Beni-Suef University
Faculty of Veterinary Medicine
Department of pharmacology

Program Specification for Ph Degree
2017-2018

A-Basic information:

1- **Course title:** *PhD VSC.* **Specialty:-** *Veterinary Pharmacology*
2- **Program type:** *Single*
3- **Department offering program:** *pharmacology*
4- **Academic year:** *2017-2018*
5- **Approval date of Department Council:**
6- **Approval date of Faculty Council:**
7-External evaluator: Prof. Dr. Taha Abd El fattah Mohamed

B-Professional information:

1- Overall aims of the program:

1-Recognize all theories, principles and basics of his/her area of learning and other related sciences .
2- Provide graduates the opportunity to develop communication skills.
3- Work continuously for increasing knowledge in veterinary professional practice.
4- Integrate the specialized and related knowledge to conclude and develop the interdisciplinary relations.
5- Be aware of current veterinary pharmacological problems and recent related approaches.

2- Intended learning outcomes of course (ILOs):

a- Knowledge and understanding:

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

a1- Describe advanced research techniques used in the field of pharmacology
a2- apply their knowledge and understanding of pharmacology to the critical analysis and discussion of the scientific literature.

a3- Acquire up to date concepts in veterinary pharmacology and other career related sciences.

a4-Perceive advanced veterinary scientific research principles, regulations, ethics and its different tools in pharmacology field.

a5-Sustain quality control in veterinary professional practices.

b- Intellectual capacity:

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

b1- Identify , conceptualize and define research problems and questions

b2- critically evaluate the research data and develop new approach to deal with the research questions

b3- develop creative approaches to solve technical problems or issues associate with running and researches project.

b4- identify , summarize and evaluate prior researches finding in a specific area

b5- Identify and analyze veterinary pharmacological problems.

b6- Solve veterinary pharmacological problems of the surrounding community

c- Professional and practical skills:

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

c1- Apply the principles of good experimental design and analysis to their own research project .

c2- Select and perform relevant statistical analysis on data obtained for their own research .

c4- Plan a research project in the field of pharmacology with a consideration to technical , ethical and safety issues and associated costs.

c5- Evaluate and improve the available and required material, tools and equipment in veterinary research projects.

c6- Utilize the up to date technology in veterinary professional and research practice.

d- General and transferable skills:

On successful completion of this program the graduate should be able to:

dl- Demonstrate an ability to learn independently in preparation for a career of lifelong learning .

d2- Demonstrate interpersonal skills and team working ability by the successful completion of collaborative learn assignment and the honors researches projects

d3- present research finding in oral and written from using arrange of appropriate soft ware (e.g., power point , word , excel and data base).

d4- Manage the scientific meetings and discussions.

d5- Communicate effectively and utilize the advanced information technology in the improvement of veterinary professional practice.

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 .

ARS (National Academic Reference Standards) prepared by NAQAAE.

4- Curriculum Structure and Contents

a-Program duration: 48 weeks.

b-Program structure: 3-5 preliminary courses

☒ **Hours/ week:**

Theoretical 5-8 Practical 6-8 Total 11-16

Preliminary courses

Code	Course title	Hours /week		Academic year	Teaching duration
		theoretical	practical		
According to selected courses	Selected (3-5) PhD courses from the various Faculty Departments programs depending on the thesis title.	5-8	6-8	Preliminary year	36 weeks

D- Courses contents

See courses specification

5- Program Admission Requirements

* According to the Faculty of Veterinary Medicine, Beni-Suef University Bylaws for Post Graduate Programs, applicants should have a master degree in the specialization subject he will register in one of the Egyptian Universities or an equivalent degree from any approved university or another recognized scientific institute.

* According to Beni-Suef University requirements, all applicants for postgraduate

studies should fulfill preliminary courses on the following subjects:
1-English language (Toefl or equivalent degree).

* Admission to the program is open during March and September annually.

*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.

