

Benha University
Faculty of Veterinary Medicine
Department of Theriogenology



Faculty of Veterinary Medicine-Benha University
Department of Theriogenology

Program Specification for Master Degree
(2010- 2011)

Program Title: Master Veterinary Science
(Theriogenology)

قسم التوليد والتناسل والتلقيح الاصطناعي
كلية الطب البيطري-جامعة بنها

Benha University
Faculty of Veterinary Medicine
Department of Theriogenology

Program Specification for Master Degree (2010- 2011)

A- Administrative information:

- 1- **Awarding Body:** Benha University
- 2- **Teaching Body:** Faculty of Veterinary Medicine
- 3- **Department responsible:** Theriogenology
- 4- **Program Title:** Master Degree in Veterinary Science (Theriogenology)
- 5- **Final award:** Master Degree
- 6- **Registration period:** 2-4 years
- 7- **Program Coordinator:** Prof. Dr.
- 8- **External evaluator:** not applicable
- 9- **Date of revision:** 28/ 11 / 2010
- 10- **Date of approval:** 28/ 11 / 2010

B- Professional information:

1-Educational aims of the program

- Provide graduates the opportunity to develop communication skills, recent techniques and diagnostic tools in the field of Theriogenology, experience of scientific research and teaching skills.

- To achieve capability in modern laboratory technology to develop practical research project.
- To supply the graduated 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.
- A Good grade in Master can serve as a basis for admission to PhD of veterinary medical science in the field of the reproductive management and biotechnology thereafter.

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.

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. Realize professional theories, principles and knowledge of advanced research techniques in the field of theriogenology.
- a.2. Recognize ethical and legal principles for the proper animal manipulation and utilization of the technology concerning uses of echography in the field of theriogenology
- a.3. Apply their knowledge of theriogenology research methods by evaluating the utility of those techniques to specific research question.
- a.4. Apply their knowledge and understanding of reproductive efficiency to the critical analysis and discussion of the scientific literature.
- a.5. Recognize the importance of infectious causes of infertility in veterinary field and its great influence on animal production.
- a.6. Recognize the different procedures that improve the fertility status of the herd.

b. Intellectual skills:

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

- b.1.** Identify and/or analyze animal reproduction problems or questions and ordering them according to the priority.
- b.2.** Arrange the scientific approach on exposing any problem related to the field application of reproductive management and biotechnology.
- b.3.** Solve animal reproduction problems by incorporation of different awareness despite insufficiency of some resources.
- b.4.** Analytical reading the researches and topics in the related subject as the baseline for further post-graduation.
- b.5.** Asses risks of animal reproduction problems and its possible consequences.
- b.6.** Make professional decisions to solve the problems in animal reproduction according to the scientific materials either via the network connection or the contact with more professional experts.
- b.7.** Develop creative approaches for solving the technical problems or issues associated running and researches project.
- b.8.** Design a plan for enhancing animal reproduction.
- b.9.** Evaluate the research data and develop new approach to solve their research questions.
- b.10.** Identify, summarize and evaluate prior researches finding in a specific area.

c. Practical and professional skills:

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

- c.1.** Apply professional skills in the area of assessment of the fertility status and diagnose reproductive failure in farm animals using of the necessary recent techniques and tools.

- c.2. Experimental designing and analysis to their own research project.
- c.3. Relevant statistical analysis on data obtained for their own research.
- c.4. Write professional reports with special emphasis to understanding and interpretation of data which help in improving the economic values following introduction of a new management policy.
- c.5. Plan and executive a research project in the field of theriogenology with a consideration to the technical, ethical and safety issues and associated costs.
- c.6. Perform essential laboratory skills that underpin techniques associated with pregnancy diagnosis, semen biology and embryo transfer.
- c.7. Mastery of research skills as use of libraries and relevant index with a consideration to the technical, ethical and safety issues.

d. General and transferable skills:

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

- d.1. Communicate effectively in different ways, including:
 - Communication with his professors, collages and animal owner (s).
 - Participation in workshops assigned on reproduction, fertility disorders and assisted reproductive techniques at level of the stockholders and veterinary practitioners.
 - To be a consultant for those working in field of animal reproduction and reproductive biotechnology, when they expose to a problem in field of specification.
- d.2. Demonstrate information retrieval and library skills.
- d.3. Self assessment and determine their educational needs.

d.4. Utilize different sources of gaining knowledge and information and to present research finding in oral and written from using arrange of appropriate soft ware(e.g. power point, word, excel and database).

d.5. Demonstrate interpersonal skills and team working ability by successful completion of collaborative learn assignment and the honors researches project.

d.6. Lead team under different professional circumstances.

d.7. Demonstrate an ability to learn independently in preparation for career of lifelong learning.

d.8. Present research finding in oral and written from using arrange of appropriate soft ware (e.g. power point, word, excel and database).

