability to manage time efficiently.

5-Teaching and Learning Methods:

The program features a variety of teaching approaches for different intended learning objectives, including lectures, practical and lab sessions, and seminars.

6-Assessments:

The program depends on different assessment ways:

a. Course assessment:

1. Final written exam
 - To assess understanding the overall aim of the course, knowledge and understanding, intellectual skills and general and transferable skills
 2. Practical exam
 - To assess abilities of recognition and recall as well as the student's acquired practical and professional skills.
 3. Oral exam
 - To assess skills of intellectual analysis and discussion beside the basic scientific knowledge.
- b. Qualifying examination**
 The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work
- c. PhD Thesis assessment**
- Annual reports adopted by the Faculty.
 - Finally, the assessment of thesis measures the individual student ability to work independently in the field specialization.
 - Final evaluation and approval by a judging committee of at least three professors including one or more of the supervisors and an external professor. This assesses the ability to write a review article, perform the needed practical steps and to present the results in tables and graphs. In addition, the skills of analysis of results and discussion with previous findings obtained by other authors are also assessed.

Assessment of program intended learning outcomes

Tool or method	ILOs
Written	a1-2; b1-2;
Oral	a1-2; b1-2;
Practical	c1-3
Qualifying Exam	a3-7; b3-12, d1-7
Thesis	a3-7; b3-12; c3-5; d1-7

7. Program structure

a. Program duration (years):

PhD degree duration at least 3 years and it should not exceed a period of 5 years, an extension could be approved by the faculty council depending on the

supervisor report that approved by the department council and postgraduate and research committee refers to the universities regulation law (article 18).

b. Program courses:

Pre-doctor study

In which student should study 2-5 courses of the postgraduates stated in article (28) in regulation law list, not exceed 10-12 theoretical and practical hours weekly for 12 months. These courses are selected by the department council should include at least 4 hours from subsidiary courses and approved by postgraduate and research committee and faculty council. These courses must not be previously studied in the Mater program. The student will entitled to apply for the exam only after meeting attendance rate for each courses. The student should pass written, practical and oral exams successfully in all courses, and the examination is held two times annually.

c- Qualifying examination

The applicant should pass a qualifying examination in which the student is examined for his ability to solve and face scientific problems and judge the advancement in his research work.

d- Scientific thesis

The applicant should conduct an innovate research on the subject that has been registered for at least 2 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor that has the right to authorize the student to do scientific experiments at recognized scientific institute. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met.

. Courses to be studied during pre-detector year

1. Principle courses

One or more of PhD principle courses so that not exceed 8 hr must be studied during pre-doctor academic year. The principle courses for PhD in Parasitology include:

Subject	Code	Course title	No of hours/week
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			Lecture	Practical Lab
Parasitology	188/1	88- Veterinary medical entomology and acarology	2	2
	189/2	89-helminthology	2	2
	190/2	90- protozoology	2	2
	191/2	91- Avian and rabbits parasitology	2	2
	192/2	9qMalacology and its vet. Importance	1	2
	193/2	93- parasitic Immunology	1	2
	194/2	94- Clinical parasitology	2	2
	195/2	95-Wild life parasitology	1	2
	196/2	96-Special vet. Parasitology	2	2
	197/2	97- Physiology and biochemistry of parasites	2	2
	198/2	98- Fish parasitology	1	2

2. Subsidiary courses:-

According to the research title, 2-3 courses are selected by the department council from the following list.

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology	101/2	1- Applied anatomy	2	2
	102/2	2- Anatomical techniques and surface anatomy	2	2
	103/2	3- Osteology and arthrology	2	2
	104/2	4- Comparative digestive system	2	2
	105/2	5- Comparative uro-genital system	2	2
	106/2	6-Comparative respiratory system	2	2
	107/2	7- Comparative cardiovascular system	2	2
	108/2	8- Comparative nervous system and endocrine glands	2	2
	109/2	9- General and special embryology	2	2
	110/2	10- Avian anatomy	1	2

Histology	111/2	11- cytology and cytochemistry	1	2
	112/2	12- general histology	2	2
	113/2	13- Histology and histochemistry of blood, lymph and cardiovascular system.	1	1
	114/2	14- Comparative histology and histochemistry of body muscles, heart and blood vessels	1	1
	115/2	15- Comparative histology and histochemistry of respiratory system	1	1
	116/2	16-Comparative histology and histochemistry of digestive system	2	2
	117/2	17- Comparative histology and histochemistry of urogenital system	2	2
	118/2	18- Comparative histology and histochemistry of nervous and endocrine systems	2	2
	119/2	19- Histology and histochemistry of special sensors	1	2
	120/2	20-Histology and histochemistry of skin, hooves, claws and Nails	2	2
	121/2	21- Avian histology	2	2
	122/2	22- Fish histology	1	2
Physiology	123/2	23- Physiology of mammalian endocrine and reproduction	2	2
	124/2	24- poultry physiology (advanced)	2	2
	125/2	25- physiology of muscle and nerve	1	2
	126/2	26- physiology of ruminants	2	2
	127/2	27- physiology of environment, adaptation and cell	2	2
	128/2	28- physiology of blood	2	2
	129/2	29- physiology of digestion, metabolism and energy	2	2
	130/2	30- Physiology in pollution	1	2
	131/2	31- Radioactive isotopes and	2	2

		biological uses		
	132/2	32– Physiology of heights	1	1
	133/2	33-Fish physiology.	1	2
Biochemistry				
	134/2	34- Basics of biochemistry	2	3
	135/2	35- Metabolism	2	2
	136/2	36- Biochemistry of tissue and body fluids .	2	2
	137/2	37- Biochemistry of hormones and reproduction	2	2
	138/2	38- Feeding biochemistry	2	2
	139/2	39- Clinical biochemistry	2	2
	140/2	40- Avian biochemistry	2	2
	141/2	41- Microbial biochemistry	2	2
	142/2	42- Biochemistry of radiation	1	2
	143/2	43- Fish biochemistry		
Animal behavior and management				
	144/2	44- Behavior and management of ruminants (specific courses in cattle, buffalo, sheep, camels and goats)	2	3
	145/2	45- Behavior and management of horses	2	3
	146/2	46- Behavior and management of pet animals	1	2
	147/2	47- Behavior and management of laboratory animals	1	2
	148/2	48- Behavior and management of wild animals	2	2
	149/2	49- Behavior and management of poultry	2	2
	150/2	50- Behavior and management of rabbit	1	2
	151/2	51- Behavior of experimental animals	1	2
Nutrition and clinical nutrition				
	152/2	52- Basics of animal nutrition	2	2
	153/2	53- feedstuff	2	2
	154/2	54- nutrition of farm animals and	2	2

		fish specific courses in (cattle and buffalo nutrition – sheep and goat nutrition – camel nutrition- equine nutrition – fish nutrition)		
	155/2	55- poultry and rabbit nutrition(advanced)	2	2
	156/2	56- wild animal nutrition	1	2
	157/2	57- laboratory animal nutrition	1	2
	158/2	58- feed additives	1	2
	159/2	59- feedstuff analysis	2	2
	160/2	60- Quality control of feed and feed factories	2	2
	161/2	61- Clinical nutrition and malnutrition	2	2
	162/2	62- Fish nutrition	1	2
Pathology	163/2	63- General pathology and neoplasm(progressive)	2	2
	164/2	64-pathology of microbial and parasitic diseases in animal	2	2
	165/2	65- pathology of bad nutrition	1	2
	166/2	66- pathology of environmental pollution	1	2
	167/2	67- pathology of reproductive diseases	1	2
	168/2	68- Avian pathology	2	2
	169/2	69-Experimental pathology	2	2
	170/2	70- toxins pathology	2	2
	171/2	71- surgical pathology	2	2
	172/2	72- Pathology of experimental animals.		
	173/2	73- Pathology of genetics		
	174/2	74-- Fish pathology	2	2
Clinical pathology	175/2	75- Advanced clinical pathology	2	2
	176/2	76-Organ function tests and body and urine balance	2	2
	177/2	77- Clinical hematology and bone marrow examination	1	2

Bacteriology, immunology and mycology	178/2	78- General bacteriology(advanced)	1	2
	179/2	79-systemic bacteriology	2	3
	182/2	80- Advanced immunology	2	2
	183/2	81- Advanced mycology	1	2
Virology	180/2	82- General virology	1	2
	181/2	83-Systemic virology(specific courses)	2	3
	182/2	84- Advanced immunology	2	2
Mixed courses between Bacteriology and Virology	184/2	85- Microbiology of poultry	2	2
	185/2	86- Microbiology of ??????	1	2
	186/2	87- Microbiology of animal product	2	2
	187/2	88- Fish Microbiology	1	2
81- Advanced immunology			2	2
Pharmacology	199/2	100- Aeneral pharmacology (advanced)	2	2
	200/2	101- pharmacology of autonomic nervous system and autocoid	2	2
	201/2	102- pharmacology of central nervous system	2	2
	202/2	103 pharmacology of anesthesia	2	2
	203/2	104- Systemic pharmacology	2	2
	204/2	105- pharmacology of metabolism	2	2
	205/2	106- pharmacology of hormones	2	2
	206/2	107-Chemotherapy	2	2
	207/2	108-Biological evolution of drug	1	1
Hygiene and control of milk and dairy products	208/2	108- Hygienic control of milk and dairy products	2	2
	209/2	109- Microbiology of milk and dairy products	2	2
	210/2	110- Milk technology and preservation	2	2
	211/2	111- Food analysis	2	2
	212/2	112- Food poisoning	1	2
	213/2	113- Specific courses on sources of contamination, disturbances of milk production, milk born diseases,	1	1

		hygiene of table egg, edible fats and oils		
	214/2	114- The sanitation of dairy plant	2	2
Control of meat hygiene and their products	215/2	115- Slaughter animal Hygiene	1	2
	216/2	116- Abattoir management and hygiene	2	2
	217/2	117- Hygienic control of meat and their product	2	2
	218/2	118 inspection of poultry meat.	1	2
	219/2	119- Food technology	1	2
	220/2	120- Microbiology of meat and fish meats and their product	2	1
	221/2	121- Chilled meal microbiology	1	2
	222/2	122- Analysis of meat and fish and their product	1	2
	223/2	123- Preservation of meat, poultry, fish and their products	1	2
	224/2	124- Sanitation affairs of meat and fish plants.	2	2
Internal medicine	225/2	125- advanced general medicine	2	2
	226/2	126- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	227/2	127- diseases of equines	2	2
	228/2	128 diseases of pet animals	2	2
	229/2	129- diseases of wild animals	2	2
	230/2	130- diseases of metabolic disorders	2	2
	231/2	131- nutritional deficiency diseases	2	2
	232/2	132- Skin diseases	1	2
	233/2	133 - diseases of newly born animals	2	2
	234/2	134- Stress diseases during animals transport.		
Infectious diseases	235/2	135- Infectious diseases of cattle	2	2
	236/2	136- Infectious diseases of sheep and goat	2	2
	237/	137- Infectious diseases camel	2	2