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 written examined time	Degree	
		Theoretical	Practical and oral exam
≥ 3 hours	3 hours	50	50
≤ 3 hours	2 hours	25	25

-The faculty council has the right to deprive the applicant from entering the exams if his attendance courses is less than 75% .
-Failure or depriving from entering one or more course did not requires reexamination of successful passed courses.
-The applicant should submit a seminar within 2years after registration about his research and specialization subject filed that accepted by a committee of professors and assistant professors(3 in number).
-the applicant should submit the thesis that accepted by the judging committee in an open discussion and the following polices should be met:

-pass all preliminary curriculums successfully.
-acceptance of the seminar presented by the applicant.

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

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 Ph.D. Thesis at the beginning of the second year.

The candidate will receive his degree after evaluating and approving the thesis by a committee according to University regulations.

7-Graduate student assessment

A: Assessment Tools

According the Faculty of Veterinary Medicine, Beni-Suef University Bylaws for Post Graduate, students should be assessed at the end of preliminary year and the thesis should be evaluated and approved by a committee after at least three years from registration date according to University regulations.

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

Ph.D. Thesis:

The Ph.D. students should prepare a thesis in pharmacology

The department and the ethical committees must approve the protocol of the research. The thesis includes a review part with a practical part. The thesis is supervised by two 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.

B- Matrix alignment of the measured ILOs

Assessments methods	**Matrix alignment of the measured ILOs**			
	K&U (a)	**I.S (b)**	**P&P. S (c)**	**G&T. S (d)**
Written exam	5,7,8	1,3,6	1,2,4,5,6,	-----
Practical exam	1,2,3,4,	3,4,5,6,	1.2.3.4.6.	1.2.3.4
Oral exam	1,2,3,4,5	1,2,4,5,6,	1.7	1,2,3,4

8- Evaluation of Program Intended Learning Outcomes

Evaluator	Tool	Sample
1. Post graduate Students	Questionnaire at the end of the program	All the PG students
4. External Evaluators	Review program and courses Attending the final exam	Once before implementation annual report
5. College Quality Assurance committee	Annual program reviewer	

Course coordinator
Dr. Abeer Mohamed Radi

Head of the Department
Prof. Dr. Mohamed Abd Allah Tohamy

PhD Program Specification Matrix (Program Courses with ILOS) **Ph-PHAR**

Program ILOs		courses
Knowledge and understanding	a1	Ph-112
	a2	Ph-103, Ph-104, Ph-105, Ph-106, Ph-107, Ph-108, Ph-109, Ph-110, Ph-111, Ph-112
	a3	Ph-107, Ph-108, Ph-110, Ph-111,
	a4	Ph-112
	a5	Ph-110, Ph-130, Ph-139, Ph-149B, Ph-103, Ph-111,
Intellectual skills	b1	Ph-212, Ph-225, Ph-214,
	b2	Ph-212, Ph-225, Ph-214, Ph-112, PhD thesis
	b3	Ph-212, Ph-225, Ph-214, PhD thesis
	b4	Ph-212, Ph-225, Ph-214, PhD thesis
	b5	Ph-103
Professional and practical skills	c1	Ph-213, Ph-103, PhD thesis
	c2	Ph-212, Ph-225, Ph-213, PhD thesis
	c3	Ph-106, Ph-212, Ph-213, Ph-112, PhD thesis
	c4	Ph-79, Ph-225, Ph-103 Ph-218, PhD thesis
	c5	Ph-112, Ph-124, PhD thesis
General and transferable skills	d1	Ph-218, Ph-225
	d2	Ph-212, Ph-214, Ph-213
	d3	Ph-214
	d4	Ph-222, Ph-213
	d5	Ph-225, Ph-218, Ph-213

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

Academic standers / Program ILOs		Knowledge and understanding						Intellectual skills									Professional and practical skills						General and transferable skills						
		a1	a2	a3	a4	a5		b1	b2	b3	b4	b5	b6	b7	b8	b9	c1	c2	c3	c4	c5		d1	d2	d3	d4	d5	d6	d7
Knowledge and understanding	a1		x																										
	a2																												
	a3	x																											
	a4			x		x																							
	a5				x																								
Intellectual skills	b1											x			x														
	b2															x													
	b3												x																
	b4									x	x																		
	b5							x						x															
	b6								x																				
Professional and practical skills	c1																												
	c2																				x								
	c3																			x									
	c4																	x											
	c5																x		x										
General and transferable skills	d1																								x				
	d2																							x			x		
	d3																												x
	d4																											x	
	d5																						x						

