BeniSuefUniversity
Faculty of Veterinary Medicine
Department of Clinical Pathology

Program Specification for Master Degree
2017-2018

A-Basic information:
1- Program title: *MVSC.,*
2- Program type: *Single*
3- Department offering program: Clinical Pathology
4-Academic year:*2016-2017*
5-Approval date of Department Council:
6-Approval date of Faculty Council:
7-External evaluator:

B-Professional information:

1- Overall aims of the program:

1-Provide graduates the opportunity to develop communication skills.
2-Allow graduates to develop practical research abilities
3-Evaluate the body systems functions and study of diseases in the clinical environment by use of laboratory assays.
 4-Understand the basis for differential laboratory diagnosis of different diseases.

2- Intended learning outcomes of course (ILOs):
a- Knowledge and understanding:
    On successful completion of this program the postgraduate should be able to:
a1-Recognize up to date veterinary clinical laboratory assays.
a2-Identify efficiently veterinary laboratory practices regulation and ethics.
a3-Characterize quality principles and basics in veterinary laboratory techniques.
a4-Distinguish the veterinary laboratory practice and its relation to the environmental protection.
a5- Recall scientific research principles and ethics.

b- Intellectual skills:
On successful completion of master program, the postgraduate should be able to:

b1-Design a scientific research plan.
b2-Critically evaluate their own research data and develop new approach to solving their research questions.
b3-Develop creative approaches to solve technical problems or issues associate with running and research projects.
b4-Evaluate the laboratory risks in clinical pathology.
b5- Select diagnostic procedures to clarify or classify identified problems

c- Professional and practical skills:
On successful completion of this program the postgraduate should be able to:
c1-Perform masterly different laboratory diagnostic techniques.
c2- Interpret the results of different laboratory techniques for diagnosis.
c3-Write and evaluate a diagnostic report.
c4- Select and perform relevant statistical analysis on data obtained from research projects.
c5- Evaluate the required and the available laboratory equipments and reagents in veterinary research projects.

d- General and transferable skills:
On successful completion of this program the postgraduate should be able to:
dl- Communicate effectively and utilize the advanced laboratory technology in the developing of veterinary professional practice.
d2-Have continuous and self-learning.
d3-Own self-evaluation and assessment.
d4- Utilize the resources to obtain knowledge and information.
d5-Lead a team work in laboratory research practices.

3- Academic standers:
* The faculty mission, vision and strategic objective are confirmed to the academic standard. The learning outcomes are inline with the department and the faculty mission.
* Postgraduates NARS (March 2009) Master degree chapter issued by national authority for quality assurance and accreditation of education (NAQAAE) and Veterinary medicine post graduate academic standards (ARS) for the faculty of veterinary medicine, Beni-Suef University, Beni-Suef, Egypt are selected to confirm the appropriateness of the academic standards.

4- Program Structure and Contents

A-   Program duration: At least two academic years from the approval of registration by the Faculty Council and maximum of four years. The faculty council has the right to give the applicant another period not to exceed than two years according to the supervisor request.

The first year for preliminary courses study, while the second year for researches and preparation of the Master Thesis.

B-   Program structure:Hours/ week:

Basic course:-

Theoretical | 4 | Practical | 7 | Total | 11

Subsidiary courses:-

Theoretical | 4-8 | Practical | 6-8 | Total | 10-16

☒ **Master Thesis: completed during the second academic year.**

C- Program courses:

1-basic courses

Code	Course title	Hours /week		Academic year	Teaching duration
		Theoretical	**Practical**		
	Master Principal course	3	4	Preliminary year	36 weeks
	Research methods	1	3	Preliminaryyear	36 weeks

2-subsidiary courses

Code	Course title	Hours /week		Academic year	Semester
		theoritical	**practical**		
	Selected (3-5) courses depending on the thesis title from the various Faculty Master courses other than specialty of the Master.	5-6	6-9	Preliminary year	36 weeks

D- Courses contents

See master courses specification

5- Program Admission Requirements

a- According to the Faculty of Veterinary Medicine, Beni-Suef University Bylaws for Post Graduate Programs, applicants should have BVSc., from an Egyptian University or equivalent degree from any approved university, with at least general grade (Good) and (Very Good) in the specialized subject.

b- Also if the student has postgraduate diploma in one specialization of total (3 hours) at least with general grade (Good) and (Very good) in the specialized subject.

c- According to Beni-SuefUniversity requirements, all applicants for postgraduate studies should fulfill preliminary courses on the following subjects:

   1- English language (Toefl or equivalent degree).
   2- Computer skills (ICDL) or equivalent computer course.

d- Admission to the program is open during March and September annually after at least one year from the BVSc degree.

6. Regulations for Progression and Program Completion

After finishing the preliminary courses, the graduate student will be eligible to sit for the examination according to the following roles:

No. of course teaching hours/ week	Allowed time for written exam.	Degree	
		Theoretical	**Practical and oral exam**
≥ 3 hours	3 hours	50	50
≤ 3 hours	2 hours	25	25

- It is mandatory to pass all the courses each chance except biostatistics (212)

-The passing mark in each exam is ⩾ 60%.

-The faculty council has the right to prevent the applicant from entering the exams if his attendance courses is less than 75%.

Qualification grades:

Excellent	≥ 90
Very good	≥80
Good	≥70
Pass	≥60
Failed	45 to less than 60 weak
	Less than 45 Very weak

-After passing, the graduate starts research for Master Thesis at the beginning of the secondyear.

-The candidate will receive hisdegreeafterevaluating and approving the thesis by a

committeeaccording to University regulations.
-The applicant should publish at least two scientific papers from the thesis in local or international journals

7-Graduate student assessment

A: Assessment Tools

According the Faculty of Veterinary Medicine, Beni-SuefUniversity Bylaws for Post Graduates, students should be assessed at the end of thepreliminary year and the thesis should be evaluated and approved by a committee according to University regulations.

1-Preliminary year

Assessments methods for each course	practical exam	Oral exam	Written exam
Time of Assessments	By the end of the year	By the end of the year	By the end of the year
Marks	25	25	50

2-Master Thesis:

All master-degree students should prepare a thesis in clinical pathology. The department council must approve the protocol (plan) of the research. The thesis is supervised by one or more staff members and may include other specialties according to the nature of the research. The thesis should be evaluated and approved by a committee according to University regulations.Theapplicant should publish at least one scientific paper from the thesis in local or international journals.

B- Matrix alignment of the measured ILOs

Assessment methods	Matrix alignment of the measured ILOs			
	K&U (a)	I.S (b)	P&P. S (c)	G&T. S (d)
written exam	a1,a2, a3, a4,a5	b1, b2, b3,b4,b5	c2,c3	
Practical exam		b1,b2,b5	c1,c2,c3,c4,c5	d1,d2, d3, d4
Oral exam	a2,a4,a5	b2,b3,b4	c2,c3, c4	d3,5

Course coordinator   **Head of the Department**

Dr./Walaa Mohamed SayedDr./ HamdyHelmyKamel

Master Program Specification Matrix (Program Courses with ILOS)

Program ILOs		courses
Knowledge and understanding	a1	M 73, 74,75,76,77,78 and thesis
	a2	M 79 and thesis
	a3	M 80, and thesis
	a4	M 79,81 and thesis
	a5	M 73, 74,75,76,77,78 and thesis
Intellectual skills	b1	M 73, 74,75,76,77,78, 213 and thesis
	b2	M 73, 74,75,76,77,78 and thesis
	b3	M 73,77,78 and thesis
	b4	M 73, 74,75,76,77,78 and thesis
	b5	M 73, 74,75,76,77,78 and thesis
Professional and practical skills	c1	M 73, 74,75,76,77,78 and thesis
	c2	M 73, 74,75,76, and thesis
	c3	M 73, 74,75,76,77,78 and thesis
	c4	M 73, 74,75,76,77,78, 212 and thesis
	c5	M 73, 74,,78 and thesis
General and transferable skills	d1	M 73, 74,75,76,77,78 and thesis
	d2	M 73, 74,75,76,77,78 and thesis
	d3	M 75,76,77,78 and thesis
	d4	M 73, 74,75,76,77,78 and thesis
	d5	M 73, 74,75,76,77,78 and thesis

Master Program Specification Matrix (Program ILOS with Academic standers ARS)

Academic standers / Program ILOs		a1	a2	a3	a4	a5	b1	b2	b3	b4	b5	b6	c1	c2	c3	c4	c5	c6	d1	d2	d3	d4	d5	d6	d7
Knowledge and understanding	a1			x																					
	a2				x																				
	a3					x																			
	a4	x																							
	a5					x																			
Intellectual skills	b1									x															
	b2						x																		
	b3							x																	
	b4										X														
	b5											X													
Professional and practical skills	c1												x	X											
	c2													X											
	c3													X											
	c4															x									
	c5																								
General and transferable skills	d1																		x						
	d2																								x
	d3																			x					
	d4																				x				
	d5																							x	