	2			
	238/ 2	138 Infectious diseases of equine	2	2
	239/ 2	139- Infectious diseases of pet animals	2	2
	240/ 2	140- Infectious diseases lab animals	1	2
	241/ 2	141- Infectious diseases of udder and newly born animals	2	2
	242/ 2	142- Infectious diseases buffaloes	2	1
	243/2	143- Infectious diseases of wild animals.		
Forensic medicine and toxicology	244/2	144- Forensic medicine and veterinary procedures	2	2
	245/2	145- general toxicology	2	2
	246/2	146- environmental toxicology	2	2
	247/2	147- forensic toxicology	2	2
	248/2	148- laboratory diagnostic toxicology	2	2
	249/2	149- Drug toxicology		
Theriogenology	250/2	150- Female infertility (special specific courses in ruminants- equine- pet animals)	2	2
	251/2	151- Male infertility (special specific courses in ruminants- equine- pet animals)	2	2
	252/2	152- Genital diseases.	1	1
	253/2	153 - obstetrics (special specific courses in farm and pet Animals)	2	2
	254/2	153- reproduction and immunity	1	2
	255/2	155- artificial insemination in ruminants	2	2
	256/2	156- artificial insemination in	2	2

		equine		
	257/2	157- artificial insemination in pet animals	1	2
	258/2	158- embryo transfer	1	2
Veterinary Surgery				
	259/2	159- General surgery (advanced)	2	2
	260/2	160- Special surgery(organs)	2	3
	261/2	161- surgery of eye, ear, nose and larynx	2	2
	262/2	162 digestive system surgery	2	2
	263/2	163- surgery of the limbs, hoof and claws	2	2
	264/2	164- experimental surgery	2	2
	265/2	165- anesthesiology	1	1
	266/2	166- radiology and ultrasonography	2	2
Poultry and rabbit diseases				
	267/2	167- bacterial diseases of poultry	2	2
	268/2	168- viral diseases of poultry	2	2
	269/2	169- fungal diseases of poultry	2	2
	270/2	170 parasitic diseases of poultry	1	2
	271/2	171 - nutritional diseases of poultry	1	2
	272/2	172-diseases of rabbit (advanced)	2	2
	273/2	173-Diseases of wild and migrating birds	2	2
	274/2	174- Preventive vaccines and their evaluation in polutry	2	2
	275/2	175- Laboratory diagnosis of poultry diseases.		
Animal and environmental hygiene				
	276/2	176- farm animal hygiene (advanced)	2	2
	277/2	177- poultry hygiene (advanced)	2	2
	278/2	178- environmental hygiene and pollution	2	2
	279/2	179- control of contagious diseases	2	2
	280/2	180- eradication of rodents and disease vector	2	2
	281/2	181- insecticides and public health	2	2
	282/2	182-hygiene of animal enclosures-	2	2

		specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses		
	283/2	183-disinfections and disinfectants	2	2
	284/2	184- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses				
	285/2	185- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
	286/2	186- role of rodents in transmission of zoonoses	2	2
	287/2	187- role of wild animals in transmission of zoonoses	2	2
	288/2	188- role of birds (special courses in: poultry, wild migrating or pets) in transmission of zoonoses		
Genetics and genetic engineering				
	289/2	189- Genetics of microorganisms .	1	2
	290/2	190- Genetic engineering(advanced)	1	2
	291/2	191- Cytological genetics	1	-
	292/2	192- Genetics of genuses.	2	-
	293/2	193- physiological genetics	2	-
	294/2	194- Chemical and radiological genetics.	1	2
Animal production				
	295/2	195- Animal breeding and improvement (advanced).	2	-
	296/2	196- Poultry breeding and improvement (advanced).	2	-
	297/2	197- Cattle and buffalo production (advanced).	2	2
	298/2	198- Sheep and goat production (advanced).	2	2
	299/2	199- Poultry production (advanced).	2	2
	300/2	200-Rabbit production (advanced).	2	2

	301/2	201-Improving by artificial insemination in poultry and rabbits.	2	2
Fish diseases and management	302/2	202- Biology of fish.	2	2
	303/2	203-Fish diseases (advanced)	2	2
	304/2	204-Fish farms.	1	2
	305/2	205-Fish breeding .	2	2
Economic and farms management	306/2	206- economics of animals and dairy production	2	-
	307/2	207- economics of poultry farms	2	-
	308/2	208-economics of fish farms	2	-
	309/2	209- feasibility studies	2	-
	310/2	210- farm management	2	-
	311/2	211- economics of beef production	2	-
Biostatistics	312/2	212- Biostatistics (advanced)	2	-
	313/2	213- Experimental design	2	2
	314/2	214- Computer and data processing	2	1

8. Program Admission Requirements:

- The applicant must have a Master degree in Veterinary Medical Sciences (**Parasitology**) of one of the Egyptian Universities or hold an equivalent degree from another recognized scientific institute.

9. Regulations for progression of program

1. Registration period for the Ph. D. program in veterinary medical science lasts for at least three calendar years after the approval date by the faculty council and it should not exceed a period of five years.
2. An extension could be approved by the faculty council depending on the supervisor report that approved by the department council and the postgraduate & research committee taking into account the provisions of the universities regulation law.

3. The candidate should conduct the supplementary study assigned by the department council and approved by both the postgraduate & research committee and the faculty council.
4. The supplementary study run in three curricula, two of which of his department of specialization and the third out of the department of the selected courses. The applicant will be informed to pass for the exam only after meeting an attendance rate for each curriculum.
5. The applicant should pass written, practical and oral exams successfully in all courses.
6. The Faculty council has the right to rob the applicant from entering the exam if this attendance courses is less than 75%. Failure in or depriving from entering one or more course did not requires reexamination of successful passed courses.
7. The applicant should conduct an innovate research on the subject that has been registered for at least 3 years from the date of registration approved by the faculty council. And the faculty council depending on a request from the supervisor has the right to authorize the student to do scientific experiments at recognized scientific institute.
8. The applicant should submit a seminar(Qualifying examination) within 2 years after registration about his research and specialization subject filed that accepted by the committee of professors and assistant professors (5 or 7 in number).
9. The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met:Pass all supplementary curriculums and acceptance of the seminar presented by the applicant.
10. The applicant should submit 4 copies of his thesis concerned department council to form committee examining the thesis to be presented to the postgraduate studies committee and the faculty council, and incase of thesis approval by the

department council, the applicant will submit 6 copies for the faculty library, 1 copy for public university library before introducing the report of examination committee to the post graduate studies committee and the faculty council.

11. Registration will be during March and September of each year. The applicant should submit a request enrolment for the dean who forwards bit to the concerned department council to determine the research subject and the study program and then take calendar after complete documentation on the faculty council for approval.
12. The thesis title should be identified before being submitted at least 2 months and the judging committee has the right to amend the title without prejudice the subject of research.
13. The Faculty council has the right to suspend the student enrolment for a certain period if he has acceptable excuse preventing him from continuing his study or research, and his period will not counted within the period stated in article 14 and 18.

10. Registration will be cancelled in one of the following cases:

1. If the supervisors report during the registration period is unsatisfactory (2 reports).
2. If the applicant does not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

After approval:

- 1- The applicant should submit 10 copies of the thesis after its validity approved by the judging committee to be distributed to the committee members and the faculty library.

- 2- The judging committee can decide the exchange of the thesis with other universities or printing it on the expense of the university.

11. Examination Regulations

- a- Time of written exam, 3 hours for each course that has 3 hours or more for lecture / practical /week. **If has less than 3 hours/week, the time of exam, is 2 hours only.**
- b-The final degree of each course which has 3 hours (lecture and practical) per week is **100 and less than 3 hours is 50 degrees and divided into 50% for written exam, and 50% for practical and oral exam.**

12. Marking scale as follow:-

Grade		Percentage
Excellent		> 90
Very good		>80
Good		>70
Pass		>60
Fail	Weak	45 to less than 60
	very weak	Less than 45

13. Program completion:

- Successfully completion of the required courses and submission of a thesis.

14. Evaluation of program outcomes

Code	Evaluator	Tools	Sample
I	Postgraduate students	Questioners	20%
2	Stakeholder	Questioners & Open discussion	10
3	Alumni	Questioners	15
4	External examiners	Questioners	5

5	External evaluators	Questioners & Open discussion	5
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Program Co-ordinator:

Prof. Dr.

Head of Department:

Prof. Dr.

Matching program ILOs with ARS-Matrix

Program ILOs	ARS																																	
	K&U (a)							I.S. (b)												P.P. (c)					G.T. (d)									
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7						
K&U	1	2	3	4	5	6	7																											
I.S.								1	3	4	6	7	8	10	11	12																		
P.P.																	1	2	3	4	5													
G.T.																												1	2	3	4	5	6	7



Kafrelsheikh University



Kafrelsheikh University

Faculty of Veterinary Medicine



ARS for PhD in Veterinary Medicine (Parasitology)

1) Graduate attributes

The graduate should have the ability for:

- 1) Mastering the basics and methodologies of scientific research in Parasitology.
- 2) Making continuous effort to add knowledge in microscopical and immunological methods in Parasitology.
- 3) Application of analytical and criticizing method in Parasitology and related areas.
- 4) Interpreting the laboratory investigations in parasitology and serology.
- 5) Showing deep awareness with the ongoing problems and modern molecular theories in Parasitology.
- 6) Understand and interpret different reports in Parasitology.
- 7) Mastering a wide range of professional skills in Parasitology.
- 8) Acquiring trends towards developing modern methods and tools in professional practice.
- 9) Develop new assays to identify the pathogenic parasites of veterinary and zoonotic significance.
- 10) Effective communication and leading work team through professional scale.
- 11) Decision making in different professional situations.
- 12) Employment and development of available resources efficiently and working on finding new ones.
- 13) Awareness with his role in society development and community preservation from different parasitic infestations.
- 14) Acting with integrity, credibility and according to the rules of profession.
- 15) Commitment with continuous self and life-long development and transferring of his knowledge and experience to others.

A) Knowledge and understanding

Adopted ARS

NARS (PhD)



	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Recent theories, principles and knowledge in mechanisms and pathogenesis of parasitic infestations in addition the immune responses to parasites	Recent theories, principles and knowledge in the field of specialization and related areas
2)	Basics and moral ethics of scientific research in the field of Parasitology and its different tools	Basics, methodologies and ethics of scientific research and its different tools
3)	Legal and ethical principles of control, prevention and eradication of parasitic diseases.	Legal and ethical principles of professional practice in the area of specialization
4)	Outline the principles of laboratory safety and regulations in laboratory of Clinical Parasitology	Principles and the basics of quality assurance in the area of professional practice in the field of specialization
5)	Awareness with the effect of parasites on the animal body and production of milk and meat.	Awareness with the effect of professional practice on the environment and methods of its maintain and development
6)	Recognize the different molecular and serological protocols for parasitic diagnosis	

B) Intellectual skills

	Adopted ARS	NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Analyzing and evaluating microscopical and serological tests and extrapolating from them	Analyzing and evaluating information in the field of specialization and the eliciting from them
2)	Solving professional problems in diagnosis and control of parasitic diseases using available data	Solving professional problems using available data
3)	Performing scientific research studies that add to knowledge in parasitology	Conducting scientific research studies that add to knowledge
4)	Formulating scientific papers and publishing them in international journals	Formulating scientific papers
5)	Design a Risk Assessment Form and performing a Risk Assessment for an item within parasitology	Risk-assessment in the field of specialization



	laboratory	
6)	Planning to enhance the performance in the laboratory diagnosis of parasitic diseases using molecular techniques.	Planning to enhance the performance in field of specialization
7)	Using appropriate intellectual strategy to deal with laboratory diagnostic problems.	Making professional decisions under different professional contexts
8)	Creation of new biotechnological techniques that aid in identification of different stages of parasites	Creation and innovative in the area of specialization
9)	Develop a trial and error method to encourage learning and practice.	Dialogue and discussion based on evidences and proofs

C) Professional and practical skills

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and accommodate the following:</i>
1)	Mastering basic and modern professional skills in isolation and identification of parasites and their infective stages	Mastering basic and modern professional skills in the area of specialization
2)	Writing and evaluating professional reports in Parasitology and serology	Writing and evaluating professional reports
3)	Evaluating and modernizing methods and tools in parasitology	Evaluating and modernizing methods and tools in the area of specialization
4)	Using modern technological means to serve protect animals against parasitic infestations and diseases transmitted by insects	Using modern technological means to serve professional practice
5)	Planning for the improvement of veterinary medicine by applying molecular techniques and developing performance of others	Planning for the improvement of professional practice and developing performance of others

D) General and transferable skill

Adopted ARS		NARS (PhD)
	<i>By the end of this program the graduate should understand and accommodate the following:</i>	<i>By the end of this program the graduate should understand and</i>



		<i>accommodate the following:</i>
1)	Effective communication with colleagues, students and veterinarians.	Effective communication
2)	Utilizing information technology to serve development of clinical Parasitology practice	Utilizing information technology to serve development of professional practice
3)	Teaching others and evaluating their performance	Teaching others and evaluating their performance
4)	Self-assessment and continuous learning	Self-assessment and continuous learning
5)	Using different resources to obtain knowledge and information	Using different resources to obtain knowledge and information
6)	Team working and leading a team in familiar professional contexts	Team working and leading a team in familiar professional contexts
7)	Management of scientific meetings with the ability to manage time efficiently	Management of scientific meetings with the ability to manage time efficiently

ثالثا: برامج الدكتوراه

١- مواصفات الخريج

خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:

١. إتقان أساسيات و منهجيات البحث العلمي
٢. العمل المستمر علي الإضافة للمعارف في مجال التخصص
٣. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
٤. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطا و مطورا للعلاقات البيئية بينها
٥. إظهار وعيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
٦. تحديد المشكلات المهنية و إيجاد حلولاً مبتكرة لها
٧. إتقان نطاقا و اسعا من المهارات المهنية في مجال التخصص
٨. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
٩. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
١٠. التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
١١. اتخاذ القرار في ظل المعلومات المتاحة
١٢. توظيف الموارد المتاحة بكفاءة و تنميتها والعمل على إيجاد موارد جديدة
١٣. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
١٤. التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة
١٥. الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

٢- المعايير القياسية العامة

المعرفة و الفهم:

بإنهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا علي الفهم والدراسة بكل من:



أ- النظريات و الأساسيات والحديث من المعارف في مجال التخصص والمجالات ذات العلاقة

ب- أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
ت- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
ث- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
ج- المعارف المتعلقة بآثار ممارسته المهنية على البيئة و طرق تنمية البيئة وصيانتها
المهارات الذهنية

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

- أ- تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
- ب- حل المشاكل المتخصصة استنادا على المعطيات المتاحة
- ج- إجراء دراسات بحثية تضيف إلى المعارف
- د- صياغة أوراق علمية
- هـ- تقييم المخاطر في الممارسات المهنية
- و- التخطيط لتطوير الأداء في مجال التخصص
- ز- اتخاذ القرارات المهنية في سياقات مهنية مختلفة
- ح- الابتكار/ الإبداع
- ط- الحوار و النقاش المبني على البراهين والأدلة

المهارات المهنية

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

- أ- إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
- ب- كتابة و تقييم التقارير المهنية
- ج- تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
- د- استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
- هـ- التخطيط لتطوير الممارسة المهنية و تنمية أداء الآخرين

المهارات العامة و المنتقلة

بانتهاج دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:

- أ- التواصل الفعال بأنواعه المختلفة
- ب- استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية
- ت- تعليم الآخرين و تقييم أداءهم
- ث- التقييم الذاتي و التعلم المستمر
- ج- استخدام المصادر المختلفة للحصول على المعلومات و المعارف
- ح- العمل في فريق و قيادة فرق العمل
- خ- إدارة اللقاءات العلمية و القدرة على إدارة الوقت



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 188/2

Course title: Veterinary Medical Entomology

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 192 hrs.