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. Course assessment is made of three elements, written, practical and oral exams. These summative assessment measures to extent student are able to demonstrate knowledge and understanding of the above mentioned points. In addition to summative assessment provide regular feedback through teaching staff supervision comment on students' essay, seminar and class activity presentation. The research experiment and writing thesis are assessed using the monitoring annual reports adopted by the Faculty Finally, the assessment of thesis measure the individual student ability to work independently in the field specialization.

7. Program courses

a. Program duration (years):


- Master degree from 2-4 years.

b. Program structure:

- Courses are given weekly in 4 theoretical hours and 7 practical hours as following:

Program courses	Lecture (hour)	Practical (hour)
Fundamental (core) course	3	4
Research methodology	1	3
Computers and biostatistics	2	2
Compulsory course	2	2
Compulsory course	2	2

c. Program evaluation methods

Evaluator	Tool	Sample
Postgraduate Student	Questioners	
	Meeting	
	Symposia	
	Seminars	
Postgraduate alumni	Questioners	
	Meeting	
	Symposia	
	Seminars	
Stakeholders (employers)	Questioners	
	Meeting	
	Symposia	
	Seminars	
External evaluator/External examiner	Reports	
Other methods		

- From 3 to 5 **Compulsory** courses choice from the following:

Subject	Code	Course title	No of hours/week	
			Lecture	Practical Lab
Anatomy and embryology		1- applied anatomy	2	2
		2- anatomical techniques and surface anatomy	2	2
		3- Osteology and arthrology	2	2
		4- comparative digestive system	2	2
		5- comparative uro-genital system	2	2
		6-comparative respiratory system	2	2
		7- comparative cardiovascular system	2	2
		8- comparative nervous system and endocrine glands	2	2
		9- general and special embryology	2	2
		10- avian anatomy	1	2
Histology		11- cytology and cytochemistry	2	2
		12- general histology	2	2
		13- Histology and histochemistry of blood, lymph and cardiovascular system.	2	2
		14- histology and histochemistry of respiratory system	2	2
		15- histology and histochemistry of digestive system	2	2
		16- histology and histochemistry of uro-genital system	2	2
		17- histology and histochemistry of nervous and endocrine systems	2	2
		18- histology and histochemistry of skin, hooves, claws and nails	2	2
		19- avian histology	2	2
		20 circulatory and immune system	2	2

Physiology	21- mammalian endocrine and reproduction	2	2
	22- poultry physiology (advanced)	2	2
	23- Fish physiology.	1	2
	24- physiology of muscle and nerve	2	2
	25- physiology of ruminants	2	2
	26- physiology of environment, adaptation and cell	2	2
	27- physiology of blood	2	2
	28- physiology of digestion, metabolism and energy	2	2
	29- pollution	1	2
	30–radioactive isotopes and biological uses	2	2
Biochemistry	31- basic biochemistry	2	2
	32- metabolism	2	2
	33- tissue and biological fluids biochemistry	2	2
	34- biochemistry of hormones and reproduction	2	2
	35- nutritional biochemistry	2	2
	36- clinical biochemistry	2	2
	37- avian biochemistry	2	2
	39- microbial biochemistry	2	2
	40- biochemistry of radiation	1	2
Animal behavior and management	41- behavior and management of ruminants (cattle, buffalo, sheep, camels and goats)	2	3
	42- behavior and management of horses	2	3
	43- behavior and management of pet animals	1	2
	44- behavior and management of laboratory animals	1	2
	45- behavior and management of wild animals	2	2
	46- behavior and management of poultry	2	2