Program aims – ILOS Matrix for the Master program

Program ILOS		1- Provide graduates the opportunity to develop communication skills.	2- Allow graduates to develop practical research abilities	3- Evaluate the body systems functions and study of diseases in the clinical environment by use of laboratory assays	4-Understand the basis for differential laboratory diagnosis of different diseases.
Knowledge and understanding	a.1-Recognize up to date veterinary clinical laboratory assays.		√		
	a.2-Identify efficiently veterinary laboratory practices regulation and ethics.		√		
	a.3- Characterize quality principles and basics in veterinary laboratory techniques.		√	√	
	a.4 Distinguish the veterinary laboratory practice and its relation to the environmental protection.			√	√
	a5- Recall scientific research principles and ethics		√		
Intellectual skills	b1-Design a scientific research plan.		√	√	√
	b2-Critically evaluate their own research data and develop new approach to solving their research questions.		√	√	
	b3-Develop creative approaches to solve technical problems or issues associate with running and research projects.		√		√
	b4-Evaluate the laboratory risks in clinical pathology.		√		√
	b5- Select diagnostic procedures to clarify or classify identified problems				√
Practical and professional skills	c1-Perform masterly different laboratory diagnostic techniques.	√	√		√
	c2- Interpret the results of different laboratory techniques for diagnosis.			√	√
	c3-Write and evaluate a diagnostic report.		√	√	√
	c4- Select and perform relevant statistical analysis on data obtained from researchprojects.				√
	c5- Evaluate the required and the available laboratory equipments and reagents in veterinary research projects.		√		

Program ILOS		Program aims			
		1- Provide graduates the opportunity to develop communication skills.	2- Allow graduates to develop practical research abilities	3- Evaluate the body systems functions and study of diseases in the clinical environment by use of laboratory assays	4-Understand the basis for differential laboratory diagnosis of different diseases.
General and transferable skills	dl- Communicate effectively and utilize the advanced laboratory technology in the developing of veterinary professional practice.	√			
	d2Have continuous and self-learning.	√			
	d3-Own self-evaluation and assessment.		√		
	d4-Utilize the resources to obtain knowledge and information.				
	d5-Lead a team work in laboratory research practices.		√		

Beni-Suef University
Faculty of Veterinary Medicine

Course specification of postgraduate

1-Basic information

Course Code:	MBC-CPAT
Course title :	Clinical Pathology
Program title:	Master basic of Clinical pathology
Contact hours/ week	7 hours/week (3hr lecture and 4 hr practical)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:
1- Describe the role of clinical pathology in diseases diagnosis.
2- Understand the basis for differential laboratory diagnosis of different diseases.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a.1. Recognize the impotence of study in the field of clinical pathology.

a.2. Identify the different types of blood cells and their functions.

a.3. Understand the reason for each test and the significance of the obtained results.

a.4. Recognize the laboratory diagnosis of different hematological and clinical biochemical disorders.

a.5. Discuss the laboratory data reports.

b-Intellectual skills

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

b.1. Evaluate hematological investigations and their clinical interpretation.

b.2. Take decisions regarding the principles of how causative agents lead to clinicopathological abnormalities.

b.3. Judge the differential diagnosis for changes in test results.

b.4. Interpret the results of clinicopathological data.

C- Professional and practical skills

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

c.1. Obtain experience in methods of sampling for different body samples.

c.2. Acquire experiences in different laboratory diagnostic techniques.

c.3. Interpret the results of different laboratory techniques for diagnosis.

c.4. Prepare a diagnostic report.

d- General and transferable skills

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

d.1.Work in group teams.

d.2. Properly use computer and internet.

d.3. Properly communicate with the others.

d.4. Manage scientific meetings and time.

Course specification of postgraduate

d.5. Enhance of his/her effective presentation skills.

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
Clinical pathology 7 hr/ week (Lec. 3h./week, Pract 4 h./week)	Blood cells formation and hemoglobin synthesis	21	9	12
	Anemia and polycythemia	35	15	20
	Leucocytes and leukocytic response to diseases	21	9	12
	Coagulation disorders	14	6	8
	Enzymology	28	12	16
	Jaundice & bile acids	21	9	12
	Renal function tests	21	9	12
	Pancreatic function tests	14	6	8
	Abnormalities in mineral metabolism	14	6	8
	Abnormalities in lipid and protein metabolism	28	12	16
	Disturbance in electrolytes	21	9	12
	Abnormalities of glucose metabolism	14	6	8
	Total	252	108	144

5-Teaching and learning methods

5.1- Lectures using board & data show, brain storming discussions.

5.2- Self learning by preparing essays and presentations (computer researches and library).

5.3- Practical (models, preparation of samples and data show).

6-Student assessment

7.1. Assessment methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Final Exam	a1- a2- a3- a4-a5	b1- b2- b3-b4	c3-c4	
Practical Exam		b1- b3- b4	c1- c2- c3-c4	
Oral Exam	a1- a2- a3- a4-a5	b1- b2- b3		d1-d2-d3-d4-d5

Course specification of postgraduate

7.2. Assessment schedules

Method	Week(s)
Writing exam	During the 45th week- 48th week
Practical exam	During the 45th week- 48th week
Oral exam	During the 45th week- 48th week

7.3. Weight of assessments

Assessment	Weight of assessment
Writing exam	50%
Practical exam	25%
Oral exam	25%
Total	100%

7- List of references

8.1. Notes and books

8.2. Essential books:
- Veterinary clinical pathology (Coles 2000).
- Veterinary hematology and clinical chemistry / edited by Mary Anna Thrall [et al.]. – 2nd ed. (2012).
- Schalm's veterinary hematology. – 6th ed. / editors, Douglas J. Weiss, K. Jane Wardrop.

Journals:
- International Journal of veterinary medicine.
-International Journal of Molecular diagnostic and laboratory and medicine htt:// int.clichem.

Websites:
WWW.Science direct
WWW. Pubmed.com
WWW.Scholar google.com

Course Coordinator   **Head of Department**

Dr./ Walaa Mohamed Sayed   Dr./ Hamdy Hemly Kamel

Beni Suef University
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Course specification

	Topics	week	Intended learning outcomes of course (ILOs)			
			K and U (a)	I.S (b)	P. P.S. (c)	G.T.S (d)
1	Blood formation and Erythrocytic and hemoglobin synthesis	1st w- 3th w	1,2,3,4,5	2	1,2,3	1,2,3,4,5
2	Different types of anemia and polycythemia	4th w- 8th w	2,3,4,5	1,2,3,4	1,2,3,4	1,2,3,4,5
3	Leucocytes and leukocytic response to diseases	9th w- 11th w	2,3,4,5	1,2,3,4	1,2,3,4	1,2,3,4,5
4	Coagulation disorders	12th w- 13th w	2,3,4,5	1,2,3,4	1,2,3,4	1,2,3,4,5
5	Enzymology	14th w- 17th w	2,3,4,5	3,4	1,2,3,4	1,2,3,4,5
6	Jaundice & bile acid	18th w- 20th w	2, 3,4,5	3,4	1,2,3,4	1,2,3,4,5
7	Renal function test	21th w- 23th w	2,3,4,5	2,3,4	1,2,3,4	1,2,3,4,5
8	Pancreatic function test	24th w- 25th w	2, 3,4,5	2,3,4	1,2,3,4	1,2,3,4,5
9	Abnormalities in mineral metabolism	26th w- 27th w	2, 3,4,5	3,4	1,2,3,4	1,2,3,4,5
10	Abnormalities in lipid and protein metabolism	28th w- 31th w	2, 3,4,5	3,4	1,2,3,4	1,2,3,4,5
11	Disturbance in electrolytes	32th w- 34th w	2, 3,4,5	3,4	1,2,3,4	1,2,3,4,5
12	Musclar function	35th w- 36th w	2, 3,4,5	2,3,4	1,2,3,4	1,2,3,4,5

Beni-Suef University
Faculty of Veterinary Medicine

Course specification of postgraduate

1-Basic information	

Course Code:	M-73
Course title :	Clinical pathology of farm animals
Program title:	Master degree
Contact hours/ week	Lecture: 2h/ week practical: 2h/week Total: 4 hr/ week
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

1-Identify different laboratory diagnostic techniques.

2-Acquire skills for proper diagnosis and management of problems of farm animals in the field of clinical Pathology.

3- Understanding basics for differential laboratory diagnosis of farm animals' diseases.

4- Maintaining of research interest and abilities.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a.1. Describe appropriate parameters for diagnosis, prognosis and monitoring of common diseases of farm animals.

a.2. Explain how common infectious and non-infectious causes diseases in farm animals, and the associated clinicopathological changes.

a.3. State the mechanism by which the abnormal parameters arise.

a.4. Familiarize with different laboratory assays used to identify pathological disorders in farm animals

b-Intellectual skills

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

b.1. Interpret results of clinical laboratory assays.

b.2. Correlate the laboratory assays with other diagnostic methods to identify different diseases of farm animals.

b.3. Assemble the pathologic and non-pathologic (physiologic, procedural) processes that result in abnormal laboratory data.

b.4. Integrate different research designs.