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical: 96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to provide students with basic and fundamental knowledge, skills and positive attitude concerning insects and arthropods affecting different animals and birds.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING:

By the end of the course, students should be able to:

- a.1. Define the fundamental concepts of veterinary medical entomology and the technical vocabulary used in this field.
- a.2. Describe different species of insects (Class: Insecta) and their biological and morphological features with reference to their medical importance in transmitting diseases (arthropod borne diseases) or in inducing lesions (blood loss and myiasis) to the affected different host animals and birds.
- a.3. Explain different species of Crustacea, their role as intermediate hosts and how could they induce or transmit diseases among different animals, and birds.
- a.4. Restate different species of Myriapoda and how could they induce or transmit diseases (their role as intermediate hosts) among different animals, and birds.
- a.5. Contrast different species of Arachnida (including Ticks and mites) and their stages in the environment based on morpho-biological, geographical, clinical observation, and their ability to transmit different diseases (Tick-borne diseases).
- a.6. Summarize different species of Pentastomatida and their role to induce diseases in different animals, and birds.
- a.7. Identify different control strategies to eliminate the insects, crustaceans, myriapoda, arachnids, pentastomatids and their stages in the environment to diminish their presence and subsequently, diseases and conditions among animals and birds.

3-B: INTELLECTUAL SKILLS:

By the end of the course, students should be able to:

- b.1. Collect the field samples of different arthropods /insects and their stages to make proper laboratory and Microscopical identification.
- b.2. Organize the differential diagnosis between infections and diseases caused by various arthropods /insects.
- b.3. Analyze the immune reaction of the affected animal /bird host to the infestations with



arthropods /insects.

b.4. Compare between the diagnostic stages of different arthropods /insects.

3- C: PRACTICAL AND PROFESSIONAL SKILLS:

By the end of the course, students should be able to: -

- c1.** Prepare the samples of arthropods /insects in permanent slides for Microscopical examination.
- c2.** Diagnose the different arthropods /insects infestations in different hosts by direct and indirect methods.
- c3.** Select rational control and prevention programs for arthropods population based on his/her knowledge of arthropods biology.

3- D: GENERAL SKILLS:

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and colleagues.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1.Introduction	10	-	10
2.Class: Insecta	28	32	60
3.Class: Crustacea	10	10	20
4.Class: Myriapoda	6	6	12
5.Class :Arachnida	28	32	60
6.Class Penatstomida	4	6	10
7.CONTROL OF ARTHROPS	10	10	20
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about arthropods which has veterinary and medical importance

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS



Advanced lectures*	a1 to a7	b1 to b4		d1, d2
Practical sessions		b1 to b4	c1 to c3	d1, d2, d3
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a7	b1 to b4	c1 to c3	d1, d2, d4

Lectures may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- No disabled students until now, but if present the methods are:-
 - *Activation of office hours.
 - *Discussion with them during lectures.

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b4		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a7	b1 to b4		d1
Student activities	a3, a7			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- Mullen, Gary R., and Lance A. Durden, eds. *Medical and veterinary entomology*. Academic press, 2009.
- Kettle, Douglas Stewart. *Medical and veterinary entomology*. Croom Helm Ltd, 1984.
- Eldridge, Bruce F., and John D. Edman, eds. *Medical entomology: a textbook on public health and veterinary problems caused by arthropods*. Springer Science & Business Media, 2012.
- Russell, Richard C., Domenico Otranto, and Richard L. Wall. *The encyclopedia of medical and veterinary entomology*. CABI, 2013.
- Wall, Richard, and David Shearer. *Veterinary entomology: Arthropod ectoparasites of veterinary importance*. Springer Science & Business Media, 1997.

8-2: Recommended books:



- Wall, Richard L., and David Shearer. *Veterinary ectoparasites: biology, pathology and control*. John Wiley & Sons, 2008.

8-3: Egyptian Knowledge Bank:

Williams, Ralph E. *Veterinary entomology: livestock and companion animals*. CRC Press, 2009.

Scientific Journals

1. Current research in parasitology & vector-borne diseases.
2. Parasites & vectors.
3. Journal of vector borne diseases.
4. Trends in parasitology.
5. Iranian journal of parasitology.
6. Parasitology international.
7. The Korean journal of parasitology.
8. Acta parasitologica
9. Journal of veterinary parasitology
10. Parasitology research.
11. Parasitology today.
12. Veterinary parasitology.

Scientific websites

- **The Egyptian Knowledge Bank:** <https://www.ekb.eg/web/guest/home>
- Arthropods and Protozoon Parasites Important to Vet Med
- [Ectoparasite Database](#)
- [Iowa State Entomology Image Gallery](#)
Pictures and information on everything from ants to stink bugs.
- [Medical Entomology](#)
Iowa state entomology index with links to a wide variety of relate entomology sites.
- [Tick ID](#)
The Rhode Island Department of Health Lyme Disease tick identification site.
- [Ticks & Tick-Transmitted Diseases in Oklahoma](#)
- [Veterinary Entomology](#)
Insects of veterinary importance.

Course Coordinator

Head of Department

Dr. Nagwa Mohammed Kandel

**Prof. Dr. Reda Elbastawisy
Khalafalla**



Course Matrix for Achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intellectual Skills				Practical & Professional Skills			General & Transferable Skills				
		1	2	3	4	5	6	7	1	2	3	4	1	2	3	1	2	3	4	
Introduction	10	✓															✓	✓	✓	✓
Class: Insecta	60		✓						✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
Class: Crustacea	20			✓					✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
Class: Myriopoda	12				✓				✓	✓	✓		✓	✓			✓	✓	✓	✓
Class :Archanida	60					✓			✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
Class Penatstomida	10						✓		✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
CONTROL OF ARTHROPDS	20							✓							✓		✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 189/2

Course title: Veterinary Helminthology

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 192 hrs.

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical: 96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to provide students with basic and fundamental knowledge, skills and positive attitude concerning helminthology in different animals, birds and fish.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING (K.U):

By the end of the course, students should be able to:

- a1. Define the fundamental concepts of Parasitology and with the technical vocabulary used in this field.
- a2. Identify different species of trematodes and their stages in the intermediate host (snails) based on morpho-biological, geographical, clinical observation, and their ability to induce diseases in different animals, and birds.
- a3. Describe different species of Eucestoda (true Cestodes) and their metacestodes in the intermediate hosts based on morpho-biological, geographical, clinical observation, and how could they induce diseases in different animals, and birds.
- a4. Explain different species of Cotyloda (Pseudophyllidea) and their metacestodes in the intermediate hosts based on morpho-biological, geographical, clinical observation, and how could they induce diseases in different animals, and birds.
- a5. Restate different species of nematodes and their stages in the environment based on morpho-biological, geographical, clinical observation, and by what method they induce diseases in different animals, and birds.
- a6. Summarize different species of Acanthocephala by studying their morpho-biological features besides how could they induce diseases in different fish and birds.
- a7. Contrast different control and prevention strategies to eliminate the helminths and their larval stages from the environment surrounding the different livestock animals.

3-B: INTELLECTUAL SKILLS (I.S):

By the end of the course, students should be able to:

- b.1. Organize the effective factors on the existence of helminths and the relevant disease severity to the affected hosts.
- b.2. Analyze the helminth -host relationship.
- b.3. Compare between different helminths.

3- C: PRACTICAL AND PROFESSIONAL SKILLS (P.P.S):

By the end of the course, students should be able to:

- c.1. Prepare permanent slides from freshly collected samples of trematodes, cestodes, nematodes and acanthocephalan parasites



c.2. Diagnose the different helminth infection in different hosts by direct and indirect methods to demonstrate their diagnostic stage in different body excreta and fluids (eggs in feces or urine, microfilaria in bloods).

c.3. Select rational prevention and control programs for parasite population based on his/her knowledge of morpho-biological characteristics of parasites.

3- D: GENERAL AND TRANSFERABLE SKILLS (G.T.S):

By the end of studying the course, the graduate should be able to:

d.1. Communicate effectively with his professors, and colleagues.

d.2. Utilize different sources of knowledge and information

d.3. Use information technology to serve the professional practice.

d.4. Manage time efficiently

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1.INTRODUCTION	10	10	20
2.CLASS: TREMATODA	28	28	56
3.CLASS: EUCESTODA	10	10	20
4.CLASS: COTYLODA	6	6	12
5.CLASS : NEMATODA	28	28	56
6.ACANTHOCEPHALA	4	4	8
7.CONTROL OF HELMINTHES	10	10	20
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about different helminthes.

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a7	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c3	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a7	b1 to b3	c1 to c3	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- Special handling in the laboratory with extra time if needed.



Ensure that all students with disabilities have equal access to educational opportunities and to help students to achieve academic and personal success

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a7	b1 to b3		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a7	b1 to b3		d1
Student activities	a1, a7			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- 1. Roberts, L. S. and J.J. Janovy. 2000. Foundations of Parasitology.5th Edition, W.C.B. Company, U.K.
- 2. Urquhart G. M., J. Armour, J. L. Duncan, A.M. Dunn, F. W. Jennings. 2000. Veterinary Parasitology, Longman Scientific Technical, U.K.
- 3. Levine, N. D. 1990. Veterinary Protozoology. Iowa State University Press, Ames, Iowa, USA.
- 4. Soulsby, E. J. L. 1986. Helminths, Arthropods and Protozoa of Domesticated Animals. The English Language Book Society BailliereTindall, London.
- 5. Georgi, J. R., M. E. Georgi and V. J. Theodorides. 1999. Parasitology for Veterinarians. 7th Ed. W.B. Saunder Company London..
- 6. Hendrix, C. M. 1998. Diagnostic Veterinary Parasitology.2nd Edition.Msoby.

8-2: Recmended books:

- Elsheikha, Hany M., and H. A. Khan. *Essentials of veterinary parasitology*. Caister Academic Press, 2011.
- Elsheikha, Hany, and Edward L. Jarroll, eds. *Illustrated Dictionary of Parasitology in the Post-genomic Era*. Caister Academic Press, 2017.
- Taylor, Mike A., R. L. Coop, and Richard L. Wall. *Veterinary parasitology*. John Wiley & Sons, 2015.

8-3: Egyptian Knowledge Bank:

- Skrjabin, K. I., et al. "Veterinary parasitology and parasitic diseases of the domestic animals." *Veterinary parasitology and parasitic diseases of the domestic animals*. (1934).



- Bowman, Dwight D. *Georgis' Parasitology for Veterinarians E-Book*. Elsevier Health Sciences, 2020.
- Zajac, Anne M., et al. *Veterinary clinical parasitology*. John Wiley & Sons, 2021.
- Bowman, Dwight D., et al. *Feline clinical parasitology*. John Wiley & Sons, 2008.
- Kassai, Tibor. *Veterinary helminthology*. Acribia, SA, 2002..
- Papadopoulos, Elias. *Atlas of parasites in sheep*. Grupo Asís Biomedica SL, 2021.