		47- behavior and management of rabbit	1	2
		48- behavior of experimental animals	1	2
Nutrition and clinical nutrition		49- basic animal nutrition	2	2
		50- feedstuff	2	2
		51- 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
		52- poultry and rabbit nutrition	2	2
		53- wild animal nutrition	1	2
		54- laboratory animal nutrition	1	2
		55- feed additives	1	2
		56- feedstuff analysis	2	2
		57- Quality control of feed and feed factories	2	2
		58- Clinical nutrition and malnutrition	2	2
Pathology and diagnostic pathology		59- General pathology and neoplasm(progressive)	2	2
		60-pathology of microbial and parasitic diseases in animal	2	2
		61- pathology of bad nutrition	1	2
		62- pathology of environmental pollution	1	2
		63- pathology reproductive diseases	1	2
		64- avian pathology	2	2
		65- fish pathology	2	2
		66- experimental pathology	2	2
		67- toxic pathology	2	2
	68- surgical pathology	2	2	
Clinical		69- Advanced clinical pathology	2	2

pathology	70-Organ function tests and body and urine balance	2	2
	71- Clinical hematology and bone marrow examination	1	2
Bacteriology, immunology and mycology	72- general bacteriology	1	2
	73-systemic bacteriology	2	2
	74- advanced immunology	2	2
	75- fish bacteriology	1	2
	76- poultry and rabbit bacteriology	2	2
	77- invertebrates bacteriology	1	2
	78- advanced mycology	2	2
	79- bacteriology diagnostic methods	2	2
Virology	80- general virology	2	2
	81-systemic virology(specific courses)	3	3
	82- methods of virus diagnosis	2	2
	83- fish virology	2	2
	85- poultry and rabbit virology	2	2
	86- vaccines and viral immunity	2	2
Parasitology	87- veterinary medical entomology and acarology	2	2
	88-helminthology	2	2
	89- protozoology	2	2
	90- avian parasitology	2	2
	92- malacology and its vet. Importance	1	2
	93- immune-parasitology	1	2
	94- Clinical parasitology	2	2
	95-Wild life parasitology	1	2
	96-Special vet. Parasitology	2	2

Pharmacology	97- general pharmacology (advanced)	2	2
	98- pharmacology of autonomic nervous system and autocoid	2	2
	99- pharmacology of central nervous system	2	2
	100 pharmacology of anesthesia	2	2
	101- systemic pharmacology	2	2
	102- pharmacology of metabolism	2	2
	103- pharmacology of hormones	2	2
	104- chemotherapy	2	2
	105-drug toxicology	1	2
	106-biological evolution of drug	1	1
Hygiene and control of milk and dairy products	107- Hygiene and control of milk and dairy products	2	2
	108- microbiology of milk and dairy products	2	2
	109- milk technology and preservation	2	2
	110 food analysis	2	2
	111- food poisoning	1	2
	112- specific courses on sources of contamination, disturbances of milk production, milk born diseases, hygiene of table egg, edible fats and oils	1	1
	113- the sanitation of dairy plant	2	2
Hygiene and control of meat and their products and animal by-	114- slaughter animal Hygiene	1	2
	115- abattoir management and hygiene	2	2
	116- meat hygiene and control	2	2
	117 meat and poultry inspection	1	2
	118- food technology	1	2

products	119- food microbiology	2	1
	120- chilled meal microbiology	1	2
	121- fish microbiology	1	2
	122- meat and fish analysis	1	2
	123- the sanitation of meat plant	2	2
Internal medicine	124- advanced general medicine	2	2
	125- disease of ruminants(cattle, buffalo, camels, sheep and goats)	3	3
	126- diseases of equines	2	2
	127 diseases of pet animals	2	2
	128- diseases of wild animals	2	2
	129- diseases of metabolic disorders	2	2
	130- nutritional deficiency diseases	2	2
	131- diseases of skin	1	2
	132 - diseases of newly born animals	2	2
Infectious diseases	133- Infectious diseases of cattle	2	2
	134- Infectious diseases of sheep and goat	2	2
	135- Infectious diseases camel	2	2
	136 Infectious diseases of equine	2	2
	137- Infectious diseases of pet animals	2	2
	138- Infectious diseases lab animals	1	2
	139- Infectious diseases udder and newly born animals	2	2
	140- Infectious diseases buffaloes	2	1
Forensic medicine and	142- Forensic medicine and veterinary procedures	2	2
	143- general toxicology	2	2