C- Professional and practical skills

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

c.1. Practice the safety procedures that should be available to clinical laboratory workers.

c.2. Operate guidelines to protect against injury when using chemicals and reagents to minimize the risk to health and safety.

c.3. Perform complete hematological and clinical biochemistry investigations.

c.4. Report the clinical laboratory assays that are used to detect, define, or evaluate pathologic states.

Course specification of postgraduate

d- General and transferable skills

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

d.1. Use the computer and internet to gather scientific information.

d.2. Use data analysis and communication skills.

d.3. Work coherently and successfully as a part of a team and team's leadership.

d.4. Be reliable and responsible in fulfilling obligations.

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
(Lec. 2 h./week, Pract 2 h./week)	Types of anemia and erythrocytosis in farm animals	12	6	6
	Leucocytic disorders and leukemia in farm animals	12	6	6
	Immunohematology of farm animals	12	6	6
	Hemostasis	8	4	4
	Enzymology	12	6	6
	Liver function tests	12	6	6
	Laboratory assessment of the kidney	12	6	6
	Muscle diseases in farm animals	12	6	6
	Electrolyte disorders in farm animals	12	6	6
	Metabolic disorders in farm animals	12	6	6
	Pancreatic diseases in farm animals	8	4	4
	Plasma proteins disorders in farm animals	12	6	6
	Laboratory assessment of lipid and glucose metabolism	8	4	4
	Total	144	72	72

5-Teaching and learning methods

5.1- Lectures (brain storm, discussion) using board, data shows

5.2- Self learning by preparing essays and presentations (computer researches and library)

5.3- Practical (models, samples and data show).

7-Student assessment

7.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Final Exam	a1- a2- a3	b1- b2- b3-b4	c4	
Practical Exam	a1- a4	b1 -b4	c1- c2- c3-c4	
Oral Exam	a1- a2	b1- b2		d1-d2-d3-d4

Course specification of postgraduate

7.2. Assessment schedule

Method	Week(s)
Writing exam	During the 45th week- 48th week
Practical exam	During the 45th week- 48th week
Oral exam	During the 45th week- 48th week

7.3. Weight of assessments

Assessment	Weight of assessment
Writing exam.	50%
Practical exam.	25%
Oral exam.	25%
Total	100%

8- List of references

8.1. Department Notes

8.2. Essential books:

- Veterinary Hematology (By Felman, Zinlkl and Jain, Publisher: Lippicott Williams and Wilkins Press, 2000).
- Clinical Biochemistry of Demostic Animals (By Jerry Kaneko, Harvarry and Bruss 5th Edition 1997 Academic press).
- Veterinary Laboratory Medicine –Clinical Pathology, Duncan, J.R et al., 2nd edition, Ames IO:- Iowa state university press, 1994.
- Veterinary Clinical Pathology (Coles 2000).

8.3. Recommended texts

-Basic concepts in biochemistry, a student survival guide, Second Edition HIRAM F. GILBERT, Ph.D. Houston, Texas.
- Introduction to clinical biochemistry, interpreting blood results, Dr. Graham Basten.
- Veterinary laboratory medicine, clinical biochemistry and hematology, 2nd edition. Morag G. Kerr.

Journals:

-International Journal of Molecular diagnostic and laboratory medicine htt:// int. clichem.
-International Journal of veterinary medicine.

Websites:

http://www.sciencedirect.com

https://scholar.google.com

https://openlibrary.org/publishers/a.welly_interscience

Course Coordinator   Head of Department

Course specification of postgraduate

Dr./ Walaa Mohamed Sayed   Dr./ Hamdy Hemly Kamel

Beni Suef University
Faculty of Veterinary Medicine

Course specification

	Topics	week	Intended learning outcomes of course (ILOs)			
			K and U (a)	I.S (b)	P. P.S. (c)	G.T.S (d)
1	Types of anemia and erythrocytosis in farm animals	1st-3rd w	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4
2	Leucocytic disorders and leukemia in farm animals	4th -6th w	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4
3	Immunohematology of farm animals	7th –9th w	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4
4	Hemostasis	10th -11th w	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4
5	Enzymology	12th - 14th w	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4
6	Liver function tests	15th – 17th w	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4
7	Laboratory assessment of the kidney	18th- 20th w	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4
8	Muscle diseases in farm animals	21th - 23rd w	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4
9	Electrolyte disorders in farm animals	24th – 26th w	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4
10	Metabolic disorders in farm animals	27th- 29th w	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4
11	Pancreatic diseases in farm animals	30th – 31w	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4
12	Plasma proteins disorders in farm animals	32nd – 34th w	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4
13	Laboratory assessment of lipid and glucose metabolism	35th-36th w	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4	1, 2 , 3, 4

Course specification of postgraduate

| **1-Basic information** |||

Course Code:	M-74
Course title :	Avian Clinical Pathology
Program title:	Master degree
Contact hours/ week	Lecture: 1h/ week practical: 2h/week Total: 3 hr/ week
Approval Date	

2-Professional information

Overall aims of the course:

This course aims at:

1-Acquiring skills in the field of clinical pathology for proper diagnosis and management of avian diseases.

2- Identifying different laboratory techniques used for diagnosis of avian diseases.

3- Understanding basics for differential laboratory diagnosis of avian diseases.

4- Maintaining of learning abilities necessary for continuous veterinary medical education.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

By the end of this course the postgraduate should be able to:

a.1. Describe appropriate parameters for diagnosis, prognosis and monitoring of common poultry diseases.

a.2. Understand the laboratory data, diseases and case management decisions.

a.3. Explain how common microorganisms and parasites cause avian diseases, and the associated clinicopathological changes.

a.4. Illustrate the different laboratory data of avian species.

a.5. Describe the mechanism by which the abnormal parameters arise.

b-Intellectual skills

By the end of this course the postgraduate should be able to:

b.1. Interpreting results of abnormal clinical laboratory assays.

b.2. Select diagnostic procedure to differential between diseases of avian species.

b.3. Distinguish pathologic and non-pathologic (physiologic, procedural) processes that result in abnormal laboratory data.

b.4. Differentiate between different blood diseases in avian species.

C- Professional and practical skills

By the end of this course the postgraduate should be able to:

c.1. Operate the clinical laboratory assays that are used to detect pathologic states in avian species.

c.2. Practice sample collection and processing according to standard procedures.

c.3. Perform complete hematological and biochemical investigations in avian species.

c4- Interpret the results of different laboratory techniques for diagnosis.

d- General and transferable skills

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

d.1. Demonstrate problem solving.

Course specification of postgraduate

d.2. working in teamwork.

d.3. Use the computer and internet to gather scientific information.

d.4. Use data analysis and communication skills.

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
(Lec. 1 h./week, Pract 2 h./week)	Erythropoiesis in avian species	9	3	6
	Immune mediated anemia in avian species	9	3	6
	Non-immune mediated anemia in avian species	9	3	6
	Leukogram of avian species	6	2	4
	Platelet disorders of avian species	9	3	6
	Cholesterol and bilirubin abnormalities	9	3	6
	Muscle disease of avian species	9	3	6
	Hepatic function tests in avian species.	9	3	6
	Renal function tests in avian species	9	3	6
	Protein disorders in avian species	9	3	6
	pancreatic diseases in avian species	12	4	8
	Glucose metabolism in avian species	9	3	6
	Total	108	36	72

5-Teaching and learning methods

5.1- Lectures using board and data show, brain storming discussions.

5.2- Self learning by preparing essays and presentations (computer researches and library).

5.3- Practical (models, samples and data show).

7-Student assessment

7.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Final Exam.	a1- a2- a3- a4-a5	b1- b3-b4	c4	
Practical Exam.	a1- a4-a5	b1- b2- b3	c1- c2- c3-c4	
Oral Exam.	a1- a2- a3 -a5	b1- b3-b4		d1-d2-d3-d4

Course specification of postgraduate

7.2. Assessment schedule

Method	Week(s)
Writing exam.	During the 45th week- 48th week
Practical exam.	During the 45th week- 48th week
Oral exam.	During the 45th week- 48th week

7.3. Weight of assessments

Assessment	Weight of assessment
Writing exam.	50%
Practical exam.	25%
Oral exam.	25%
Total	100%

8- List of references

8.1. Department Notes

8.2. Essential books:
- Veterinary Hematology (By Felman, Zinlkl and Jain, Publisher: Lippicott Williams and Wilkins press, 2000).
- Veterinary hematology and clinical chemistry / edited by Mary Anna Thrall [et al.]. – 2nd ed.
- Veterinary Laboratory Medicine –Clinical Pathology, Duncan, J.R et al., 2nd edition, Ames IO:- Iowa state university press, 1994.
- Veterinary clinical pathology (Coles 2000).