Scientific Journals

1. Current research in parasitology & vector-borne diseases.
2. Veterinary parasitology: X.
3. Parasitology open.
4. Veterinary parasitology, regional studies and reports.
5. Annals of parasitology.
6. International journal for parasitology. Parasites and wildlife.
7. ISRN parasitology. (International Scholarly Research Network Parasitology)
8. Tropical parasitology.
9. Journal of parasitology research.
10. Parasites & vectors.

Scientific websites

- **The Egyptian Knowledge Bank:** <https://www.ekb.eg/web/guest/home>
- [Alberta Agriculture, Food and Rural Development](#)
Livestock diseases and parasites.
- [American Heartworm Society](#)
Aims: Further scientific progress in the study of heartworm disease; Inform the membership of new developments; and encourage and help promote effective procedures for the diagnosis, treatment and prevention of heartworm disease.
- [Canine heartworm disease](#)
A detailed look at heartworm disease including a dogs vs cats comparison chart showing illustrating major differences. Presented by the American Heartworm Society.
- [Control Of Parasites In Companion Animals](#)
The Companion Animal Parasite Council (CAPC) is an independent group of U.S. veterinary, governmental, and association leaders in the parasitology field.
- [Diagnosteg](#)
This website contains information compiled by experts in equine parasitic diseases.
- [Know Heartworms](#)
This Pfizer site, approved by the American Heartworm Society and the American Association of Feline Practitioners, contains downloadable handouts/posters/etc. for clinic use.
- [Morbidity and Mortality Weekly Report \(MMWR\)](#)
A Synopsis On Raccoon Roundworm Encephalitis In Chicago, Illinois, and Los Angeles, California, 2000.
- [Veterinary clinical parasitology images](#)
Images and descriptions from Oklahoma State University.

Course Coordinator

Head of Department

Dr. Nagwa Mohammed Kandel

**Prof. Dr. Reda Elbastawisy
Khalafalla**



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding							Intellectual Skills			Practical & Professional Skills			General & Transferable Skills			
		1	2	3	4	5	6	7	1	2	3	1	2	3	1	2	3	4
1.INTRODUCTION	20	✓													✓	✓	✓	✓
2.CLASS: TREMATODA	56		✓						✓	✓	✓	✓	✓		✓	✓	✓	✓
3.CLASS: EUCESTODA	20			✓					✓	✓	✓	✓	✓		✓	✓	✓	✓
4.CLASS: COTYLODA	12				✓				✓	✓	✓	✓	✓		✓	✓	✓	✓
5.CLASS : NEMATODA	56					✓			✓	✓	✓	✓	✓		✓	✓	✓	✓
6.ACANTHOCEPHALA	8						✓		✓	✓	✓	✓	✓		✓	✓	✓	✓
7.CONTROL OF HELMINTHES	20							✓						✓	✓	✓	✓	✓

COURSE SPECIFICATION **(2021 / 2022)**

1 - Basic Information:

Code number: 190/2

Course title: Protozoology

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 192 hrs.

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical: 96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to provide students with basic and fundamental knowledge, skills and positive attitude concerning protozoology in different animals, birds and fish

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING (K.U):

By the end of the course, students should be able to:

- a.1. Define the fundamental concepts of Protozoology and the technical vocabulary used in this field.
- a.2. Discuss the ability of Protozoa to induce diseases in domesticated, wild animal, fish, birds and man by studying their life cycles, intermediate hosts /vectors, mode of infection transmission.
- a.3. Identify common taxa of Protozoa including Myxospora, Mastigophora, Sarcodina, Apicomplexa, Ciliphora, and Microspora, based on their morphological, biologic and geographical criteria and clinical observation.
- a.4. recognize the behavior and ecology of different protozoa species and stages in the environment.

3-B: INTELLECTUAL SKILLS (I.S):

By the end of the course, students should be able to:

- b.1. Organize the factors responsible for protozoal infections in different animals.
- b.2. Analyze the parasite-host relationship between protozoa and their host animals.
- b.3. Compare between different parasites.

3- C: PRACTICAL AND PROFESSIONAL SKILLS (P.P.S):

By the end of the course, students should be able to:

- c.1. Collect lymph and blood as well as fecal samples to investigate and to diagnose the presence of different protozoal infections affecting various hosts by applying different techniques including; fecal floatation, fecal sedimentation, blood thin film and blood thick film.
- c.2. Interpreting sample investigations results to write reports for the clinicians for correct treatment, prevention, and control program.
- c.3. Select rational prevention and control programs for protozoan population based on his/her knowledge of life cycles, their intermediate hosts, mode of infection transmission, the morpho-biological characters of the protozoan parasites.

3- D: GENERAL AND TRANSFERABLE SKILLS (G.T.S):

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1.Introduction	4	4	8
2.Class: Mastigophora	24	24	48
3.Class: Sarcodina	12	12	24
4.Phylum: Apicomplexa	10	10	20
5.Phylum : Ciliphora	28	28	56
6.Phylum: Microspora	6	6	12
7.Phylum: Myxospora	12	12	24
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about different species of protozoa

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c3	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b3	c1 to c3	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- Special handling in the laboratory with extra time if needed.

Ensure that all students with disabilities have equal access to educational opportunities and to help students to achieve academic and personal success

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b3		d4
Practical exams			c1 to c2	d2, d3
Oral exams	a1 to a4	b1 to b3		d1
Student activities	a1, a4			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- 1. Roberts, L. S. and J.J. Janovy. 2000. Foundations of Parasitology.5th Edition, W.C.B. Company, U.K.
- 2. Urquhart G. M., J. Armour, J. L. Duncan, A.M. Dunn, F. W. Jennings. 2000. Veterinary Parasitology, Longman Scientific Technical, U.K.
- 3. Levine, N. D. 1990. Veterinary Protozoology.Iowa State University Press, Ames, Iowa, USA.
- 4. Soulsby, E. J. L. 1986. Helminths, Arthropods and Protozoa of Domesticated Animals. The English Language Book Society BailliereTindall, London.
- 5. Georgi, J. R., M. E. Georgi and V. J. Theodorides. 1999. Parasitology for Veterinarians. 7th Ed. W.B. Saunder Company London.
- 6 Hendrix, C. M. 1998. Diagnostic Veterinary Parasitology.2nd Edition.Msoby.

8-2: Recmended books:

- Elsheikha, Hany M., and H. A. Khan. Essentials of veterinary parasitology. Caister Academic Press, 2011.
- Elsheikha, Hany, and Edward L. Jarroll, eds. Illustrated Dictionary of Parasitology in the Post-genomic Era. Caister Academic Press, 2017.
- Taylor, Mike A., R. L. Coop, and Richard L. Wall. Veterinary parasitology. John Wiley & Sons, 2015.

8-3: Egyptian Knowledge Bank:

- Skrjabin, K. I., et al. "Veterinary parasitology and parasitic diseases of the domestic animals." Veterinary parasitology and parasitic diseases of the domestic animals. (1934).
- Bowman, Dwight D. Georgis' Parasitology for Veterinarians E-Book. Elsevier Health Sciences, 2020.
- Zajac, Anne M., et al. Veterinary clinical parasitology. John Wiley & Sons, 2021.
- Kreier, Julius P., ed. Parasitic Protozoa: Volume 10. Academic Press, 2013.

Scientific Journals

1. Current research in parasitology & vector-borne diseases.
2. Veterinary parasitology: X.
3. Parasitology open.
4. Veterinary parasitology, regional studies and reports.
5. Annals of parasitology.
6. International journal for parasitology. Parasites and wildlife.
7. ISRN parasitology. (International Scholarly Research Network Parasitology)
8. Tropical parasitology.

9. Journal of parasitology research.
10. The open parasitology journal.
11. Journal of parasitology.
12. Parasitology international.
13. Parasitology research.
14. Parasitology today..

Scientific websites

- **The Egyptian Knowledge Bank:** <https://www.ekb.eg/web/guest/home>
- [Alberta Agriculture, Food and Rural Development](#)
Livestock diseases and parasites.
- [Arthropods and Protozoan Parasites](#)
Arthropods and Protozoan Parasites Important to Vet Med
- [Diagnosis of Veterinary Endoparasitic Infections](#)
University of Pennsylvania program designed to assist students, researchers, and clinicians in diagnosing parasitic infections.
- [Guarding against Giardia](#)
The original source of an outbreak may be cysts in contaminated water or the environment. What are the clinical signs and how is it treated?
- [Infectious Enteritis](#)
Dr. Jody Gookin's biographical site provides links to *Trichostrongylus axei* information (test kits, sample submission, videomicroscopy, research pubs, etc.), along with some *Cryptosporidium* information.
- [Parasitology Research](#)
Cryptosporidium/*Coccidia* research from Kansas State University, Biology division.
- [Research In Veterinary Parasitology](#)
it includes: a) development of an immunodiagnostic assay for larval stages of *Cyathostomins*; b) development of DNA probes to identify individual *Cyathostomins* species; c) the role of cytokines in parasite induced colitis; d) identification of stage specific genes that may be involved in reactivation and inhibition of larval stages; etc.
- [UW Veterinary Parasitology](#)
- [Veterinary clinical parasitology images](#)
Images and descriptions from Oklahoma State University.

Course Coordinator

Dr. Nagwa Mohammed Kandel

Head of Department

**Prof. Dr. Reda Elbastawisy
Khalafalla**

Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding				Intellectual Skills			Practical & Professional Skills			General & Transferable Skills				
		1	2	3	4	1	2	3	1	2	3	1	2	3	4	
Introduction	8	✓										✓	✓	✓	✓	
Class: Mastigophora	48		✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓
Class: Sarcodina	24		✓	✓	✓		✓	✓	✓		✓		✓	✓	✓	✓
Phylum: Apicomplexa	20		✓	✓	✓		✓	✓	✓		✓		✓	✓	✓	✓
Phylum : Ciliphora	56		✓	✓	✓		✓	✓	✓		✓		✓	✓	✓	✓
Phylum: Microspora	12		✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓
Phylum: Myxospora	24		✓	✓	✓	✓		✓	✓		✓		✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 191/2

Course title: Parasites of birds and rabbits

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 192 hrs.

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical: 96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to basic and fundamental knowledge, skills and positive attitude concerning parasites of birds and rabbits

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING (K.U):

By the end of the course, students should be able to:

- a.1. Define the fundamental concepts of parasites of birds and rabbits and with the technical vocabulary used in this field.
- a.2. Discuss how could helminthes, arthropods and protozoa are able to induce diseases in domesticated / wild birds and rabbits.
- a.3. Identify common taxa of parasites of birds and rabbits based on criteria of their morphology, biology and geographical distribution and clinical observation
- a.4. Explain the behavior and ecology of different parasite species and stages in the environment.

3-B: INTELLECTUAL SKILLS (I.S):

By the end of the course, students should be able to:

- b.1. Organize the factors responsible for main parasitic infections affecting poultry and rabbits (chicken coccidiosis, Ascariidiasis, Histomoniasis, blood parasites, scaly leg disease, mange of rabbits, hepatic coccidiosis in rabbits, red mites in poultry farms, etc).
- b.2. Analyze the parasite-host interaction and the defense mechanisms of the parasites against the host immune response.
- b.3. Compare between different parasites.

3- C: PRACTICAL AND PROFESSIONAL SKILLS (P.P.S):

By the end of the course, students should be able to:

- c.1. Collect different samples from died and live poultry /rabbits including organs, blood, lymph, serum, swabs, skin scrapings etc.,
- c.2. Apply a variety of laboratory techniques for identification of the causative parasites.
- c.3. Select rational prevention and control programs for parasite population based on his/her knowledge of life cycle, intermediate host and mode of transmission of each parasite of special importance for poultry and rabbits (e.g., chicken coccidiosis, Ascariidiasis, Histomoniasis, blood parasites, scaly leg disease, mange of rabbits, hepatic coccidiosis in rabbits, red mites in poultry farms, etc).

3- D: GENERAL AND TRANSFERABLE SKILLS (G.T.S):

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information



- d.3. Use information technology to serve the professional practice.
d.4. Manage time efficiently

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1.Introduction	4	4	8
2.Trematodes of birds & rabbits	24	24	48
3.Cestodes of birds & rabbits	12	12	24
4.Nematodes of birds & rabbits	10	10	20
5.Acanthocephala of birds & rabbits	6	6	12
6.Arthropods of birds & rabbits	28	28	56
7.Protozoa of birds & rabbits	12	12	24
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about parasites of domesticated and wild birds and rabbits.