Program aims – ILOS Matrix for the Ph degree program (*PhD VSC*)

مصفوفة اهداف البرنامج مع مخرجات التعلم المستهدفة

Program ILOs		Program aims				
Program ILOS		a- Recognize all theories, principles and basics of his/her area of learning and other related sciences	b. provide graduates the opportunity to develop communication skills	3- Work continuously for increasing knowledge in veterinary professional practice	4- Integrate the specialized and related knowledge to conclude and develop the interdisciplinary relations	5- Be aware of current veterinary pharmacological problems and recent related approaches
Knowledge and understanding	a1- Describe advanced research techniques used in the field of pharmacology	√				
	a2- apply their knowledge and understanding of pharmacology to the critical analysis and discussion of the scientific literature			√		
	a3- Acquire up to date concepts in veterinary pharmacology and other career related sciences				√	
	a4-Perceive advanced veterinary scientific research principles, regulations, ethics and its different tools in pharmacology field			√		
	a5-Sustain quality control in veterinary professional practices		√	√	√	
Intell	b1- Identify , conceptualize and define research problems and questions					√
	b2- critically evaluate the		√			

Program ILOS	Program ILOs	Program aims				
		a- Recognize all theories, principles and basics of his/her area of learning and other related sciences	b. provide graduates the opportunity to develop communication skills	3- Work continuously for increasing knowledge in veterinary professional practice	4- Integrate the specialized and related knowledge to conclude and develop the interdisciplinary relations	5- Be aware of current veterinary pharmacological problems and recent related approaches
	research data and develop new approach to deal with the research questions					
	b3- develop creative approaches to solve technical problems or issues associate with running and researches project				√	
	b4- identify , summarize and evaluate prior researches finding in a specific area	√				
	b5- Identify and analyze veterinary pharmacological problems		√			√
	b6- Solve veterinary pharmacological problems of the surrounding community		√			√
Practical and professional skills	c1- Apply the principles of good experimental design and analysis to their own research project		√		√	
	c2- Select and perform relevant statistical analysis on data obtained for their	√				

Program ILOs		Program aims				
Program ILOS		a- Recognize all theories, principles and basics of his/her area of learning and other related sciences	b. provide graduates the opportunity to develop communication skills	3- Work continuously for increasing knowledge in veterinary professional practice	4- Integrate the specialized and related knowledge to conclude and develop the interdisciplinary relations	5- Be aware of current veterinary pharmacological problems and recent related approaches
	own research					
	c3- Plan a research project in the field of pharmacology with a consideration to technical , ethical and safety issues and associated costs		√	√		
	C4- Evaluate and improve the available and required material, tools and equipment in veterinary research projects				√	√
	C5- Utilize the up to date technology in veterinary professional and research practice			√	√	
Gene	dl- Demonstrate an ability to learn independently in preparation for a career of lifelong learning		√		√	

Program ILOs		Program aims				
Program ILOS		a- Recognize all theories, principles and basics of his/her area of learning and other related sciences	b. provide graduates the opportunity to develop communication skills	3- Work continuously for increasing knowledge in veterinary professional practice	4- Integrate the specialized and related knowledge to conclude and develop the interdisciplinary relations	5- Be aware of current veterinary pharmacological problems and recent related approaches
	d2- Demonstrate interpersonal skills and team working ability by the successful completion of collaborative learn assignment and the honors researches projects			√		
	d3- present research finding in oral and written from using arrange of appropriate soft ware (e.g., power point , word , excel and data base).				√	
	d4- Manage the scientific meetings and discussions		√			
	d5- Communicate effectively and utilize the advanced information technology in the improvement of veterinary professional practice			√		