8.3. Recommended texts

-Basic concepts in biochemistry, a student survival guide,Second Edition HIRAM F. GILBERT, Ph.D. Houston, Texas.
- Introduction to clinical biochemistry, interpreting blood results, Dr. Graham Basten.
- Veterinary laboratory medicine, clinical biochemistry and hematology, 2nd edition. Morag G. Kerr.

Journals:

-International Journal of Molecular diagnostic and laboratory and medicine htt:// int. clichem.
-International Journal of veterinary medicine.

Websites:

http://www.sciencedirect.com

https://scholar.google.com

https://openlibrary.org/publishers/a.welly_interscience

Course Coordinator   **Head of Department**

Dr./ Walaa Mohamed Sayed   Dr./ Hamdy Hemly Kamel

Beni Suef University
Faculty of Veterinary Medicine

Course specification

	Topics	week	Intended learning outcomes of course (ILOs)			
			K and U (a)	I.S (b)	P. P.S. (c)	G.T.S (d)
1	Erythropoiesis in avian species	1st-3rd w	4,5	1,3	3, 4	1,2,3,4
2	Immune mediated anemia in avian species	4th -6th w	1,2,3,4,5	1, 2, 3, 4	1, 2, 3, 4	1,2,3,4
3	Non-immune mediated anemia in avian species	7th –9th w	1,2,3,4,5	1, 2, 3, 4	1, 2, 3, 4	1,2,3,4
4	Leukogram of avian species	10th -11th w	1,2,3,4,5	1, 2, 3, 4	1, 2, 3, 4	1,2,3,4
5	Platelet disorders of avian species	12th - 14th w	1,2,3,4,5	1, 2, 3, 4	1, 2, 3, 4	1,2,3,4
6	Cholesterol and bilirubin abnormalities	15th – 17th w	1,2,3,4,5	1, 2, 3, 4	1, 2, 3, 4	1,2,3,4
7	Muscle disease of avian species	18th- 20th w	1,2,3,4,5	1, 2, 3, 4	1, 2, 3, 4	1,2,3,4
8	Hepatic function tests in avian species.	21th - 23rd w	1,2,3,4,5	1, 2, 3, 4	1, 2, 3, 4	1,2,3,4
9	Renal function tests in avian species	24th – 26th w	1,2,3,4,5	1, 2, 3, 4	1, 2, 3, 4	1,2,3,4
10	Protein disorders in avian species	27th- 29th w	1,2,3,4,5	1, 2, 3, 4	1, 2, 3, 4	1,2,3,4
11	pancreatic diseases in avian species	30th – 33rd w	1,2,3,4,5	1, 2, 3, 4	1, 2, 3, 4	1,2,3,4
12	Glucose metabolism in avian species	34th – 36th w	1,2,4,5	1, 2, 3, 4	1, 2, 3, 4	1,2,3,4

Beni-Suef University

Faculty of Veterinary Medicine

Course specification of postgraduate

1-Basic information

Course Code:	M-75
Course title :	Clinical pathology of laboratory animals
Program title:	Master degree
Contact hours/ week	Lecture: 1h/ week practical: 2h/week Total: 3 hr/ week
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

1-Acquiring information in clinical pathology of laboratory animals.

2-Identifying different laboratory diagnostic techniques in laboratory animals.

3-Acquiring experience in samples collection from laboratory animals.

4- Understanding basis for differential laboratory diagnosis of diseased conditions in laboratory animals.

5- Utilizing the new scientific knowledge to continuously update and improve practice.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

By the end of this course the postgraduate should be able to:

a1. Define the different types of blood cells and their functions in different laboratory animals.

a.2. Explain the laboratory diagnosis of different hematological and clinical biochemical disorders in laboratory animals.

a.3 Characterize quality principles and basics in veterinary laboratory techniques.

a.4. Comment on the laboratory data results.

b-Intellectual skills

By the end of this course the postgraduate should be able to:

b.1. Deal with different pathophysiologic conditions when results of clinical laboratory assays are abnormal.

b.2. Take decisions regarding differential diagnosis of laboratory animals diseases.

b.3. Connect between knowledge for professional problem solving .

b.4. Interpret data acquired through laboratory tests.

C- Professional and practical skills

By the end of this course the postgraduate should be able to:

c.1. Practice sample collection and processing according to standard procedures.

c.2. Perform complete hematological and biochemical investigations in laboratory animals.

c.3. Recognize blood diseases on morphological bases of blood film examination from laboratory animals.

c.4 Write and evaluate laboratory tests reports.

d- General and transferable skills

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

Course specification of postgraduate

d.1. Demonstrate problem solving.
d.2. Utilize group working.
d.3. Use the computer and internet to gather scientific information.
d.4. Use data analysis and communication skills.

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
(Lecture 1 h/week, Practical 2 h/week)	Erythropoiesis and erythrocytosis in laboratory animals	9	3	6
	Types of anemia in laboratory animals	9	3	6
	Leucopenia in laboratory animals	9	3	6
	Leukocytosis and leukemia in laboratory animals	6	2	4
	Enzymology in laboratory animals	9	3	6
	Liver function tests in laboratory animals	12	4	8
	Laboratory assessment of the kidney	9	3	6
	Muscle diseases in laboratory animals	9	3	6
	Electrolyte disorders in laboratory animals	9	3	6
	Metabolic disorders in laboratory animals	12	4	8
	Pancreatic diseases in laboratory animals	9	3	6
	Total	102	34	68

5-Teaching and learning methods

5.1- Lectures using board & data shows, brain storming discussions.
5.2- Self learning by preparing essays and presentations (computer researches and library).
5.3- Practical (models, samples and data show).

7-Student assessment

7.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Final Exam.	a1- a2- a3-a4	b1- b2- b3-b4	c3-c4	
Practical Exam.	a1- a3- a4	b1- b2- b3	c1- c2- c3-c4	
Oral Exam.	a1- a2- a4	b1- b2- b4		d1-d2-d3-d4

Course specification of postgraduate

7.2. Assessment schedules

Method	Week(s)
Writing exam.	During the 45th week- 48th week
Practical exam.	During the 45th week- 48th week
Oral exam.	During the 45th week- 48th week

7.3. Weight of assessments

Assessment	Weight of assessment
Writing exam.	50%
Practical exam.	25%
Oral exam.	25%
Total	100%

8- List of references

8.1. Department Notes

8.2. Essential books:

- Clinical Biochemistry of Demostic Animals (By Jerry Kaneko, Harvarry and Bruss 5th Edition 1997 Academic press).
- Veterinary Laboratory Medicine –Clinical Pathology, Duncan, J.R et al., 2nd edition, Ames IO:- Iowa State University Press, 1994.
- Veterinary Clinical Pathology (Coles 2000).

8.3. Recommended texts

-Handbook of laboratory animal science / edited by Jann Hau, Gerald L. Van Hoosier, Jr. 2nd ed.
- Introduction to clinical biochemistry, interpreting blood results, Dr. Graham Basten.
- Veterinary laboratory medicine, clinical biochemistry and hematology, 2nd edition. Morag G. Kerr.

Journals:

-International Journal of Molecular diagnostic and laboratory medicine htt:// int. clichem.
-International Journal of veterinary medicine.

Websites:

http://www.sciencedirect.com

https://scholar.google.com

https://openlibrary.org/publishers/a.welly_interscience

Course Coordinator   **Head of Department**

Dr./ Walaa Mohamed Sayed   Dr./ Hamdy Hemly Kamel

Beni Suef University
Faculty of Veterinary Medicine

Course specification

	Topics	week	Intended learning outcomes of course (ILOs)			
			K and U (a)	I.S (b)	P. P.S. (c)	G.T.S (d)
1	Erythropoiesis and erythrocytosis in laboratory animals	1st-3rd w	1, 2 , 3,4	1, 2 , 3,4	1, 2 , 3,4	1,2,3,4
2	Types of anemia in laboratory animals	4th -6th w	1, 2 , 3,4	1, 2 , 3,4	1, 2 , 3,4	1,2,3,4
3	Leucopenia in laboratory animals	7th –9th w	1, 2 , 3,4	1, 2 , 3,4	1, 2 , 3,4	1,2,3,4
4	Leukocytosis and leukemia in laboratory animals	10th -11th w	1, 2 , 3,4	1, 2 , 3,4	1, 2 , 3,4	1,2,3,4
5	Enzymology in laboratory animals	12th - 14th w	1, 2 , 3,4	1, 2 , 3,4	1, 2 , 3,4	1,2,3,4
6	Liver function tests in laboratory animals	15th – 18th w	1, 2 , 3,4	1, 2 , 3,4	1, 2 , 3,4	1,2,3,4
7	Laboratory assessment of the kidney	19th- 21th w	1, 2 , 3,4	1, 2 , 3,4	1, 2 , 3,4	1,2,3,4
8	Muscle diseases in laboratory animals	22th – 24th w	1, 2 , 3,4	1, 2 , 3,4	1, 2 , 3,4	1,2,3,4
9	Electrolyte disorders in laboratory animals	25th – 28th w	1, 2 , 3,4	1, 2 , 3,4	1, 2 , 3,4	1,2,3,4
10	Metabolic disorders in laboratory animals	29th- 31th w	1, 2 , 3,4	1, 2 , 3,4	1, 2 , 3,4	1,2,3,4
11	Pancreatic diseases in laboratory animals	32th – 34th w	1, 2 , 3,4	1, 2 , 3,4	1, 2 , 3,4	1,2,3,4

Beni-Suef University
Faculty of Veterinary Medicine

Course specification of postgraduate

1-Basic information

Course Code:	M-76
Course title :	Organ function tests, acid-base balance, examination of body fluids and urinalysis
Program title:	Master degree
Contact hours/ week	Lecture: 2h/ week practical: 2h/week Total: 4 hr/ week
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

1-Identifying different laboratory diagnostic techniques used for diagnosis of body systems' dysfunction.