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c2	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b3	c1 to c2	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- Special handling in the laboratory with extra time if needed.

Ensure that all students with disabilities have equal access to educational opportunities and to help students to achieve academic and personal success

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10



6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b3		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a4	b1 to b3		d1
Student activities	a1, a4			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- 1. Roberts, L. S. and J.J. Janovy. 2000. Foundations of Parasitology.5th Edition, W.C.B. Company, U.K.
- 2. Urquhart G. M., J. Armour, J. L. Duncan, A.M. Dunn, F. W. Jennings. 2000. Veterinary Parasitology, Longman Scientific Technical, U.K.
- 3. Levine, N. D. 1990. Veterinary Protozoology.Iowa State University Press, Ames, Iowa, USA.
- 4. Soulsby, E. J. L. 1986. Helminths, Arthropods and Protozoa of Domesticated Animals. The English Language Book Society BailliereTindall, London.
- 5. Georgi, J. R., M. E. Georgi and V. J. Theodorides. 1999. Parasitology for Veterinarians. 7th Ed. W.B. Saunder Company London.
- 6. Wall, R. and D. Shearer. 1997. Veterinary Entomology. Chapman and Hall.
- 7. Hendrix, C. M. 1998. Diagnostic Veterinary Parasitology.2nd Edition.Msoby.
- 8. Arnall, Leslie, and Ian Frank Keymer. *Bird diseases. An introduction to clinical diagnosis and treatment of diseases in birds other than poultry.* Bailliere Tindall., 1975.
- 9. Valkiunas, Gediminas. *Avian malaria parasites and other haemosporidia.* CRC press, 2004.

8-2: Recmended books:

- Pattison, Mark, et al., eds. Poultry diseases. Elsevier Health Sciences, 2007.
- Chauhan, H. V. S. Poultry diseases, diagnosis and treatment. New Age International, 1996.
- Elsheikha, Hany M., and H. A. Khan. Essentials of veterinary parasitology. Caister Academic Press, 2011.
- Elsheikha, Hany, and Edward L. Jarroll, eds. Illustrated Dictionary of Parasitology in the Post-genomic Era. Caister Academic Press, 2017.
- Taylor, Mike A., R. L. Coop, and Richard L. Wall. Veterinary parasitology. John Wiley & Sons, 2015.

8-3: Egyptian Knowledge Bank:

- Forrester, Donald J., and Marilyn G. Spalding. Parasites and diseases of wild birds in Florida. University Press of Florida, 2003.
- Atkinson, Carter T., Nancy J. Thomas, and D. Bruce Hunter, eds. Parasitic diseases of wild birds. John Wiley & Sons, 2009.
- Bowman, Dwight D. Georgis' Parasitology for Veterinarians E-Book. Elsevier Health Sciences, 2020.
- Zajac, Anne M., et al. Veterinary clinical parasitology. John Wiley & Sons, 2021.
- Bowman, Dwight D., et al. Feline clinical parasitology. John Wiley & Sons, 2008.
- Kassai, Tibor. Veterinary helminthology. Acribia, SA, 2002.



Faculty



- Kreier, Julius P., ed. Parasitic Protozoa: Volume 10. Academic Press, 2013.

Scientific Journals

1. Current research in parasitology & vector-borne diseases.
2. Veterinary parasitology: X.
3. Parasitology open.
4. Veterinary parasitology, regional studies and reports.
5. Annals of parasitology.
6. International journal for parasitology. Parasites and wildlife.
7. ISRN parasitology. (International Scholarly Research Network Parasitology)
8. Tropical parasitology.
9. Journal of parasitology research.
10. Parasites & vectors.
11. The open parasitology journal.
12. Journal of parasitology.
13. Journal of vector borne diseases

Scientific websites

- **The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>**
- [Alberta Agriculture, Food and Rural Development](#)
Livestock diseases and parasites.
- [Arthropods and Protozoan Parasites](#)
Arthropods and Protozoan Parasites Important to Vet Med
- [Diagnosis of Veterinary Endoparasitic Infections](#)
University of Pennsylvania program designed to assist students, researchers, and clinicians in diagnosing parasitic infections.
- [Ectoparasite Database](#)
Treatments for ectoparasites. Covers species (avian, reptilian, small mammal), route of administration, etc. Last update 2002.
- [Infectious Enteritis](#)
Dr. Jody Gookin's biographical site provides links to Tritrichomonas foetus information (test kits, sample submission, videomicroscopy, research pubs, etc.), along with some Cryptosporidium information.
- [Morbidity and Mortality Weekly Report \(MMWR\)](#)
A Synopsis On Raccoon Roundworm Encephalitis In Chicago, Illinois, and Los Angeles, California, 2000.
- [Parasitology Research](#)
Cryptosporidium/Coccidial research from Kansas State University, Biology division.
- [Research In Veterinary Parasitology](#)
[UW Veterinary Parasitology](#)
- [Veterinary clinical parasitology images](#)
Images and descriptions from Oklahoma State University.
- [Veterinary Entomology](#)
Insects of veterinary importance.

Course Coordinator

Head of Department

Dr. Nagwa Mohammed Kandel

**Prof. Dr. Reda Elbastawisy
Khalafalla**



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 192/2

Course title: Snails and its veterinary medical importance

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 144 hrs.

Lectures: 48 hrs. (48 weeks- 1hrs/week)

Practical: 96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to basic and fundamental knowledge, skills and positive attitude concerning snail and its veterinary medical importance

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING (K.U):

By the end of the course, students should be able to:

- a.1. Define the fundamental concepts of mollusks and with the technical vocabulary used in this field in relation to the molluscan anatomy, nutrition, reproduction and geographical distribution in relation to the transmitted parasitic diseases in different regions.
- a.2. Describe the role of snails in transmission of different species of parasites.
- a.3. Identify common taxa of snails based on morphological, biologic and geographical criteria and clinical observation.
- a.4. Explain the behavior and ecology of different snails species and stages in the environment and how to control biologically by natural predators (plants/fish/flyes etc.) , chemically or physically (i.e.; minimizing the slope of water channels prevent snail attachment, decrease population settlement and increase water speed).

3-B: INTELLECTUAL SKILLS (I.S):

By the end of the course, students should be able to:

- b.1. Organize the factors responsible for increase/ decrease of snails population.
- b.2. Analyze the role of molluscan in transmitting a parasite and the effect of the parasitism on the snail (some parasites can destroy the internal organs of the snail).
- b.3. Compare between different snails (land, fresh water, brackish water or marine water snails).

3- C: PRACTICAL AND PROFESSIONAL SKILLS (P.P.S):

By the end of the course, students should be able to:

- c.1. Investigate the snails available in the local region and examine / identify the different parasitic infection related to each type of snails.
- c.2. Select rational treatment and control programs for snails population based on his/her knowledge of biology of each snails.

3- D: GENERAL AND TRANSFERABLE SKILLS (G.T.S):

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently



4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1.Introduction	5	0	5
2.Biology& physiology of snails	14	32	46
3.Classification of Snails	5	10	15
4.Snails as I.M.H. for trematodes	3	6	9
5.Snails as I.M.H. for cestodes	14	32	46
6.Snails as I.M.H. for Nematodes	2	6	8
7.Control of Snails	5	10	15
Total	48	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making individual reports about common snails and its distribution in Egypt

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c2	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b3	c1 to c2	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- Special handling in the laboratory with extra time if needed.

Ensure that all students with disabilities have equal access to educational opportunities and to help students to achieve academic and personal success

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment
	Intended Learning Outcomes Covered



	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b3		d4
Practical exams			c1 to c2	d2, d3
Oral exams	a1 to a4	b1 to b3		d1
Student activities	a1, a4			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- 1. Roberts, L. S. and J.J. Janovy. 2000. Foundations of Parasitology.5th Edition, W.C.B. Company, U.K.
- 2. Urquhart G. M., J. Armour, J. L. Duncan, A.M. Dunn, F. W. Jennings. 2000. Veterinary Parasitology, Longman Scientific Technical, U.K.
- 3. Soulsby, E. J. L. 1986. Helminths, Arthropods and Protozoa of Domesticated Animals. The English Language Book Society Bailliere Tindall, London.
- 4. Georgi, J. R., M. E. Georgi and V. J. Theodorides. 1999. Parasitology for Veterinarians. 7th Ed. W.B. Saunder Company London.

8-2: Recommended books:

- Brown, David S. Freshwater snails of Africa and their medical importance. CRC press, 2002.
- Smith, V. G. F. "Distribution of snails of medical and veterinary importance in an organically polluted watercourse in Nigeria." Annals of Tropical Medicine & Parasitology 76.5 (1982): 539-546.
- Toledo, Rafael, and Bernard Fried, eds. Biomphalaria snails and larval trematodes. Springer Science & Business Media, 2010.
- Elsheikha, Hany M., and H. A. Khan. Essentials of veterinary parasitology. Caister Academic Press, 2011.
- Elsheikha, Hany, and Edward L. Jarroll, eds. Illustrated Dictionary of Parasitology in the Post-genomic Era. Caister Academic Press, 2017.
- Taylor, Mike A., R. L. Coop, and Richard L. Wall. Veterinary parasitology. John Wiley & Sons, 2015.
- Ram Pratap Yadav, Singh Ajay, Bio-Pesticides Used As Snail Control, Lap Lambert Academic Publishing GmbH KG, 2012

8-3: Egyptian Knowledge Bank:

- Willmott, Sheila, ed. Report of an independent evaluation mission on the national bilharzia control program, Egypt, 1985. 1987.
- World Health Organization. "Snail control in the prevention of bilharziasis." Snail control in the prevention of bilharziasis. (1965).
- Skrjabin, K. I., et al. "Veterinary parasitology and parasitic diseases of the domestic animals." Veterinary parasitology and parasitic diseases of the domestic animals. (1934).
- Bowman, Dwight D. Georgis' Parasitology for Veterinarians E-Book. Elsevier Health Sciences, 2020.
- Zajac, Anne M., et al. Veterinary clinical parasitology. John Wiley & Sons, 2021.
- Kassai, Tibor. Veterinary helminthology. Acribia, SA, 2002.

Scientific Journals

1. Current research in parasitology & vector-borne diseases.



Faculty



2. Veterinary parasitology: X.
3. Parasitology open.
4. Veterinary parasitology, regional studies and reports.
5. Annals of parasitology.
6. International journal for parasitology. Parasites and wildlife.
7. ISRN parasitology. (International Scholarly Research Network Parasitology)
8. Tropical parasitology.
9. Journal of parasitology research.
10. Parasites & vectors.
11. The open parasitology journal.
12. Journal of parasitology.
13. Parasitology international.
14. The Korean journal of parasitology.
15. Journal of veterinary parasitology

Scientific websites

- **The Egyptian Knowledge Bank:** <https://www.ekb.eg/web/guest/home>
- [Alberta Agriculture, Food and Rural Development](#)
Livestock diseases and parasites.
- [Control Of Parasites In Companion Animals](#)
The Companion Animal Parasite Council (CAPC) is an independent group of U.S. veterinary, governmental, and association leaders in the parasitology field.
- [Iowa State Entomology Image Gallery](#)
Pictures and information on everything from ants to stink bugs.
- [Ohio State University Acarology Laboratory](#)
- [Parasitology Research](#)
Cryptosporidium/Coccidial research from Kansas State University, Biology division.
- [Research In Veterinary Parasitology](#)
it includes: a) development of an immunodiagnostic assay for larval stages of Cyathostomins; b) development of DNA probes to identify individual Cyathostomin species; c) the role of cytokines in parasite induced colitis; d) identification of stage specific genes that may be involved in reactivation and inhibition of larval stages; etc.
- [UW Veterinary Parasitology](#)
- [Veterinary clinical parasitology images](#)
Images and descriptions from Oklahoma State University.

Course Coordinator

Dr. Nagwa Mohammed Kandel

Head of Department

**Prof. Dr. Reda Elbastawisy
Khalafalla**



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 193/2

Course title: **Immunity to parasites**

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 144 hrs.

Lectures: 48 hrs. (48 weeks- 1hrs/week)

Practical: 96 hrs. (48 weeks-2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to basic and fundamental knowledge, skills and positive attitude concerning immunity to parasites in different animals, birds and fish

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING (K.U):

By the end of the course, students should be able to:

- a.1. Be familiar with the fundamental concepts of Immunology and with the technical vocabulary used in this field.
- a.2. Associate specific helminthes, arthropods and protozoa with disease processes in domesticated, wild animal, fishes, birds and man based on immunological concepts.
- a.3. Identify common immunological responses of different parasites and the parasite defense mechanisms against the host immune response (these mechanisms include; antigenic variation, repeated antigenic determinants, induction of suppressor cells, acquisition of host proteins or molecular mimicry, proteinase destruction of host effector molecules, proteinase inhibitor-mediated inhibition of humoral and cellular immune effector arms and immunosuppressive products of parasite arachidonic acid metabolism).
- a.4. Illustrate the immune behavior of different parasite species.