Beni-Suef University
Faculty of Veterinary Medicine

Course Specification of Postgraduate

1-Basic information

Course Code:	Ph-103
Course title :	General Pharmacology
Program title:	Ph. D of Veterinary Science (Vet. Pharmacology)
Contact hours/ week	4 hours/ week, (Lect. 2hrs/week, Practical. 2hrs/week)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

a1- Work continuously for increasing knowledge in veterinary professional practice.
a3- Develop the information technology skills of veterinary pharmacology .
a4- Integrate the specialized and related knowledge to conclude and develop the interdisciplinary relations.
a5- Make a decision based on available information.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a1- Acquire up to date concepts in veterinary pharmacology and other career related sciences.
a2- Be aware about the effects of drug residues and their harmful effects on the body.
a3- Connect up to date pharmacology professional practice regulations and ethics.
a4- Sustain quality control in pharmacology professional practices.

b-Intellectual skills

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

b1- Solve specialized pharmacological problems by utilizing available resources.
b2- Evaluate the veterinary risks of drug residue.
b3- Perform scientific research studies with applied impact.

C- Professional and practical skills

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

c1- Write the veterinary professional reports.
c2- Utilize the up to date technology to make the drug forms necessary for treatment certain diseases.
c3- Evaluate and improve the available material, tools and equipment in pharmacological research projects.
c5- Perform the research plan of his/her Ph.D thesis

d- General and transferable skills

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

d1- Communicate effectively and utilize the advanced information technology in the improvement of pharmacological professional practice.

Course Specification of Postgraduate

d2- Own continuous and self-learning of programs of computer related to pharmacology such as (R-strip, Micromath, Scientific software, USA).
d3- Manage the time efficiently.
d4- Own continuous connection with drug companies, pharmacists and the friends in the career.

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
General Pharmacology (Lec. h./week, Pract h./week)	Introduction	4	2	2
	Drug sources	4	2	2
	Drug forms	4	2	2
	Drug absorption	4	2	2
	Drug distribution	4	2	2
	Drug metabolism	4	2	2
	Drug excretion	4	2	2
	Duration of drug action	4	2	2
	Drug residues	4	2	2
	Pharmacodynamics review	4	2	2
	Effects of drugs in the body	4	2	2
	Mechanism of drug action	4	2	2
	Concept of cell receptors	4	2	2
	Tachyphlaxis	4	2	2
	Dose response relationship	4	2	2
	Posology	4	2	2
	Therapeutic index	4	2	2
	Drug and body weight	4	2	2
	Drug and age	4	2	2
	Drug and sex	4	2	2
	Drug and species	4	2	2
	Drug and route of drug administration	4	2	2
	Drug and forms	4	2	2
	Drug and frequency of drug administration	4	2	2
	Drug and time of drug administration	4	2	2
	Drug and amount of the dose	4	2	2
	Drug and disease conditions	4	2	2
	Drug accumulation	4	2	2
	Drug intolerance	4	2	2
	Drug tolerance	4	2	2
	Idiosyncrasy	4	2	2
	Drug allergy	4	2	2
	Drug dependence	4	2	2
	Drug tolerance	4	2	2

Course Specification of Postgraduate

	Pharmacokinetic interaction	4	2	2
	Pharmacodynamic interaction	4	2	2
	Total	**144**	**72**	**72**

5-Teaching and learning methods

5.1- Lectures using board, data shows

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

5.3- Practical (models, samples of drugs).

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-a4	b1-b3		d2,d3
Practical Exam	a1-a4		c1-c5	d1-d4
Oral Exam	a1-a4	b1-b3		d1, d3, d4

7.2. Assessment schedules

Method	Week(s)
Practical exams	During the last month
Written exams	During the last month
Oral Exam	During the last month

7.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	25 %
Written exams	50 %
Oral Exam	25 %
Total	100 %

8- List of references

8.1. Notes and books

Departmental notes on:

* Basis of pharmacology by Prof. Dr. Mohamed Abd Allah Tohamy (2015/25136).

*Textbook of practical pharmacology

8.2. Essential books:

- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

***Walker, D.G.; Renwick, A.G. and Hillier, K. (2001):**

Medical pharmacology and therapeutics.