toxicology	144- environmental toxicology	2	2
	145- forensic toxicology	2	2
	146- laboratory diagnostic toxicology	2	2
Theriogenology	147- diseases of genital system	2	2
	148- special specific courses in ruminants- equine- pet animals	2	2
	149- diseases of male genital system and coital diseases	2	2
	150 obstetrics and its related diseases in farm animals and pet animals	2	2
	151- reproduction and immunity	1	2
	152- artificial insemination in ruminants	2	2
	153- artificial insemination in equine	2	2
	154- artificial insemination in pet animals	1	2
	155- artificial insemination in poultry and rabbits	1	2
	156- embryo transfer	1	2
Veterinary Surgery	157- general surgery (advanced)	2	2
	158- operative surgery(organs)	2	3
	159- surgery of eye, ear, nose and larynx	2	2
	160 digestive system surgery	2	2
	161- surgery of the limbs, hoof and claws	2	2
	162- experimental surgery	2	2
	163- anesthesiology	1	1
	164- radiology	2	2
Poultry and rabbit diseases	165- bacterial diseases of poultry	2	2
	166- viral diseases of poultry	2	2

		167- fungal diseases of poultry	2	2
		168 parasitic diseases of poultry	1	2
		169- nutritional diseases of poultry	1	2
		171-diseases of rabbit (advanced)	2	2
		172-diseases prevention in poultry	2	2
		173- laboratory poultry diseases diagnosis	2	2
Animal and environmental hygiene		174- farm animal hygiene (advanced)	2	2
		175- poultry hygiene (advanced)	2	2
		176- environmental hygiene and pollution	2	2
		177- control of contagious diseases	2	2
		178- eradication of rodents and disease vector	2	2
		179- insecticides and public health	2	2
		180-hygiene of animal enclosures- specific courses in :- cattle houses – poultry houses – rabbit houses- pet animals house3s – experimental animals houses	2	2
		181-disinfections and disinfectants	2	2
		182- veterinary epidemiology – specific courses in animal environment	2	-
Zoonoses		183- advanced zoonoses (specific courses in bacterial and Mycotic diseases – viral diseases – parasitic diseases)	2	2
		184- role of rodents in transmission of zoonoses	2	2
		185- role of wild animals in transmission op zoonoses	2	2
Animal wealth		201- economics of animals and dairy production	2	-
		202- economics of poultry farms	2	-
		203-economics of fish farms	2	-

		204- feasibility studies	2	-
		205- farm management	2	-
		206- economics of beef production	2	-
Fish diseases and management		223- parasitic fish diseases	2	2
		224-bacterial fish diseases	2	2
		225-mycotic fish diseases	1	2
		226-viral fish diseases	1	2
		227-shell fish diseases	2	2
		228-fish breeding and management	2	2

d. Graduate master program course

Code	Course title	No of hours/week																																		
		Lec.	Pract	a (6)						b (10)						c (7)						d (8)														
1	Gynaecology			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
2	Species specific courses for ruminants, equine, & pet animals			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
3	diseases of male genital system and coital diseases			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
4	Obstetrics and its related diseases in farm animals and pet animals			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
5	Reproduction and immunity			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
6	Artificial insemination in ruminants			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
7	Artificial insemination in equine			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
8	Artificial insemination in pet animals			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
9	Artificial insemination in poultry and rabbits			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
10	Embryo transfer			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

a :Knowledge and understanding.

b :Intellectual skills.

c :Professional and practical skills.

d :General and transferable skills.

8. Program Admission Requirements:

The Applicant must normally satisfy the faculty of veterinary medicine- Benha University general entrance and requirement. The normal minimum entrance qualification for registration at the faculty on a master's program

- 1- Bachelor degree in Medical veterinary science of one of the Egyptian universities or hold a degree in Medical veterinary science equivalent through the Supreme Council of Universities with general grade at least "Good" and at least grade "Good" in specialization or the average courses covered the specialization
- 2- Diploma of at least grade "Good".
- 3- Applications with an appropriate technical qualification, or equivalent qualification and experience from overseas are also welcomed.

9. Regulations for progression of program

- a) Registration period for the M.V.Sc in veterinary medical science is at least 3 years after the approval date by the faculty council 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) The student should conduct the courses proposed by both department council and approved by postgraduate and research committee and faculty council and include,
5 courses of the postgraduates stated in article (29) in regulation law list and the student will entitled to apply for the exam only after meeting attendance rate for each courses.
- c) -The student should pass written, practical and oral exams successfully in all courses, and the grade will be estimated according to one of the estimates stated in the article (34c).
- d) -The Faculty council should deprive the student from entering the exam if his attendance rate in the course is less than 75%.