3-B: INTELLECTUAL SKILLS (I.S):

By the end of the course, students should be able to:

- b.1. Organize the factors responsible for immune response to the parasitism.
- b.2. Analyze the parasite defense mechanisms against the host immune response.
- b.3. Compare between different parasites (protozoa, arthropods, helminths) and how to escape the host immune response.

3- C: PRACTICAL AND PROFESSIONAL SKILLS (P.P.S):

By the end of the course, students should be able to:

- c.1. Use the available immune markers against the different parasitic infection as direct and indirect methods for the correct diagnosis.
- c.2. Select rational prevention and control programs (including vaccines and immune sera) for parasite population based on his/her knowledge of host immune response and parasite defense against this response.

3- D: GENERAL AND TRANSFERABLE SKILLS (G.T.S):

By the end of studying the course, the graduate should be able to:



- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Introduction of Immuno-parasitology	5	0	5
2. Immunity against parasites & immune evasion	14	32	46
3. Immunity against helminthes	5	10	15
4. Immunity against Arthropods	3	6	9
5. Immunity against Protozoa	14	32	46
6. Immuno-diagnosis of parasitic diseases	2	6	8
7. Vaccination and Immunization	5	10	15
Total	48	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c2	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b3	c1 to c2	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- Special handling in the laboratory with extra time if needed.

Ensure that all students with disabilities have equal access to educational opportunities and to help students to achieve academic and personal success

7. STUDENT ASSESSMENT:-

<u>7.a Used methods</u>	Written examination	Oral examination	Practical examination	Activities
<u>7.b time</u>	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
<u>7.c grads</u>	50	20	20	10



7. Student Assessment				
6.1. Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b3		d4
Practical exams			c1 to c2	d2, d3
Oral exams	a1 to a4	b1 to b3		d1
Student activities	a1, a4			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- 1. Roberts, L. S. and J.J. Janovy. 2000. Foundations of Parasitology.5th Edition, W.C.B. Company, U.K.
- 2. Urquhart G. M., J. Armour, J. L. Duncan, A.M. Dunn, F. W. Jennings. 2000. Veterinary Parasitology, Longman Scientific Technical, U.K.
- 3. Levine, N. D. 1990. Veterinary Protozoology.Iowa State University Press, Ames, Iowa, USA.
- 4. Soulsby, E. J. L. 1986. Helminths, Arthropods and Protozoa of Domesticated Animals. The English Language Book Society BailliereTindall, London.
- 5. Georgi, J. R., M. E. Georgi and V. J. Theodorides. 1999. Parasitology for Veterinarians. 7th Ed. W.B. Saunder Company London.
- 6 Hendrix, C. M. 1998. Diagnostic Veterinary Parasitology.2nd Edition.Msoby.

8-2: Recmended books:

- Cohen, Sydney, and Elvio H. Sadun. Immunology of parasitic infections. Blackwell Scientific Publications Ltd, Osney Mead, Oxford, OX2 OEL., 1976.
- Lamb, Tracey, ed. Immunity to parasitic infection. John Wiley & Sons, 2012.
- Wakelin, Derek. Immunity to parasites: how parasitic infections are controlled. Cambridge University Press, 1996.
- Elsheikha, Hany M., and H. A. Khan. Essentials of veterinary parasitology. Caister Academic Press, 2011.
- Elsheikha, Hany, and Edward L. Jarroll, eds. Illustrated Dictionary of Parasitology in the Post-genomic Era. Caister Academic Press, 2017.
- Taylor, Mike A., R. L. Coop, and Richard L. Wall. Veterinary parasitology. John Wiley & Sons, 2015.

8-3: Egyptian Knowledge Bank:

- Cohen, Sydney. "The immune response to parasites." Parasites in the immunized host: mechanisms of survival (1974): 3.
- Skrjabin, K. I., et al. "Veterinary parasitology and parasitic diseases of the domestic animals." Veterinary parasitology and parasitic diseases of the domestic animals. (1934).
- Bowman, Dwight D. Georgis' Parasitology for Veterinarians E-Book. Elsevier Health Sciences, 2020.
- Zajac, Anne M., et al. Veterinary clinical parasitology. John Wiley & Sons, 2021.
- Kassai, Tibor. Veterinary helminthology. Acribia, SA, 2002.
- Kreier, Julius P., ed. Parasitic Protozoa: Volume 10. Academic Press, 2013.



Scientific Journals

1. Current research in parasitology & vector-borne diseases.
2. Veterinary parasitology: X.
3. Parasitology open.
4. Veterinary parasitology, regional studies and reports.
5. Annals of parasitology.
6. International journal for parasitology. Parasites and wildlife.
7. ISRN parasitology. (International Scholarly Research Network Parasitology)
8. Tropical parasitology.
9. Journal of parasitology research.
10. Parasites & vectors.
11. The open parasitology journal.
12. Journal of parasitology.
13. Journal of vector borne diseases.
14. Trends in parasitology.
15. Iranian journal of parasitology.

Scientific websites

- **The Egyptian Knowledge Bank:** <https://www.ekb.eg/web/guest/home>
- [Alberta Agriculture, Food and Rural Development](#)
Livestock diseases and parasites.
- [Control Of Parasites In Companion Animals](#)
The Companion Animal Parasite Council (CAPC) is an independent group of U.S. veterinary, governmental, and association leaders in the parasitology field.
- [Diagnosis of Veterinary Endoparasitic Infections](#)
University of Pennsylvania program designed to assist students, researchers, and clinicians in diagnosing parasitic infections.
- [Ohio State University Acarology Laboratory](#)
- [Parasitology Research](#)
Cryptosporidium/Coccidial research from Kansas State University, Biology division.
- [Research In Veterinary Parasitology](#)
it includes: a) development of an immunodiagnostic assay for larval stages of Cyathostomins; b) development of DNA probes to identify individual Cyathostomin species; c) the role of cytokines in parasite induced colitis; d) identification of stage specific genes that may be involved in reactivation and inhibition of larval stages; etc.
- [UW Veterinary Parasitology](#)
- [Veterinary clinical parasitology images](#)
Images and descriptions from Oklahoma State University.

Course Coordinator

Head of Department

Dr. Nagwa Mohammed Kandel

**Prof. Dr. Reda Elbastawisy
Khalafalla**



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 194/2

Course title: **Clinical parasitology**

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 192 hrs.

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical: 96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to basic and fundamental knowledge, skills and positive attitude concerning clinical Parasitology in different animals, birds and fish.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING (K.U):

By the end of the course, students should be able to:

- a.1. Define the fundamental concepts of clinical parasitology and the technical vocabulary used in this field.
- a.2. Identify morphology of diagnostic stages of different parasites which can be detected in skin scrapings, faeces, urine, blood and/or different body fluids.
- a.3. Recognize the difference between different species of ectoparasites.
- a.4. Explain the proper serological test for diagnosis of different parasites.

3-B: INTELLECTUAL SKILLS (I.S):

By the end of the course, students should be able to:

- b.1. Realize the factors responsible for shedding of the diagnostic stages (the periodicity: nocturnal or diurnal).
- b.2. Analyze the parasite-host interaction including the defense mechanism of the parasites to the host immune response together with, the clinical findings of the blood picture and clinical signs appeared on the affected host in relation to each specific parasitic infection.
- b.3. Compare between different parasites by microscopical identification of different stages.

3- C: PRACTICAL AND PROFESSIONAL SKILLS (P.P.S):

By the end of the course, students should be able to:

- c.1. Collect lymph and blood as well as fecal and urine samples to investigate and diagnose the presence of different parasitic infections affecting various hosts by applying laboratory techniques including; fecal floatation, fecal sedimentation, blood thin /thick film and skin scrapings (for mange diagnosis).
- c.2. Interpreting sample investigations results to write reports to the clinicians for correct treatment, prevention, and control program
- c.3. Diagnose the different parasitic infection in various hosts by indirect methods (serological tests).

3- D: GENERAL AND TRANSFERABLE SKILLS (G.T.S):

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.



d.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1.Introduction	10	0	10
2.Fecal examination	28	32	60
3.Blood examination	10	10	20
4.Examination of other body fluids and tissues	6	6	12
5.Examination for ectoparasites	28	32	60
6.Making permanent mounts of parasites	4	6	10
7.Serological diagnosis of parasitic diseases	10	10	20
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library
Making standard operation procedures for common parasitological tests.

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures *	a1 to a4	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c3	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b3	c1 to c3	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- Special handling in the laboratory with extra time if needed.

Ensure that all students with disabilities have equal access to educational opportunities and to help students to achieve academic and personal success

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	All over the academic year
7.c grads	50	20	20	10



6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b3		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a4	b1 to b3		d1
Student activities	a1, a4			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- 1. Roberts, L. S. and J.J. Janovy. 2000. Foundations of Parasitology.5th Edition, W.C.B. Company, U.K.
- 2. Urquhart G. M., J. Armour, J. L. Duncan, A.M. Dunn, F. W. Jennings. 2000. Veterinary Parasitology, Longman Scientific Technical, U.K.
- 3. Levine, N. D. 1990. Veterinary Protozoology.Iowa State University Press, Ames, Iowa, USA.
- 4. Soulsby, E. J. L. 1986. Helminths, Arthropods and Protozoa of Domesticated Animals. The English Language Book Society BailliereTindall, London.
- 5. Georgi, J. R., M. E. Georgi and V. J. Theodorides. 1999. Parasitology for Veterinarians. 7th Ed. W.B. Saunder Company London.
- 6. Wall, R. and D. Shearer. 1997. Veterinary Entomology. Chapman and Hall.
- 7. Hendrix, C. M. 1998. Diagnostic Veterinary Parasitology.2nd Edition.Msoby.

8-2: Recmended books:

- Elsheikha, Hany M., and H. A. Khan. Essentials of veterinary parasitology. Caister Academic Press, 2011.
- Elsheikha, Hany, and Edward L. Jarroll, eds. Illustrated Dictionary of Parasitology in the Post-genomic Era. Caister Academic Press, 2017.
- Taylor, Mike A., R. L. Coop, and Richard L. Wall. Veterinary parasitology. John Wiley & Sons, 2015.

8-3: Egyptian Knowledge Bank:

- Skrjabin, K. I., et al. "Veterinary parasitology and parasitic diseases of the domestic animals." Veterinary parasitology and parasitic diseases of the domestic animals. (1934).
- Bowman, Dwight D. Georgis' Parasitology for Veterinarians E-Book. Elsevier Health Sciences, 2020.
- Zajac, Anne M., et al. Veterinary clinical parasitology. John Wiley & Sons, 2021.
- Kassai, Tibor. Veterinary helminthology. Acribia, SA, 2002.
- Kreier, Julius P., ed. Parasitic Protozoa: Volume 10. Academic Press, 2013.
- Papadopoulos, Elias. Atlas of parasites in sheep. Grupo Asís Biomedica SL, 2021.

Scientific Journals

1. Current research in parasitology & vector-borne diseases.
2. Veterinary parasitology: X.
3. Parasitology open.
4. Veterinary parasitology, regional studies and reports.
5. Annals of parasitology.
6. International journal for parasitology. Parasites and wildlife.



7. ISRN parasitology. (International Scholarly Research Network Parasitology)
8. Tropical parasitology.
9. Journal of parasitology research.
10. Parasites & vectors.
11. The open parasitology journal.
12. Journal of parasitology.
13. Journal of vector borne diseases.

Scientific websites

- **The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>**
- [Alberta Agriculture, Food and Rural Development](#)
Livestock diseases and parasites.
- [Arthropods and Protozoan Parasites](#)
Arthropods and Protozoan Parasites Important to Vet Med
- [Diagnosis of Veterinary Endoparasitic Infections](#)
University of Pennsylvania program designed to assist students, researchers, and clinicians in diagnosing parasitic infections.
- [Diagnosteg](#)
This website contains information compiled by experts in equine parasitic diseases.
- [Ohio State University Acarology Laboratory](#)
- [Parasitology Research](#)
Cryptosporidium/Coccidial research from Kansas State University, Biology division.
- [Veterinary clinical parasitology images](#)
Images and descriptions from Oklahoma State University.