2-Acquiring skills for proper diagnosis and management of problems of body systems' dysfunction utilizing clinical pathology examinations.

3- Understanding the basis for differential laboratory diagnosis.

4- Utilizing the new scientific knowledge to continuously update and improve practice.

5- Maintaining of learning abilities necessary for continuous veterinary medical education.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a.1. Describe appropriate parameters for diagnosis, prognosis and monitoring of common animal diseases.

a.2. Understanding the laboratory data of diseases and case management decisions.

a.3. Explain causes of diseases and the associated clinicopathological changes.

a.4. State the different laboratory data of different body systems.

b-Intellectual skills

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

b.1. Demonstrate pathophysiologic conditions that should be considered when results of clinical laboratory assays are interpreted.

b.2. Evaluate the laboratory risks in clinical chemistry.

b.3. Select diagnostic procedures to clarify or classify identified problems.

b.4. Interpret the results of biochemical and metabolic disorders

C- Professional and practical skills

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

c.1. Apply safety and infection control measures during practice.

c.2. Write and assess laboratory report

c.3.Examine and interpret serum in different diseases

c.4. Mange how to collect and transport critical samples.

Course specification of postgraduate

d- General and transferable skills

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

d.1. Demonstrate problem solving.

d.2. Utilize group working.

d.3. Use the computer and internet to gather scientific information.

d.4. Use data analysis and communication skills.

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
(Lec. 2 h./week, Pract 2 h./week)	Hepatic function tests	16	8	8
	Renal function tests	12	6	6
	Analysis of CSF	16	8	8
	Exocrine pancreatic diseases	12	6	6
	Endocrine function tests	12	6	6
	Chemical and physical examination of urine	16	8	8
	Microscopical examination of urine	16	8	8
	Metabolic alkalosis	16	8	8
	Metabolic acidosis	16	8	8
	Total	132	66	66

5-Teaching and learning methods

5.1- Lectures using board & data show, brain storming discussions.

5.2- Self learning by preparing essays and presentations (computer researches and library).

5.3- Practical (models, samples and data show).

7-Student assessment

7.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Final Exam.	a1- a2- a3- a4-a5	b1- b2- b3	c1- c2- c3-c4	
Practical Exam.	a1- a2- a3- a4-a5	b1- b2- b3	c1- c2- c3-c4	
Oral Exam.	a1- a2- a3- a4-a5	b1- b2- b3		d1-d2-d3-d4

7.2. Assessment schedules

Course specification of postgraduate

Method	Week(s)
Writing exam.	During the 45th week- 48th week
Practical exam.	During the 45th week- 48th week
Oral exam.	During the 45th week- 48th week

7.3. Weight of assessments

Assessment	Weight of assessment
Writing exam.	50%
Practical exam.	25%
Oral exam.	25%
Total	100%

8- List of references

8.1. Notes and books

8.2. Essential books:
- Veterinary Hematology (By Felman, Zinlkl and Jain, Publisher: Lippicott Williams and Wilkins press, 2000).
- Veterinary Laboratory Medicine –Clinical Pathology, Duncan, J.R et al., 2nd edition, Ames IO:- Iowa state university press, 1994.
- Veterinary clinical pathology (Coles 2000).

8.3. Recommended texts
-Basic concepts in biochemistry a student survival guide,Second Edition HIRAM F. GILBERT, Ph.D. Houston, Texas
- Introduction to clinical biochemistry, interpreting blood results, Dr. Graham Basten.
- Veterinary laboratory medicine, clinical biochemistry and hematology, 2nd edition. Morag G. Kerr.

Journals:
-International Journal of Molecular diagnostic and laboratory and medicine htt:// int. clichem.
-International Journal of veterinary medicine.

Websites:
http://www.sciencedirect.com

https://scholar.google.com

https://openlibrary.org/publishers/a.welly_interscience

Course Coordinator

Dr./ Walaa Mohamed Sayed

Head of Department

Dr./ Hamdy Hemly Kamel

Course specification

	Topics	week	Intended learning outcomes of course (ILOs)			
			K and U (a)	I.S (b)	P. P.S. (c)	G.T.S (d)
1	Hematology	1st-4th w	1, 5	1, 3	1, 2, 3, 4	1,2,3,4
2	Hemostasis	5th -7th w	1, 5	1, 3	1, 2, 3, 4	1,2,3,4
3	Advanced enzymology	8th –11th w	1, 2 , 3, 4	1, 2, 3	1, 2, 3, 4	1,2,3,4
4	Acid-base balance	12th -14th w	2 , 3, 4	1, 2 , 3	1, 2, 3, 4	1,2,3,4
5	Hepatic function tests	15th - 17th w	3, 4, 5	1, 2 , 3	1, 2, 3, 4	1,2,3,4
6	Renal function tests	18th- 21th w	1, 2 , 3, 4	1, 2 , 3	1, 2, 3, 4	1,2,3,4
7	Metabolic disorders	22th – 25th w	1,4	1, 2 , 3	1, 2, 3, 4	1,2,3,4
8	Gastrointestinal and pancreatic tests	26th – 29th w	3, 4, 5	1, 2 , 3	1, 2, 3, 4	1,2,3,4
9	Endocrine function tests	30th – 33th w	1, 2 , 3, 4	1, 2 , 3	1, 2, 3, 4	1,2,3,4

Beni-Suef University
Faculty of Veterinary Medicine

Course specification of postgraduate

1-Basic information

Course Code:	M-77
Course title :	Diagnosis of blood diseases and bone marrow examination
Program title:	Master degree
Contact hours/ week	Lecture: 1h/ week practical: 2h/week Total: 3 hr/ week
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

1- Use the knowledge gained from applied hematology to better understand the pathophysiology, clinical symptoms and the laboratory tests needed for diagnosis of blood disease

3- Understanding the basis for differential laboratory diagnosis of blood diseases.

4- Utilizing the new scientific knowledge to continuously update and improve practice.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a.1. List the blood diseases affecting different animal species.

a.2. Describe information about various blood cell types and their abnormalities.

a.3. Identify the laboratory hematological tests needed for diagnosis of blood diseases.

b-Intellectual skills

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

b.1. Evaluate the blood and marrow samples by laboratory tests to detect an unidentified pathologic state

b.2. Illustrate disorders that cause hematological abnormalities.

b.3. Understand the functional changes in organs and tissues causing blood and marrow disorders

C- Professional and practical skills

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

c.1. Follow safety measures in dealing with laboratory instruments.

c.2. Practice sample collection and processing according to standard procedures.

c.3. Perform complete hematological and bone marrow investigations.

d- General and transferable skills

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

d.1. Use the computer and internet to gather scientific information.

d.2. Use data analysis and communication skills.

d.3. Work coherently and successfully as a part of a team and team's leadership.

d.4. Be reliable and responsible in fulfilling obligations.

Course specification of postgraduate

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
(Lec. 1 h./week, Pract 2 h./week)	Hematopoiesis	24	4	8
	Erythrokinetics	18	3	6
	Anemia	24	4	8
	Polycythemia	18	3	6
	Disorders of erythrocytes' morphology	18	3	6
	Leucocytic disorders	24	4	8
	Leukemias	24	4	8
	Hemostasis	18	3	6
	Immunohematology	18	3	6
	Laboratory procedures in hematology	18	3	6
	Total	102	34	68

5-Teaching and learning methods

5.1- Lectures using board & data show, brain storming discussions.

5.2- Self learning by preparing essays and presentations (computer researches and library).

5.3- Practical (models, samples and data show).

7-Student assessment

7.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Written Exam.	a1- a2- a3	b2- b3		
Practical Exam.	a3	b1	c1- c2- c3	
Oral Exam.	a1- a2	b2- b3		d1-d2-d3-d4

7.2. Assessment schedules

Method	Week(s)
Writing exam.	During the 45th week- 48th week
Practical exam.	During the 45th week- 48th week
Oral exam.	During the 45th week- 48th week

Course specification of postgraduate

7.3. Weight of assessments

Assessment	Weight of assessment
Writing exam.	50%
Practical exam.	25%
Oral exam.	25%
Total	100%

8- List of references

8.1. Department Notes

8.2. Essential books:
- Veterinary Hematology (By Felman, Zinlkl and Jain, Publisher: Lippicott Williams and Wilkins press, 2000).
- Veterinary Laboratory Medicine –Clinical Pathology, Duncan, J.R et al., 2nd edition, Ames IO:- Iowa state university press, 1994.
- Veterinary clinical pathology (Coles 2000).