First Ed. University of Southampton printed in Spain

8.3. Recommended texts:

-- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

Course Specification of Postgraduate

***Nicholas H. Booth and E. Mcdonald (2005):**
5th Edition, Jones Veterinary Pharmacology and Therapeutics (2005)
***Goodman, L.S. and Gilman, A. (2006):**
The pharmacological basis of therapeutics 8th Ed. Iowa State University Press USA
***Robert L. Bill (2006):**
3rd Edition, Clinical Pharmacology and Therapeutics for the Veterinary Technician
***Satish K. Garg (2006):** 1st Edition-Reprint, Veterinary Toxicology
Norman Holland and Michael Patrick Adams (2007):
2nd Edition, Core Concepts in Pharmacology

8.4. Journals, Websites ……..etc

Journals:

*Journal of Veterinary Pharmacology and Therapeutics
*The Pharmacological Basis of Therapeutics
*Journal of Antimicrobial Chemotherapy
*British Journal of Pharmacology
*International Journal of Antimicrobial Agents

Websites:

httpi//www.sciencedirect.com/scince?

ncbi.nlm.nih.gov/entrez/query.fcgi?

Course Coordinators	Head of Department
Dr. Abeer Mohamed Radi	Prof. Dr. Mohamed Abd Allah Tohamy

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	**Introduction**	1	a1-a4	b1-b4	c1-c5	d1-d5
2	**Drug sources**	2	a1	b1-b2	c1-c5	d1,d2,d4
3	**Drug forms**	3	a1	b1-b2	c1-c5	d1,d2,d4
4	**Drug absorption**	4	a2	b1-b2	c1-c5	d1,d2,d4
5	**Drug distribution**	5	a2	b1-b2	c1-c5	d1,d2,d4
6	**Drug metabolism**	6	a2	b1-b2	c1-c5	d1,d2,d4
7	**Drug excretion**	7	a2	b1-b2	c1-c5	d1,d2,d4
8	**Duration of drug action**	8	a2	b1-b2	c1-c5	d1,d2,d4
9	**Drug residues**	9	a1-a4	b1-b2	c1-c5	d1,d2,d4
10	**Introduction of pharmacodynamic**	10	a1-a4	b1-b2	c1-c5	d1-d5
11	**Effect of drug**	11	a2- a4	b2	c1-c5	d1-d5
12	**Mechanism of drug action**	12	a2- a4	b2	c1-c5	d1-d5
13	**Concept of cell receptors**	13	a2- a4	b2	c1-c5	d1-d5
14	**Tachyphlaxis**	14	a2- a4	b3	c1-c5	d1-d5
15	**Dose response relationship**	15	a2- a4	b1-b2	c1-c5	d1-d5
16	**Posology**	16	a2- a4	b1-b2	c1-c5	d1-d5
17	**Therapeutic index**	17	a2- a4	b1-b2	c1-c5	d1-d5
18	**Drug and body weight**	18	a2- a4	b1-b2	c1-c5	d1-d5
19	**Drug and age**	19	a2- a4	b1-b2	c1-c5	d1-d5
20	**Drug and sex**	20	a2- a4	b1-b2	c1-c5	d1-d5
21	**Drug and species**	21	a2- a4	b1-b2	c1-c5	d1-d5
22	**Drug and route of drug administration**	22	a2- a4	b1-b2	c1-c5	d1-d5