Course Coordinator

Head of Department

Dr. Nagwa Mohammed Kandel

**Prof. Dr. Reda Elbastawisy
Khalafalla**



Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding				Intellectual Skills			Practical & Professional Skills			General & Transferable Skills			
		1	2	3	4	1	2	3	1	2	3	1	2	3	4
Introduction	10	✓										✓	✓	✓	✓
Fecal examination	60		✓			✓		✓	✓	✓		✓	✓	✓	✓
Blood examination	20		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
Examination of other body fluids and tissues	12		✓				✓	✓	✓	✓		✓	✓	✓	✓
Examination for ectoparasites	60			✓			✓	✓	✓		✓	✓	✓	✓	✓
Making permanent mounts of parasites	10		✓	✓				✓	✓			✓	✓	✓	✓
Serological diagnosis of parasitic diseases	20	✓	✓		✓	✓		✓	✓		✓	✓	✓	✓	✓



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 195/2

Course title: Parasites of wild animals

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 144 hrs.

Lectures: 48 hrs. (48 weeks- 1hrs/week)

Practical: 96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to provide students with basic and fundamental knowledge, skills and positive attitude concerning parasites of wild animals.

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING (K.U):

By the end of the course, students should be able to:

- a.1. Define the fundamental concepts of Parasites of wild animals and with the technical vocabulary used in this field.
- a.2. Identify different species of helminths (trematodes, nematodes and cestodes) and their stages in the intermediate host (snails) based on morpho-biological, geographical, clinical observation, and how could they induce diseases in different wild animals and how to control.
- a.3. Recognize different species of arthropods and their biological and morphological features with reference to their medical importance in transmitting diseases (arthropod borne diseases) or in inducing lesions (blood loss and myiasis) to the affected wild animals and their control.
- a.4. Discuss the ability of Protozoa to induce diseases in wild animals by studying their life cycles, intermediate hosts /vector, mode of infection transmission and control .

3-B: INTELLECTUAL SKILLS (I.S):

By the end of the course, students should be able to:

- b.1. organize the factors responsible for intensity of parasitic infections among wild animals.
- b.2. analyze the parasite-host interaction and the parasite defense mechanism.
- b.3. compare between different parasites and their impact on the wild animals.

3- C: PRACTICAL AND PROFESSIONAL SKILLS (P.P.S):

By the end of the course, students should be able to:

- c.1. Collect lymph and blood as well as fecal samples to investigate and diagnose the presence of different parasitic infections affecting various hosts by applying different techniques including; fecal floatation, fecal sedimentation, skin scrapings, blood thin film and blood thick film.
- c.2. Interpreting sample investigations results to write reports for the clinicians for correct treatment, prevention, and control program
- c.3.. Diagnose the different parasitic infection in wild animals by indirect methods like different serological tests,

3- D: GENERAL AND TRANSFERABLE SKILLS (G.T.S):

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.



d.4. Manage time efficiently.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1.Introduction	5	0	5
2.Trematodes of wild animals	14	32	46
3.Cestodes of wild animals	5	10	15
4.Nematodes of wild animals	3	6	9
5.Arthropods of wild animals	14	32	46
6.Protozoa of wild animals	2	6	8
7.Diagnosis and Control of wild animals parasites	5	10	15
Total	48	96	144

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library

Making host parasites list for different wild animals commonly found in Egypt

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures *	a1 to a4	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c2	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b3	c1 to c2	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- Special handling in the laboratory with extra time if needed.

Ensure that all students with disabilities have equal access to educational opportunities and to help students to achieve academic and personal success

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10



6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b3		d4
Practical exams			c1 to c2	d2, d3
Oral exams	a1 to a4	b1 to b3		d1
Student activities	a1, a4			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- 1. Roberts, L. S. and J.J. Janovy. 2000. Foundations of Parasitology.5th Edition, W.C.B. Company, U.K.
- 2. Urquhart G. M., J. Armour, J. L. Duncan, A.M. Dunn, F. W. Jennings. 2000. Veterinary Parasitology, Longman Scientific Technical, U.K.
- 3. Levine, N. D. 1990. Veterinary Protozoology.Iowa State University Press, Ames, Iowa, USA.
- 4. Georgi, J. R., M. E. Georgi and V. J. Theodorides. 1999. Parasitology for Veterinarians. 7th Ed. W.B. Saunder Company London.
- 5. Wall, R. and D. Shearer. 1997. Veterinary Entomology. Chapman and Hall.

8-2: Recmended books:

- Elsheikha, Hany M., and H. A. Khan. Essentials of veterinary parasitology. Caister Academic Press, 2011.
- Elsheikha, Hany, and Edward L. Jarroll, eds. Illustrated Dictionary of Parasitology in the Post-genomic Era. Caister Academic Press, 2017.
- Taylor, Mike A., R. L. Coop, and Richard L. Wall. Veterinary parasitology. John Wiley & Sons, 2015.

8-3: Egyptian Knowledge Bank:

- Skrjabin, K. I., et al. "Veterinary parasitology and parasitic diseases of the domestic animals." Veterinary parasitology and parasitic diseases of the domestic animals. (1934).
- Bowman, Dwight D. Georgis' Parasitology for Veterinarians E-Book. Elsevier Health Sciences, 2020.
- Zajac, Anne M., et al. Veterinary clinical parasitology. John Wiley & Sons, 2021.
- Bowman, Dwight D., et al. Feline clinical parasitology. John Wiley & Sons, 2008.
- Kassai, Tibor. Veterinary helminthology. Acribia, SA, 2002.
- Kreier, Julius P., ed. Parasitic Protozoa: Volume 10. Academic Press, 2013.
- Rohde, Klaus, ed. Marine parasitology. Csiro publishing, 2005.
- Islam, S. "Parasites and parasitic diseases of wildlife." Proceedings of XVII National Congress of Veterinary Parasitology and National symposium on Strengths, challenges and opportunities in Veterinary Parasitology (Nov. 15-17, 2006). 2006.
- Papadopoulos, Elias. Atlas of parasites in sheep. Grupo Asís Biomedica SL, 2021.

Scientific Journals

1. Journal of parasitology research.
2. Parasites & vectors.
3. The open parasitology journal.



Faculty



4. Journal of parasitology.
5. Journal of vector borne diseases.
6. Trends in parasitology.
7. Iranian journal of parasitology.
8. Parasitology international.
9. The Korean journal of parasitology.
10. Acta parasitologica
11. Journal of veterinary parasitology
12. Parasitology research.
13. Parasitology today.
14. Tropical medicine and parasitology: official organ of Deutsche
15. Tropical biomedicine.
16. Turkiye parazitolojii dergisi
17. Veterinary parasitology.
18. International journal for parasitology.

Scientific websites

- **The Egyptian Knowledge Bank:** <https://www.ekb.eg/web/guest/home>
- [Arthropods and Protozoan Parasites](#)
Arthropods and Protozoon Parasites Important to Vet Med
- [Diagnosis of Veterinary Endoparasitic Infections](#)
University of Pennsylvania program designed to assist students, researchers, and clinicians in diagnosing parasitic infections.
- [Fleas Factsheet](#)
Provides a concise description of flea biology, products and some general strategies to eliminate fleas.
- [Iowa State Entomology Image Gallery](#)
Pictures and information on everything from ants to stink bugs.
- [Medical Entomology](#)
Iowa state entomology index with links to a wide variety of related entomology sites.
- [Morbidity and Mortality Weekly Report \(MMWR\)](#)
A Synopsis On Raccoon Roundworm Encephalitis In Chicago, Illinois, and Los Angeles, California, 2000.
- [Ohio State University Acarology Laboratory](#)
- [Parasitology Research](#)
Cryptosporidium/Coccidial research from Kansas State University, Biology division.
- [Research In Veterinary Parasitology](#)
- [Veterinary clinical parasitology images](#)
Images and descriptions from Oklahoma State University.
- [Veterinary Entomology](#)
Insects of veterinary importance.

Course Coordinator

Head of Department

Dr. Nagwa Mohammed Kandel

**Prof. Dr. Reda Elbastawisy
Khalafalla**



COURSE SPECIFICATION (2021 / 2022)

1 - Basic Information:

Code number: 196/2

Course title: Veterinary Medical Parasitology

Academic Year: PhD Veterinary Medicine Program

Total teaching hours: 192 hrs.

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical: 96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to basic and fundamental knowledge, skills and positive attitude concerning parasites in different animals, birds and fish

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING (K.U):

By the end of the course, students should be able to:

- a.1. Define the fundamental concepts of Parasitology and with the technical vocabulary used in this field.
- a.2. Identify different species of helminths (trematodes, nematodes and cestodes) based on their morphology, biology, geographical distribution, clinical observation, and their ability to induce diseases in different hosts.
- a.3. Recognize different species of arthropods and their morphology, biology, geographical distribution, and their ability to induce diseases (mange/scabies, myiasis, blood loss) in different hosts with reference to their veterinary medical importance in transmitting diseases (arthropod borne diseases).
- a.4. Discuss the ability of Protozoa to induce diseases in different hosts by studying their life cycles, intermediate hosts /vector, mode of infection transmission, diagnosis, prevention and control .

3-B: INTELLECTUAL SKILLS (I.S):

By the end of the course, students should be able to:

- b.1. Organize the factors responsible for severity of parasitic infection hosts.
- b.2. Analyze the parasite-host interaction and defense mechanism of the parasites against the host immune reaction.
- b.3. Compare between different parasites.

3- C: PRACTICAL AND PROFESSIONAL SKILLS (P.P.S):

By the end of the course, students should be able to:

- c.1. Collect urine, lymph, skin scrapings and blood as well as fecal samples to investigate and diagnose the presence of different parasitic infections microscopically by applying different techniques including; fecal floatation, fecal sedimentation, blood thin /thick film and mite diagnosis.
- c.2. Interpreting the results after sample investigations to write reports for the clinicians for the correct treatment, prevention, and control program
- c.3.. Diagnose the different parasitic infection in different hosts by indirect methods like different serological tests,

3- D: GENERAL AND TRANSFERABLE SKILLS (G.T.S):

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information



- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently and work in groups.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1. Terminology and introduction into veterinary medical parasitology	10	0	10
2. Helminths	30	30	60
3. Arthropods	21	21	42
4. Protozoa	25	25	50
5. diagnostic and laboratory procedures applied in parasitology	10	20	30
Total	96	96	192

5- TEACHING & LEARNING METHODS:

- * **Advanced lectures:** PowerPoint presentations including videos, and whiteboard Discussion and brain storming
- * **Practical sessions:**
- * **Self-Learning activities:** Mini reviews from the web and the library Making host parasites list for different animals.
- * **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a4	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c3	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a4	b1 to b3	c1 to c3	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- Special handling in the laboratory with extra time if needed.

Ensure that all students with disabilities have equal access to educational opportunities and to help students to achieve academic and personal success

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment
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	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a4	b1 to b3		d4
Practical exams			c1 to c3	d2, d3
Oral exams	a1 to a4	b1 to b3		d1
Student activities	a1, a4			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- 1. Roberts, L. S. and J.J. Janovy. 2000. Foundations of Parasitology.5th Edition, W.C.B. Company, U.K.
- 2. Urquhart G. M., J. Armour, J. L. Duncan, A.M. Dunn, F. W. Jennings. 2000. Veterinary Parasitology, Longman Scientific Technical, U.K.
- 3. Levine, N. D. 1990. Veterinary Protozoology.Iowa State University Press, Ames, Iowa, USA.
- 4. Soulsby, E. J. L. 1986. Helminths, Arthropods and Protozoa of Domesticated Animals. The English Language Book Society BailliereTindall, London.
- 5. Georgi, J. R., M. E. Georgi and V. J. Theodorides. 1999. Parasitology for Veterinarians. 7th Ed. W.B. Saunder Company London.
- 6. Wall, R. and D. Shearer. 1997. Veterinary Entomology. Chapman and Hall.
- 7. Hendrix, C. M. 1998. Diagnostic Veterinary Parasitology.2nd Edition.Msoby.

8-2: Recommended books:

- 1. Elsheikha, Hany M., and H. A. Khan. Essentials of veterinary parasitology. Caister Academic Press, 2011.
- 2. Elsheikha, Hany, and Edward L. Jarroll, eds. Illustrated Dictionary of Parasitology in the Post-genomic Era. Caister Academic Press, 2017.
- 3. Taylor, Mike A., R. L. Coop, and Richard L. Wall. Veterinary parasitology. John Wiley & Sons, 2015.