8.3. Recommended texts

Postgraduate haematology / edited by A. Victor Hoffbrand, [et al.] – 5th ed.

Journals:

-International Journal of Molecular diagnostic and laboratory and medicine htt:// int. clichem.
-International Journal of veterinary medicine.

Websites:

http://www.sciencedirect.com

https://scholar.google.com

https://openlibrary.org/publishers/a.welly_interscience

Course Coordinator	**Head of Department**
Dr./ Walaa Mohamed Sayed	Dr./ Hamdy Hemly Kamel

Course specification

	Topics	Week	Intended learning outcomes of course (ILOs)			
			K and U (a)	I.S (b)	P. P.S. (c)	G.T.S (d)
1	Hematopoiesis	1st-4th w	2 , 3	1, 3	1, 2, 3	1,2,3,4
2	Erythrokinetics	5th -7th w	1, 2 , 3	1, 2 , 3	1, 2 , 3	1,2,3,4
3	Anemia	8th –11th w	1, 2 , 3	1, 2 , 3	1, 2 , 3	1,2,3,4
4	Polycythemia	12th -14th w	1, 2 , 3	1, 2 , 3	1, 2 , 3	1,2,3,4
5	Disorders of erythrocytes' morphology	15th - 17th w	1, 2 , 3	1, 2 , 3	1, 2 , 3	1,2,3,4
6	Leucocytic disorders	18th- 21th w	1, 2 , 3	1, 2 , 3	1, 2 , 3	1,2,3,4
7	Leukemias	22th – 25th w	1, 2 , 3	1, 2 , 3	1, 2 , 3	1,2,3,4
8	Hemostasis	26th – 28th w	1, 2 , 3	1, 2 , 3	1, 2 , 3	1,2,3,4
9	Immunohematology	29th – 31th w	1, 2 , 3	1, 2 , 3	1, 2 , 3	1,2,3,4
10	Laboratory procedures in hematology	32th-34th w	3	1, 2, 3	1, 2, 3	1,2,3,4

Course specification of postgraduate

1-Basic information

Course Code:	M-78
Course title :	Immune system disorders
Program title:	Master degree
Contact hours/ week	Lecture: 2h/ week practical: 2h/week Total: 4 hr/ week
Approval Date	

2-Professional information

Overall aims of the course:

This course aims to:

1-Understanding body defense mechanisms in combating microbial, autoimmune and immune-mediated diseases.

2- Understanding how disordered immunity, inflammation and regulatory mechanisms can contribute to animal diseases.

3- Applying knowledge gained through this course in understanding various types of immune diseases.

4- Maintaining research interest and abilities.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a.1. Describe cells, immune receptors and other molecules that mediate inflammation and immune responses.

a.2. Explain how the immune system mediate host defense against different types of infections.

a.3. Recognize immune defects and predisposition to infection.

a.4. State different immunological laboratory tests used in clinical pathology.

b-Intellectual skills

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

b.1. Predict pathophysiologic conditions that should be considered when results of clinical laboratory assays are abnormal.

b.2. Take decisions regarding differential diagnosis between immunological diseases.

b.3.Assemble the pathologic and non-pathologic processes that result in abnormal laboratory data.

C- Professional and practical skills

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

 c.1. Apply the safety procedures that should be available to clinical laboratory workers.

c.2. Operate guidelines to protect against injury when using chemicals and reagents to minimize the risk to health and safety.

c.3. Perform immunodiagnostic investigations.

c.4. Consider the cost effective manner when follow up a given problem or laboratory abnormality.

d- General and transferable skills

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

Course specification of postgraduate

d.1. Use the computer and internet to gather scientific information.
d.2. Use data analysis and communication skills.
d.3. Work coherently and successfully as a part of a team and team's leadership.
d.4. Be reliable and responsible in fulfilling obligations.

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
(Lec. 2 h./week, Pract 2 h./week)	The defense of the body	12	6	6
	Proinflammatory and antimicrobial mediators	12	6	6
	Neutrophils and phagocytosis	12	6	6
	Lymphocytes and regulation of its function	8	4	4
	Systemic responses to inflammation	12	6	6
	Organs of the immune system	12	6	6
	Regulation of adaptive immunity	12	6	6
	Autoimmunity: general principles	12	6	6
	Primary immunodeficiencies	12	6	6
	Secondary immunological defects	12	6	6
	Immunodiagnostic techniques	8	4	4
	Protein assays	12	6	6
	Complement assays	8	4	4
	Total	144	72	72

5-Teaching and learning methods

5.1- Lectures using board & data show, brain storming discussion.

5.2- Self learning by preparing essays and presentations (computer researches and library).

5.3- Practical (models, samples and data show).

7-Student assessment

7.1. Assessment methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Final Exam.	a1- a2- a3- a4	b1- b2- b3	c1- c2- c3-c4	
Practical Exam.	a1- a2- a3- a4	b1- b2- b3	c1- c2- c3-c4	
Oral Exam.	a1- a2- a3- a4	b1- b2- b3		d1-d2-d3-d4

7.2. Assessment schedules

Course specification of postgraduate

Method	Week(s)
Writing exam.	During the 45th week- 48th week
Practical exam.	During the 45th week- 48th week
Oral exam.	During the 45th week- 48th week

7.3. Weight of assessments

Assessment	Weight of assessment
Writing exam.	50%
Practical exam.	25%
Oral exam.	25%
Total	100%

8- List of references

8.1. Department Notes

8.2. Essential books:
- Veterinary Hematology (By Felman, Zinlkl and Jain, Publisher: Lippicott Williams and Wilkins press, 2000).
- Veterinary clinical pathology (Coles 2000).
- Veterinary Immunology (by IAN R. TIZARD, 2013, 9th Edition)

8.3. Recommended texts
-Basic concepts in biochemistry a student survival guide,Second Edition HIRAM F. GILBERT, Ph.D. Houston, Texas
- Introduction to clinical biochemistry, interpreting blood results, Dr. Graham Basten.
- Veterinary laboratory medicine, clinical biochemistry and hematology, 2nd edition. Morag G. Kerr.

Journals:
-International Journal of Molecular diagnostic and laboratory and medicine htt:// int. clichem.
-International Journal of veterinary medicine.

Websites:
http://www.sciencedirect.com

https://scholar.google.com

https://openlibrary.org/publishers/a.welly_interscience

Course Coordinator	Head of Department
Dr./ Walaa Mohamed Sayed	Dr./ Hamdy Hemly Kamel

Course specification

	Topics	week	Intended learning outcomes of course (ILOs)			
			K and U (a)	I.S (b)	P. P.S. (c)	G.T.S (d)
1	The defense of the body	1st-3rd w	1, 2	1, 2, 3	1, 3, 4	1,2,3,4
2	Proinflammatory and antimicrobial mediators	4th -6th w	1, 2, 4	1, 2, 3	1, 3, 4	1,2,3,4
3	Neutrophils and phagocytosis	7th –9th w	2, 4	1, 2, 3	1, 3, 4	1,2,3,4
4	Lymphocytes and regulation of its function	10th -11th w	2, 4	1, 2, 3	3	1,2,3,4
5	Systemic responses to inflammation	12th - 14th w	2, 4	1, 2, 3	1, 4	1,2,3,4
6	Organs of the immune system	15th – 17th w	1, 2, 4	1,2, 3	2, 4	1,2,3,4
7	Regulation of adaptive immunity	18th- 20th w	1, 2, 4	1, 2, 3	2,4	1,2,3,4
8	Autoimmunity: general principles	21th - 23rd w	2, 4	1, 2, 3	2, 4	1,2,3,4
9	Primary immunodeficiencies	24th – 26th w	3, 4	1, 2, 3	2, 4	1,2,3,4
10	Secondary immunological defects	27th- 29th w	3, 4	1, 2, 3	2, 4	1,2,3,4
11	Immunodiagnostic techniques	30th – 31w	4	1, 2, 3	2, 4	1,2,3,4
12	Protein assays	32nd – 34th w	2, 4	1, 2, 3	2, 4	1,2,3,4
13	Complement assays	35th-36th w	2, 4	2	4	1,2,3,4

Beni-Suef University
Faculty of Veterinary Medicine

Course specification of postgraduate

1-Basic information	

Course Code:	M-79
Course title :	Laboratory equipments and techniques
Program title:	Master degree
Contact hours/ week	Lecture: 1h/ week practical: 2h/week Total: 3 hr/ week
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

1-Identify different laboratory equipments and diagnostic techniques.