Course specification

23	**Drug and forms**	23	a2	b1-b2	c1-c5	d1-d5
24	**Drug and frequency of drug administration**	24	a2	b1-b2	c1-c5	d1-d5
25	**Drug and time of drug administration**	25	a2	b1-b2	c1-c5	d1-d5
26	**Drug and amount of the dose**	26	a2	b1-b2	c1-c5	d1-d5
27	**Drug and disease conditions**	27	a2	b1-b2	c1-c5	d1-d5
28	**Drug accumulation**	28	a2- a4	b3	c1-c5	d1-d5
29	**Drug intolerance**	29	a2- a4	b3	c1-c5	d1-d5
30	**Drug tolerance**	30	a2- a4	b3	c1-c5	d1-d5
31	**Idiosyncrasy**	31	a2- a4	b3	c1-c5	d1-d5
32	**Drug allergy**	32	a2- a4	b3	c1-c5	d1-d5
33	**Drug dependence**	33	a2- a4	b3	c1-c5	d1-d5
34	**Drug tolerance**	34	a2- a4	b3	c1-c5	d1-d5
35	**Pharmacokinetic interaction**	35	a2- a4	b1-b4	c1-c5	d1-d5
36	**Pharmacodynamic interaction**	36	a2- a4	b1-b4	c1-c5	d1-d5

Beni-Suef University
Faculty of Veterinary Medicine

Course Specification of Postgraduate

1-Basic information

Course Code:	Ph-104
Course title :	Central nervous system pharmacology
Program title:	Ph. D of Veterinary Science (Vet. Pharmacology)
Contact hours/ week	4 hours/ week, (Lect. 2hrs/week, Practical. 2hrs/week)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

-Acquire specialized knowledge and skills related to the pharmacological actions of different drugs on central nervous system including C.N.S stimulants and C.N.S depressant drugs and their pharmacokinetics, pharmacodynamics, toxicity and antidotal treatment and their therapeutic uses.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a1- Differentiat between C.N.S transmitters and C.N.S receptors
a2- Discuss C.N.S drugs and their mechanism of action
a3- describes pharmacological action, therapeutic uses, toxicity and antidotal treatment.

b-Intellectual skills

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

b1- evaluate the safety and efficacy of these drugs.
b2- Apply anti dote for toxicity by strychnine and caffeine.
b3- Demonstrate the site of action of these drugs on brain or spinal cord
b4- Take decisions regarding the therapeutic uses of these drugs

C- Professional and practical skills

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

c1- Practice pharmacological actions of C.N.S acting drugs, their toxicity and antidotal treatment.
c2- make the drug forms necessary for treatment certain diseases.
c3- Perform the research plan of his/her Ph. D thesis

d- General and transferable skills

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

d1- Utilize different available resources for efficient obtaining of knowledge and information.
d2- Lead a team work in a certain professional task.
d3- Own continuous connection with drug companies, pharmacists and the friends in the career.
d4- Own self-evaluation and discipline with continuous learning.

Course Specification of Postgraduate

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
Central nervous system pharmacology (Lec. h./week, Pract h./week)	Introduction	4	4	-
	Chemical transmitters in the CNS	4	4	-
	Mechanism of action of centrally acting drugs	8	8	-
	CNS stimulants review	8	2	6
	Cerebral cortex stimulants	4	4	-
	Medullary stimulants	4	2	2
	Spinal cord stimulants	4	2	2
	CNS depressants review	8	4	4
	Sedatives	4	2	2
	Hypnotics	8	2	6
	Tranquilizers	8	2	6
	Analgesics	8	8	-
	Narcotic analgesics	8	6	2
	Antipyretic analgesics	8	2	6
	Pre-anesthetic medication	8	4	4
	General anesthesia	4	2	2
	Volatile anesthetics	4	2	2
	Non volatile anesthetics	8	2	6
	Local anesthetics	8	2	6
	Methods of producing local anesthesia	4	2	2
	Methods of application of local anesthetics	4	2	2
	Methods of prolonging duration of action of local anesthetics	8	2	6
	General pharmacological actions of local anesthetics	8	2	6
	Total	**144**	**72**	**72**

5-Teaching and learning methods

5.1- Lectures using board, data shows

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

5.3- Practical (models, samples of C.N.S drugs).