8-3: Egyptian Knowledge Bank:

- 1. Skrjabin, K. I., et al. "Veterinary parasitology and parasitic diseases of the domestic animals." Veterinary parasitology and parasitic diseases of the domestic animals. (1934).
- 2. Bowman, Dwight D. Georgis' Parasitology for Veterinarians E-Book. Elsevier Health Sciences, 2020.
- 3. Zajac, Anne M., et al. Veterinary clinical parasitology. John Wiley & Sons, 2021..
- 4. Kassai, Tibor. Veterinary helminthology. Acribia, SA, 2002.
- 5. Kreier, Julius P., ed. Parasitic Protozoa: Volume 10. Academic Press, 2013.
- 6. Rohde, Klaus, ed. Marine parasitology. Csiro publishing, 2005.
- 7. Papadopoulos, Elias. Atlas of parasites in sheep. Grupo Asís Biomedica SL, 2021.

Scientific Journals

1. Current research in parasitology & vector-borne diseases.
2. Veterinary parasitology: X.
3. Parasitology open.
4. Veterinary parasitology, regional studies and reports.
5. Annals of parasitology.
6. International journal for parasitology. Parasites and wildlife.
7. ISRN parasitology. (International Scholarly Research Network Parasitology)



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8. Tropical parasitology.
9. Journal of parasitology research.
10. Parasites & vectors.
11. The open parasitology journal.
12. Journal of parasitology.
13. Journal of vector borne diseases.
14. Trends in parasitology.
15. Iranian journal of parasitology.
16. Parasitology international.
17. The Korean journal of parasitology.
18. Acta parasitologica

Scientific websites

- **The Egyptian Knowledge Bank:** <https://www.ekb.eg/web/guest/home>
- [Alberta Agriculture, Food and Rural Development](#)
Livestock diseases and parasites.
- [Arthropods and Protozoan Parasites](#)
Arthropods and Protozoon Parasites Important to Vet Med
- [Ectoparasite Database](#)
Treatments for ectoparasites. Covers species (avian, reptilian, small mammal), route of administration, etc. Last update 2002.
- [Fleas Factsheet](#)
Provides a concise description of flea biology, products and some general strategies to eliminate fleas.
- [Guarding against Giardia Infectious Enteritis](#)
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Pictures and information on everything from ants to stink bugs.
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Iowa state entomology index with links to a wide variety of related entomology sites.
- [Ohio State University Acarology Laboratory](#)
- [Parasitology Research](#)
Cryptosporidium/Coccidial research from Kansas State University, Biology division.
- [Tick ID](#)
The Rhode Island Department of Health Lyme Disease tick identification site.
- [Ticks & Tick-Transmitted Diseases in Oklahoma](#)
- [UW Veterinary Parasitology](#)
- [Veterinary clinical parasitology images](#)
Images and descriptions from Oklahoma State University.
- [Veterinary Entomology](#)
Insects of veterinary importance.

Course Coordinator

Dr. Nagwa Mohammed Kandel

Head of Department

**Prof. Dr. Reda Elbastawisy
Khalafalla**



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Course Matrix for achievement of Intended Learning Outcomes

Topics	Hours	Knowledge & Understanding				Intellectual Skills			Practical & Professional Skills			General & Transferable Skills			
		1	2	3	4	1	2	3	1	2	3	1	2	3	4
1. terminology and introduction into veterinary medical parasitology	10	✓										✓	✓	✓	✓
2. Helminths	60		✓			✓	✓	✓	✓		✓	✓	✓	✓	✓
3. Arthropods	42	✓		✓		✓		✓				✓	✓	✓	✓
4. Protozoa	50	✓			✓	✓		✓	✓		✓	✓	✓	✓	✓
5. diagnostic and laboratory precedures applied in parasitology	30		✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓

COURSE SPECIFICATION

(2021 / 2022)

1 - Basic Information:

Code number:197/2

Course title: **Physiology and biochemistry of parasites**

Academic Year: **PhD Veterinary Medicine Program**

Total teaching hours: 192 h

Lectures: 96 hrs. (48 weeks- 2hrs/week)

Practical:96 hrs. (48 weeks- 2hrs/week)

2 - OVERALL AIMS OF THE COURSE:

By the end of this course, the student should acquire the concepts, principles and skills related to provide students with basic and fundamental knowledge, skills and positive attitude concerning physiology and biochemistry of parasites in different animals, birds and fish

3 - INTENDED LEARNING OUTCOMES (I. L. Os.):

3-A: KNOWLEDGE and UNDERSTANDING (K.U):

By the end of the course, students should be able to:

- a.1. Be familiar with the fundamental concepts of physiology and biochemistry of parasites
- a.2. Describe the physiology of helminths, arthropods, protozoa, (including; nutrition, digestion, absorption, excretion, gas exchange, reproduction, muscles, nervous system, movement /locomotion, appendages, etc)
- a.3. Explain the biochemistry of helminths, arthropods, protozoa that including neurotransmitter, toxins excreted, secretion, antigens, gas exchange, energy consumption, etc.

3-B: INTELLECTUAL SKILLS (I.S):

By the end of the course, students should be able to:

- b.1. Organize the physiological and biochemical factors responsible for parasite's infectivity, virulence, defense mechanism and survival within the host and his immune response.
- b.2. Analyze the parasite-host interaction on physiological and biochemical base.
- b.3. Compare between physiology and biochemistry of different parasites .

3- C: PRACTICAL AND PROFESSIONAL SKILLS (P.P.S):

By the end of the course, students should be able to

- c.1. Diagnose the different chemical constituents of the parasite body and their secretions and toxins during the course of the infection in different hosts by direct and indirect methods.
- c.2. Select rational treatment and control programs for parasite population based on his/her knowledge of physiology and biochemistry of parasites.

3- D: GENERAL AND TRANSFERABLE SKILLS (G.T.S):

By the end of studying the course, the graduate should be able to:

- d.1. Communicate effectively with his professors, and collages.
- d.2. Utilize different sources of knowledge and information
- d.3. Use information technology to serve the professional practice.
- d.4. Manage time efficiently and work in groups.

4 - COURSE CONTENTS:

Topic	No. of hours		
	Lectures	Practical	Total
1.Introduction	10	0	10
2.Physiology of helminthes	28	32	60
3.Biochemistry of helminthes	10	10	20
4.Physiology of arthropods	6	6	12
5.Biochemistry of arthropods	28	32	60

6. Physiology of protozoa	4	6	10
7. Biochemistry of protozoa	10	10	20
Total	96	96	192

5- TEACHING & LEARNING METHODS:

* **Advanced lectures:** PowerPoint presentations including videos, and whiteboard
Discussion and brain storming

* **Practical sessions:**

* **Self-Learning activities:** Mini reviews from the web and the library concerning physiology and biochemistry of parasites

* **Distance Teaching and Learning:** Using the Microsoft Teams platform, when necessary, such as during COVID-19 pandemics or when onsite (face-to-face) education is halted due to weather emergencies or other reasons. Distance teaching may be offered synchronous or non-synchronous.

Teaching and Learning Methods	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Advanced lectures*	a1 to a3	b1 to b3		d1, d4
Practical sessions		b1 to b3	c1 to c2	d2, d4
Self-Learning activities				d2, d3, d4
Distance Teaching and Learning	a1 to a3	b1 to b3	c1 to c2	d1 to d4

*Lectures and some practical topics may be offered face to face or via distance teaching and learning.

6. METHODS FOR STUDENTS With limited capabilities:-

- Special handling in the laboratory with extra time if needed.

Ensure that all students with disabilities have equal access to educational opportunities and to help students to achieve academic and personal success

7. STUDENT ASSESSMENT:-

7.a Used methods	Written examination	Oral examination	Practical examination	Activities
7.b time	At the end of the academic year	At the end of the academic year	At the end of the academic year	Allover the academic year
7.c grads	50	20	20	10

6.1. Methods	7. Student Assessment			
	Intended Learning Outcomes Covered			
	KU	IS	PPS	GTS
Written exams	a1 to a3	b1 to b3		d4
Practical exams			c1 to c2	d2, d3
Oral exams	a1 to a3	b1 to b3		d1
Student activities	a1, a3			d1 to d4

KU, knowledge and understanding; IS, intellectual skills; PPS, practical and professional skills; GTS, general and transferable skills.

8. LEARNING AND REFERENCE MATERIALS:

8-1: Essential Books

- 1. Roberts, L. S. and J.J. Janovy. 2000. Foundations of Parasitology. 5th Edition, W.C.B. Company, U.K.
- 2. Urquhart G. M., J. Armour, J. L. Duncan, A.M. Dunn, F. W. Jennings. 2000. Veterinary Parasitology, Longman Scientific Technical, U.K.

- 3. Levine, N. D. 1990. Veterinary Protozoology. Iowa State University Press, Ames, Iowa, USA.
- 4. Soulsby, E. J. L. 1986. Helminths, Arthropods and Protozoa of Domesticated Animals. The English Language Book Society Bailliere Tindall, London.
- 5. Georgi, J. R., M. E. Georgi and V. J. Theodorides. 1999. Parasitology for Veterinarians. 7th Ed. W.B. Saunders Company London.
- 6. Wall, R. and D. Shearer. 1997. Veterinary Entomology. Chapman and Hall.
- 7. Hendrix, C. M. 1998. Diagnostic Veterinary Parasitology. 2nd Edition. Mosby.

8-2: Recommended books:

- Van den Bossche, Hugo, ed. Comparative biochemistry of parasites. Elsevier, 2012.
- Elsheikha, Hany M., and H. A. Khan. Essentials of veterinary parasitology. Caister Academic Press, 2011.
- Elsheikha, Hany, and Edward L. Jarroll, eds. Illustrated Dictionary of Parasitology in the Post-genomic Era. Caister Academic Press, 2017.
- Taylor, Mike A., R. L. Coop, and Richard L. Wall. Veterinary parasitology. John Wiley & Sons, 2015.

8-3: Egyptian Knowledge Bank:

- Smyth, James Desmond, and Donald Peter McManus. The physiology and biochemistry of cestodes. Cambridge university press, 1989.
- Barrett, John. Biochemistry of parasitic helminths. MacMillan Publishers Ltd., 1981.
- Bryant, Christopher, and Carolyn A. Behm. Biochemical adaptation in parasites. Chapman and Hall Ltd, 1989.
- Von Brand, Theodor. Biochemistry of parasites. Elsevier, 2013.
- Skrzabin, K. I., et al. "Veterinary parasitology and parasitic diseases of the domestic animals." Veterinary parasitology and parasitic diseases of the domestic animals. (1934).
- Bowman, Dwight D. Georgis' Parasitology for Veterinarians E-Book. Elsevier Health Sciences, 2020.
- Zajac, Anne M., et al. Veterinary clinical parasitology. John Wiley & Sons, 2021.
- Kassai, Tibor. Veterinary helminthology. Acribia, SA, 2002.
- Kreier, Julius P., ed. Parasitic Protozoa: Volume 10. Academic Press, 2013.
- Papadopoulos, Elias. Atlas of parasites in sheep. Grupo Asís Biomedica SL, 2021.

Scientific Journals

1. Current research in parasitology & vector-borne diseases.
2. Veterinary parasitology: X.
3. Parasitology open.
4. Journal of parasitology.
5. Journal of vector borne diseases.
6. Trends in parasitology.
7. Iranian journal of parasitology.
8. Parasitology international.
9. The Korean journal of parasitology.
10. Acta parasitologica
11. Journal of veterinary parasitology
12. Parasitology research.
13. Parasitology today.
14. Tropical medicine and parasitology: official organ of Deutsche
15. Tropical biomedicine.
16. Turkiye parazitolojii dergisi
17. Veterinary parasitology.
18. Egyptian journal of bilharziasis

Scientific websites

- **The Egyptian Knowledge Bank: <https://www.ekb.eg/web/guest/home>**

- [Alberta Agriculture, Food and Rural Development](#)
Livestock diseases and parasites.
- [Arthropods and Protozoan Parasites](#)
Arthropods and Protozoan Parasites Important to Vet Med
- [Control Of Parasites In Companion Animals](#)
The Companion Animal Parasite Council (CAPC) is an independent group of U.S. veterinary, governmental, and association leaders in the parasitology field.
- [Diagnosis of Veterinary Endoparasitic Infections](#)
University of Pennsylvania program designed to assist students, researchers, and clinicians in diagnosing parasitic infections.
- [Ectoparasite Database](#)
Treatments for ectoparasites. Covers species (avian, reptilian, small mammal), route of administration, etc. Last update 2002.
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Cryptosporidium/Coccidial research from Kansas State University, Biology division.
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- [UW Veterinary Parasitology](#)
- [Veterinary clinical parasitology images](#)
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Course Coordinator

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