2-Acquire skills for carrying out specimen examination using a variety of clinical instruments.

3- Understanding the scientific basis for differential laboratory diagnosis.

4- Maintaining of research interest and abilities.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a.1. Describe the different test equipments and environments.

a.2. Recognize the laboratory data, diseases and case management decisions.

a.3. Discuss the different laboratory results.

a.4. State the mechanism by which the abnormal parameters arise.

b-Intellectual skills

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

b.1. Realize the potential risks and complications of diagnostic tests.

b.2. Integrate different methodology and how to assess their performance.

b.3. Understanding diagnostic tests, from the relatively simple to the most complex.

C- Professional and practical skills

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

c.1. Apply the safety measures that should be adopted when using clinical laboratory equipment.

c.2. Operate guidelines to protect against injury when using chemicals and reagents to minimize the risk to health and safety.

c.3. Perform complete hematological and clinical biochemistry investigations.

d- General and transferable skills

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

d.1. Use the computer and internet to gather scientific information.

d.2. Use data analysis and communication skills.

d.3. Work coherently and successfully as a part of a team and team's leadership.

d.4. Be reliable and responsible in fulfilling obligations.

4-Topics and contents

Course specification of postgraduate

Course	Topic	No. of hours	Lectures	Practical
(Lec. 1 h./week, Pract 2 h./week)	Laboratory equipments	9	3	6
	Handling and preparing samples	9	3	6
	Documentation and record keeping	9	3	6
	Standard operating procedures	6	2	4
	General laboratory techniques	9	3	6
	Principles of laboratory measurements	9	3	6
	Expected and unexpected test outcomes	9	3	6
	Types of laboratory errors	9	3	6
	Basic blood tests	9	3	6
	Overview of chemistry studies	9	3	6
	Electrolyte tests	6	2	4
	Stool tests	6	2	4
	Urine tests	9	3	6
	Total	108	36	72

5-Teaching and learning methods

5.1- Lectures using board and data show, brain storm, discussion.

5.2- Self learning by preparing essays and presentations (computer researches and library).

5.3- Practical (models, samples and data show).

7-Student assessment

7.1. Assessment methods:

Method	Matrix alignment of the measured ILOs/ Assessment methods			
	K&U	I.S	P&P.S	G.S
Final Exam.	a1- a2- a3- a4	b1- b2- b3	c3	
Practical Exam.	a1- a2- a3	b1- b2- b3	c1- c2- c3	
Oral Exam.	a1 - a3- a4	b1- b2		d1-d2-d3-d4

7.2. Assessment schedules

Method	Week(s)
Writing exam.	During the 45th week- 48th week
Practical exam.	During the 45th week- 48th week

Course specification of postgraduate

Oral exam.	During the 45th week- 48th week

7.3. Weight of assessments

Assessment	Weight of assessment
Writing exam.	50%
Practical exam.	25%
Oral exam.	25%
Total	100%

8- List of references

8.1. Department Notes

8.2. Essential books:
- Veterinary Hematology (By Felman, Zinlkl and Jain, Publisher: Lippicott Williams and Wilkins press, 2000).
- Clinical Biochemistry of Demostic Animals (By Jerry Kaneko, Harvarry and Bruss 5th Edition 1997 Academic press).
- Veterinary Laboratory Medicine –Clinical Pathology, Duncan, J.R et al., 2nd edition, Ames IO:- Iowa state university press, 1994.

8.3. Recommended texts
-Basic concepts in biochemistry a student survival guide,Second Edition HIRAM F. GILBERT, Ph.D. Houston, Texas
- Introduction to clinical biochemistry, interpreting blood results, Dr. Graham Basten.
- Veterinary laboratory medicine, clinical biochemistry and hematology, 2nd edition. Morag G. Kerr.

Journals:
-International Journal of Molecular diagnostic and laboratory and medicine htt:// int. clichem.
-International Journal of veterinary medicine.

Websites:
http://www.sciencedirect.com
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https://openlibrary.org/publishers/a.welly_interscience

Course Coordinator	**Head of Department**
Dr./ Walaa Mohamed Sayed	Dr./ Hamdy Hemly Kamel

Course specification

	Topics	week	Intended learning outcomes of course (ILOs)			
			K and U (a)	I.S (b)	P. P.S. (c)	G.T.S (d)
1	Laboratory equipments	1st-2nd w	1	2, 3	1, 2, 3	1,2,3,4
2	Handling and preparing samples	3rd -5th w	1, 2 , 3, 4	1, 2, 3	1, 2, 3	1,2,3,4
3	Documentation and record keeping	6th –8th w	1, 2 , 3, 4	1, 2, 3	1, 2, 3	1,2,3,4
4	Standard operating procedures	9th -10th w	1, 2 , 3, 4	1, 2, 3	1, 2, 3	1,2,3,4
5	General laboratory techniques	11th - 13th w	1, 2 , 3, 4	1,2, 3	1, 2, 3	1,2,3,4
6	Principles of laboratory measurements	14th – 16th w	1, 2 , 3, 4	1, 2, 3	1, 2, 3	1,2,3,4
7	Expected and unexpected test outcomes	17th- 19th w	1, 2 , 3, 4	1, 2, 3	1, 2, 3	1,2,3,4
8	Types of laboratory errors	20th – 22nd w	1, 2 , 3, 4	1, 2, 3	1, 2, 3	1,2,3,4
9	Basic blood tests	23rd – 25th w	1, 2 , 3, 4	1, 2, 3	1, 2, 3	1,2,3,4
10	Overview of chemistry studies	26th- 28th w	1, 2 , 3, 4	1, 2, 3	1, 2, 3	1,2,3,4
11	Electrolyte tests	29th – 30rd w	1, 2 , 3, 4	1, 2, 3	1, 2, 3	1,2,3,4
12	Stool tests	31th – 32nd w	1, 2 , 3, 4	1, 2, 3	1, 2, 3	1,2,3,4
13	Urine tests	33th-35th w	1, 2 , 3, 4	1, 2, 3	1, 2, 3	1,2,3,4

Course specification of postgraduate

1-Basic information

Course Code:	M-80
Course title :	Quality procedures for laboratory analysis
Program title:	Master degree
Contact hours/ week	Lecture: 1h/ week practical: 2 h/week Total: 3 hr/ week
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

1-Identify different laboratory diagnostic techniques.

2-Acquire skills for proper diagnosis and management of problems of animals in the field of clinical Pathology.

3- Understanding the basis for differential laboratory diagnosis.

4- Utilizing the new scientific knowledge to continuously update and improve practice.

5- Maintenance of research interest and abilities.

6- Maintenance of learning abilities necessary for continuous veterinary medical education.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a.1. Recognize the standard operating procedures for hematology and biochemical work with appropriate quality assurance procedures.

a.2. Describe the procedures for internal quality control in accordance with the manufacturer's instruction and standard method.

a.3. Explain how to solve problems when results fail to meet the expected quality standards.

a.4. State the standard operating procedures related to specimen collection and storage.

a.5. Summarize the criteria for rejection of a specimen.

b-Intellectual skills

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

b.1. Integrate different methodology and how to assess their performance.

b.2. Take decisions regarding safety precautions.

b.3.Assemble the pathologic and non-pathologic (physiologic, procedural) processes that result in abnormal laboratory data.

C- Professional and practical skills

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

c.1. Apply the safety items or protective equipment that should be available to clinical laboratory workers.

c.2. Operate guidelines to protect against injury when using chemicals and reagents to minimize the risk to health and safety.

c.3. Perform complete hematological and clinical biochemistry investigations.

Course specification of postgraduate

c.4. Considered the sources of errors (e.g. inherent counting error; effect of interfering subances), how to recognize them and what steps to take to avoid/ correct them.

d- General and transferable skills

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

d.1. Use the computer and internet to gather scientific information.

d.2. Use data analysis and communication skills.

d.3. Work coherently and successfully as a part of a team and team's leadership.

d.4. Be reliable and responsible in fulfilling obligations.

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
(Lec. 1 h./week, Pract 2 h./week)	Standard operating procedures	9	3	6
	Specimen requirements	9	3	6
	Samples reception	6	2	4
	Safety precautions	9	3	6
	Quality control procedures	9	3	6
	Reporting results	9	3	6
	Test validity	9	3	6
	Clinical significant of results	9	3	6
	Reference intervals	9	3	6
	Sources of test error	12	4	8
	Specimen post- test	9	3	6
	Total	99	33	66

5-Teaching and learning methods

5.1- Lectures (brain storm, discussion) using board, data shows

5.2- Self learning by preparing essays and presentations (computer researches and library)

5.3- Practical (models, samples and data show).