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-a3	b1-b4		
Practical Exam	a1-a3		c1-c3	d1-d4
Oral Exam	a1-a3	b1-b4		d1-d4

Course Specification of Postgraduate

7.2. Assessment schedules

Method	Week(s)
Practical exams	During the last month
Written exams	During the last month
Oral Exam	During the last month

7.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	25 %
Written exams	50 %
Oral Exam	25 %
Total	100 %

8- List of references

8.1. Notes and books

Departmental notes on:

* Basis of pharmacology by Prof. Dr. Mohamed Abd Allah Tohamy (2015/25136).
*Textbook of practical pharmacology

8.2. Essential books:

- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

***Walker, D.G.; Renwick, A.G. and Hillier, K. (2001):**

Medical pharmacology and therapeutics.
First Ed. University of Southampton printed in Spain

8.3. Recommended texts:

-- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

***Robert L. Bill (2006):**

3rd Edition, Clinical Pharmacology and Therapeutics for the Veterinary Technician

***Satish K. Garg (2006):** 1st Edition-Reprint, Veterinary Toxicology

Norman Holland and Michael Patrick Adams (2007):

2nd Edition, Core Concepts In Pharmacology

8.4. Journals, Websites ……..etc

Journals:

*Journal of Veterinary Pharmacology and Therapeutics
*The Science and Practice of Pharmacy
*The Pharmacological Basis of Therapeutics
*Journal of Antimicrobial Chemotherapy
*British Journal of Pharmacology
*International Journal of Antimicrobial Agents

Websites:

httpi//www.sciencedirect.com/scince?...

ncbi.nlm.nih.gov/entrez/query.fcgi?...

Course Coordinators	Head of Department
Dr. Abeer Mohamed Radi	Prof. Dr. Mohamed Abd Allah Tohamy

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	Introduction	1	a1-a4	b1-b3	c1-c3	d1-d4
2	Chemical transmitters in the CNS	2	a1	b1-b2	c1	d1,d2,d4
3	Mechanism of action of centrally acting drugs	3, 4	a1	b1-b2	c1	d1,d2,d4
4	CNS stimulants review	5,6	a2	b1-b2	c1	d1,d2,d4
5	Cerebral cortex stimulants	7	a2	b1-b2	c1	d1,d2,d4
6	Medullary stimulants	8	a2	b1-b2	c1	d1,d2,d4
7	Spinal cord stimulants	9	a2	b1-b2	c1	d1,d2,d4
8	CNS depressants review	10,11	a2	b1-b2	c1	d1,d2,d4
9	Sedatives	12	a1-a4	b1-b2	c1	d1,d2,d4
10	Hypnotics	13,14	a1-a4	b1-b2	c1	d1-d4
11	Tranquilizers	15,16	a2- a4	b2	c1	d1-d4
12	Analgesics	17,18	a2- a4	b2	c1	d1-d4
13	Narcotic analgesics	19,20	a2- a4	b2	c1	d1-d4
14	Antipyretic analgesics	21,22	a2- a4	b3	c1	d1-d4
15	Pre-anesthetic medication	24,23	a2- a4	b1-b2	c1	d1-d4
16	General anesthesia	25	a2- a4	b1-b2	c1	d1-d4
17	Volatile anesthetics	26	a2- a4	b1-b2	c1-c3	d1-d4
18	Non volatile anesthetics	28,27	a2- a4	b1-b2	c1-c3	d1-d4
19	Local anesthetics	30,29	a2- a4	b1-b2	c1-c3	d1-d4
20	Methods of producing local anesthesia	31	a2- a4	b1-b2	c1-c3	d1-d4
21	Methods of application of local anesthetics	32	a2- a4	b1-b2	c1-c3	d1-d4

Course specification

22	Methods of prolonging duration of action of local anesthetics	33,34	a2- a4	b1-b2	c1-c3	d1-d4
23	General pharmacological actions of local anesthetics	35,36	a2	b1-b2	c1-c3	d1-d4

Beni-Suef University
Faculty of Veterinary Medicine

Course Specification of Postgraduate

1-Basic information

Course Code:	Ph-105
Course title :	Autonomic nervous system and autacoids pharmacology
Program title:	Ph. D of Veterinary Science (Vet. Pharmacology)
Contact hours/ week	4 hours/ week, (Lect. 2hrs/week, Practical. 2hrs/week)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

a- Acquire specialized knowledge and skills related to the background of physiology of autonomic nervous system and pharmacological action, mechanism of action, toxicity and antidotal treatment, side effect of autonomic drugs and autacoids and their therapeutic uses for treatment of different cases.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a1- Differentiate between different groups of drugs acting on ANS.
a2- describes pharmacological action, side effects, toxicity and antidotal treatment.
a3- Summarize autonomic drugs and autacoids and their mechanism of action.
a4- Explain anatomy and physiology of drugs acting on ANS.