- e) -Failure or depriving from entering one or more course did not requires reexamination of successful passed courses.
- f) -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 has the right to authorize the student to do scientific experiments at recognized scientific institute.
- g) -The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following policies should be met:
- h) -Pass all courses.
- i) -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.
- j) -Registration will be during March and September of each year.
- k) -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.
- l) -The thesis title should be identified before being submitted at least 2 months e and the judging committee has the right to amend the title without prejudice the subject of research.
- m) -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 16 &20.
- n) -Registration will be cancelled in one of the following cases:

- If the supervisors report during the registration period is unsatisfactory (2 reports).
- If he did not submit his thesis before the end of registration period.
- If the judging committee rejected the thesis twice.

o) The applicant should submit 10 copies of the thesis after its validity approved by the judging and discussion committee to be distributed to the committee members and faculty library and the judging and discussion committee can decide the exchange of the thesis with other universities or printing at the expense of the university.

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

1. If the supervisors report during the registration period is un satisfactory (2 reports).
2. If he did not submit his thesis before the end of registration period.
3. If the judging committee rejected the thesis twice.

The applicant should submit 5 hard copies and 10 electronic copies (CDs) of the thesis after its validity approved by the judging committee and head of department to be distributed to the committee members and faculty library and the judging committee can decide the exchange of the thesis with other universities or printing at 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:-

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. Assessment of program intended learning outcomes.

Tool or method	ILOs
1- Written	a.1, a.2, a.5, a.6
2- Oral	a.3, a.4
3- Practical	c.4, c.5, c.6
4- Assignments	a.3, a.4, a.6, b.1, b.4, c.3, c.4
5- Seminar	a.3, b.2, b.6, c.4
6- Dissertation	b.8, b.9, b.10, c.7

Date of production and revision: 28/ 11 / 2010

Date of approval: 28/ 11 / 2010

Course Co-coordinator:

Head of Department:

Program Specification Matrix (2010-2011)

Post graduate degree: Master of Veterinary Medical science (Theriogenology)

Name of student: الشيماء الحسينى حسب النبى حسب النبى

Registration date: Oct. 2010

Course title	Total Contact hours/ course	No. of hours / week			Program ILOs covered (by No.)			
		Lect.	Lab.	Total	K,U (a)	I.S (b)	P.S (c)	G.T.S (d)
Basic course	252	3	4	7	a.1, a.2, a.3, a.4, a.5, a.6	b.1, b.2, b.3, b.4, b.5, b.6	c.1, c.2, c.3, c.4	d.1, d.2, d.3, d.4, d.5
surgery of the limbs, hoof and claws (130)	144	2	2	4				
Medicine-Blood and immunity diseases (103)	108	1	2	3				
Biochemistry-Metabolism (27)	144	2	2	4				
Research tools	144	1	3	4				
Total	792	9	13	22				

Supervision committee

أ.د/ محمود السيد عابد ابوالروس

أ.د/ علاء السيد عبد الغفار

أ.د/ يوسف فوزى أحمد

Signature

Head of department

كلية الطب البيطرى - جامعة بنها
التوليد والتناسل والتلقيح الاصطناعى

Program Specification Matrix (2010-2011)

Post graduate degree: Master of Veterinary Medical science

Name of student: محمد محمود مصطفى السكري

Registration date: Oct. 2010

Course title	Total Contact hours/ course	No. of hours / week			Program ILOs covered (by No.)			
		Lect.	Lab.	Total	K,U (a)	IS (b)	P.S (c)	G.T.S (d)
Basic course	252	3	4	7	a.1, a.2, a.3, a.4, a.5, a.6	b.1, b.2, b.3, b.4, b.5, b.6	c.1, c.2, c.3, c.4	d.1, d.2, d.3, d.4, d.5
Infectious diseases of wild animals (111)	144	2	2	4				
Radiology and ultrasound (133)	144	2	2	4				
Biochemistry-Minerals and Enzymes (29)	144	2	2	4				
Research tools	144	1	3	4				
Total	792	9	13	22				

Supervision committee

أ.د/ محمود السيد عابد ابوالروس

أ.د/ جمال عبدالرحيم محمد سوسة

د. كريمة غنيمي محمد محمود

Signature

Head of department

كلية الطب البيطري - جامعة بنها
 قسم التوليد والتناسل والتلقيح الاصطناعي