7-Student assessment

7.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Final Exam.	a1- a2- a3- a4-a5	b1- b2- b3	c1- c2- c3-c4	
Practical Exam.	a1- a2- a3- a4-a5	b1- b2- b3	c1- c2- c3-c4	
Oral Exam.	a1- a2- a3- a4-a5	b1- b2- b3		d1-d2-d3-d4

Course specification of postgraduate

7.2. Assessment schedules

Method	Week(s)
Writing exam	During the 45th week- 48th week
Practical exam	During the 45th week- 48th week
Oral exam	During the 45th week- 48th week

7.3. Weight of assessments

Assessment	Weight of assessment
Writing exam.	50%
Practical exam.	25%
Oral exam.	25%
Total	100%

8- List of references

8.1. Notes and books

8.2. Essential books:

- Veterinary Hematology (By Felman, Zinlkl and Jain, Publisher: Lippicott Williams and Wilkins press, 2000).
- Clinical Biochemistry of Demostic Animals (By Jerry Kaneko, Harvarry and Bruss 5th Edition 1997 Academic press).
- Veterinary Laboratory Medicine –Clinical Pathology, Duncan, J.R et al., 2nd edition, Ames IO:- Iowa state university press, 1994.

8.3. Recommended texts

-Basic concepts in biochemistry a student survival guide,Second Edition HIRAM F. GILBERT, Ph.D. Houston, Texas
- Introduction to clinical biochemistry, interpreting blood results, Dr. Graham Basten.
- Veterinary laboratory medicine, clinical biochemistry and hematology, 2nd edition. Morag G. Kerr.

Journals:

-International Journal of Molecular diagnostic and laboratory and medicine htt:// int. clichem.
-International Journal of veterinary medicine.

Websites:

http://www.sciencedirect.com

https://scholar.google.com

https://openlibrary.org/publishers/a.welly_interscience

Course Coordinator	**Head of Department**
Dr./ Walaa Mohamed Sayed	Dr./ Hamdy Hemly Kamel

Beni Suef University
Faculty of Veterinary Medicine

Course specification

	Topics	week	Intended learning outcomes of course (ILOs)			
			K and U (a)	I.S (b)	P. P.S. (c)	G.T.S (d)
1	Standard operating procedures	1st-3rd w	1, 2 , 3	2, 3	1, 3, 4	1,2,3,4
2	Specimen requirements	4th -6th w	1, 4	2, 3	1, 3, 4	1,2,3,4
3	Samples reception	7th –8th w	1, 4	2, 3	1, 3, 4	1,2,3,4
4	Safety precautions	9th -11th w	1, 2 , 3, 4	2, 3	3	1,2,3,4
5	Quality control procedures	12th - 14th w	1, 2	2, 3	1, 4	1,2,3,4
6	Reporting results	15th – 17th w	1, 2, 3	1, 2, 3	2, 4	1,2,3,4
7	Test validity	18th- 20th w	3	1, 2, 3	2, 3	1,2,3,4
8	Clinical significant of results	21th - 23rd w	7	1, 2, 3	2, 4	1,2,3,4
9	Reference intervals	24th – 26th w	7	1, 2, 3	2, 4	1,2,3,4
10	Sources of test error	27th- 30th w	4,5	1, 2, 3	2, 4	1,2,3,4
11	Specimen post- test	31th – 33th w	4,5	1, 2, 3	2, 4	1,2,3,4

Beni-Suef University
Faculty of Veterinary Medicine

Course specification of postgraduate

1-Basic information

Course Code:	M-81
Course title :	Safety tests of biological products
Program title:	Master degree
Contact hours/ week	Lecture: 1h/ week practical: 2 h/week Total: 3 hr/ week
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

1-Identify different diagnostic techniques.

2-Acquire skills for proper diagnosis of problems of animals in the field of clinical Pathology.

3- Understanding the basis for differential laboratory diagnosis.

4- Utilizing the new scientific knowledge to continuously update and improve practice.

5- Maintenance of research interest and abilities.

6- Maintenance of learning abilities necessary for continuous veterinary medical education.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a.1. Recognize the standard operating procedures with appropriate quality assurance procedures.

a.2. Describe the procedures for internal quality control.

a.3. Explain how to solve problems when results fail to meet the expected quality standards.

a.4. State the standard operating procedures related to specimen collection and storage.

a.5. Summarize the criteria for rejection of a specimen.

b-Intellectual skills

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

b.1. Integrate different methodology and how to assess their performance.

b.2. Take decisions regarding safety precautions.

b.3. Assemble the pathologic and non-pathologic processes that result in abnormal laboratory data.

C- Professional and practical skills

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

c.1. Apply the protective equipment that should be available to the laboratory workers.

c.2. Operate guidelines to protect against injury when using chemicals and reagents to minimize the risk to health and safety.

c.3. Perform complete hematological and clinical biochemistry investigations.

c.4. Considered the sources of errors, how to recognize them and what steps to take to avoid them.

d- General and transferable skills

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

d.1. Use the computer and internet to gather scientific information.

d.2. Use data analysis and communication skills.

Course specification of postgraduate

d.3. Work coherently and successfully as a part of a team and team's leadership.
d.4. Be reliable and responsible in fulfilling obligations.

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
(Lec. 1 h./week, Pract 2 h./week)	General consideration	9	3	6
	Manufacturing practices	9	3	6
	Premises and equipment	6	2	4
	Animal cell substrate for biological products	9	3	6
	Phenotypic characteristics of cells in vitro	9	3	6
	Animal quarters and care	9	3	6
	Preservatives for biological products	9	3	6
	Quality of biotechnological products	9	3	6
	Legal basis for approval biologics	9	3	6
	Sources of test error	12	4	8
	Specimen post- test	9	3	6
	Total	99	33	66

5-Teaching and learning methods

5.1- Lectures (brain storm, discussion) using board, data shows

5.2- Self learning by preparing essays and presentations (computer researches and library)

5.3- Practical (models, samples and data show).

7-Student assessment

7.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Final Exam	a1- a2- a3- a4-a5	b1- b2- b3	c1- c2- c3-c4	
Practical Exam	a1- a2- a3- a4-a5-	b1- b2- b3	c1- c2- c3-c4	
Oral Exam	a1- a2- a3- a4-a5-	b1- b2- b3		d1-d2-d3-d4

7.2. Assessment schedules

Method	Week(s)
Writing exam.	During the 45th week- 48th week
Practical exam.	During the 45th week- 48th week
Oral exam.	During the 45th week- 48th week

Course specification of postgraduate

7.3. Weight of assessments

Assessment	Weight of assessment
Writing exam.	50%
Practical exam.	25%
Oral exam.	25%
Total	100%

8- List of references

8.1. Notes and books

8.2. Essential books:
- Veterinary Hematology (By Felman, Zinlkl and Jain, Publisher: Lippicott Williams and Wilkins press, 2000).
- Clinical Biochemistry of Demostic Animals (By Jerry Kaneko, Harvarry and Bruss 5th Edition 1997 Academic press).
- Veterinary Laboratory Medicine –Clinical Pathology, Duncan, J.R et al., 2nd edition, Ames IO:- Iowa state university press, 1994.
- Veterinary clinical pathology (Coles 2000).

8.3. Recommended texts
- Basic concepts in biochemistry a student survival guide, Second Edition HIRAM F. GILBERT, Ph.D. Houston, Texas
- Introduction to clinical biochemistry, interpreting blood results, Dr. Graham Basten.
- Veterinary laboratory medicine, clinical biochemistry and hematology, 2nd edition. Morag G. Kerr.

Journals:
- International Journal of Molecular diagnostic and laboratory and medicine htt:// int. clichem.
- International Journal of veterinary medicine.

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Course Coordinator   **Head of Department**

Dr./ Walaa Mohamed Sayed   Dr./ Hamdy Hemly Kamel

Beni Suef University
Faculty of Veterinary Medicine

Course specification

	Topics	week	Intended learning outcomes of course (ILOs)			
			K and U (a)	I.S (b)	P. P.S. (c)	G.T.S (d)
1	General consideration	1st-3rd w	1, 2 , 3	2, 3	1, 3, 4	1,2,3,4
2	Manufacturing practices	4th -6th w	1, 4,	2, 3	1, 3, 4	1,2,3,4
3	Premises and equipment	7th –8th w	1, 4,	2, 3	1, 3, 4	1,2,3,4
4	Animal cell substrate for biological products	9th -11th w	1, 2 , 3, 4	2, 3	3	1,2,3,4
5	Phenotypic characteristics of cells in vitro	12th - 14th w	1, 2	2, 3	1, 4	1,2,3,4
6	Animal quarters and care	15th – 17th w	1, 2, 3	1, 2, 3	2, 4	1,2,3,4
7	Preservatives for biological products	18th- 20th w	3, 4	1, 2, 3	2, 4	1,2,3,4
8	Quality of biotechnological products	21th - 23rd w	4, 5	1, 2, 3	2, 4	1,2,3,4
9	Legal basis for approval biologics	24th – 26th w	4, 5	1, 2, 3	2, 4	1,2,3,4
10	Sources of test error	27th- 30th w	4,5	1, 2, 3	2, 4	1,2,3,4
11	Specimen post- test	31th – 33th w	4,5	1, 2, 3	2, 4	1,2,3,4