b-Intellectual skills

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

b1- Interpret the effect of different drugs on autonomic nervous system.
b2- - evaluate the safety and efficacy of these drugs
b3- Take decisions regarding the therapeutic uses of these drugs.
b4- Assess the risk in veterinary professional practice.

C- Professional and practical skills

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

c1- Practice the effect of drugs on isolated tissue preparations and intact animals.
c2- Demonstrate the site of action of drugs acting on autonomic nervous system.
c3- Apply their therapeutic uses.
c4- Perform the research plan of his/her Ph. D thesis.

d- General and transferable skills

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

d1- Practice self-evaluation and need assessment.
d2- Utilize different available resources for efficient obtaining of knowledge and information.
D3- Own continuous connection with drug companies, pharmacists and the friends in the career.

Course Specification of Postgraduate

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
Autonomic nervous system and autacoids pharmacology (Lec. h./week, Pract h./week)	Introduction	4	4	-
	Autonomic receptors	4	4	-
	Parasympathomimetics review	8	8	-
	Choline esters	4	4	-
	Cholinomimetic drugs	8	2	6
	Anti-cholinesterases	4	2	2
	Parasympatholytics review	8	4	4
	Atropine	4	2	2
	Synthetic and semi-synthetic atropine substitutes	4	2	2
	Drugs acting on autonomic ganglia	8	2	6
	Drugs acting on skeletal muscles	8	2	6
	Sympathomimetics review	8	8	-
	Catecholamines	8	6	2
	Non catecholamines	8	2	6
	sympatholytics review	8	4	4
	Adrenergic receptors blocking drugs	4	2	2
	Adrenergic neurons blocking drugs	4	2	2
	Autacoids	8	2	6
	Anti-histaminics	8	2	6
	angiotensin	4	2	2
	5-hydroxy tryptamine	4	2	2
	prostaglandins	8	2	6
	Anti-inflammatory drugs	8	2	6
	Total	**144**	**72**	**72**

5-Teaching and learning methods

5.1- Lectures using board, data shows

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

5.3- Practical (models, samples).

Course Specification of Postgraduate

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-a4	b1-b4		
Practical Exam	a1-a4	b1,b2	c1-c4	d1-d3
Oral Exam	a1-a4	b1-b4		d1-d3

7.2. Assessment schedules

Method	Week(s)
Practical exams	During the last month
Written exams	During the last month
Oral Exam	During the last month

7.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	25 %
Written exams	50 %
Oral Exam	25 %
Total	100 %

8- List of references

8.1. Notes and books

Departmental notes on:

* Basis of pharmacology by Prof. Dr. Mohamed Abd Allah Tohamy (2015/25136).

*Textbook of practical pharmacology

8.2. Essential books:

- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

***Walker, D.G.; Renwick, A.G. and Hillier, K. (2001):**

Medical pharmacology and therapeutics.

First Ed. University of Southampton printed in Spain

8.3. Recommended texts:

-- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

***Goodman, L.S. and Gilman, A. (2006):**

The pharmacological basis of therapeutics 8th Ed. Iowa State University Press USA

***Robert L. Bill (2006):**

3rd Edition, Clinical Pharmacology and Therapeutics for the Veterinary Technician

***Satish K. Garg (2006):** 1st Edition-Reprint, Veterinary Toxicology

Norman Holland and Michael Patrick Adams (2007):

2nd Edition, Core Concepts In Pharmacology

8.4. Journals, Websites ……..etc

Course Specification of Postgraduate

Journals:

*Journal of Veterinary Pharmacology and Therapeutics
*The Science and Practice of Pharmacy
*The Pharmacological Basis of Therapeutics
*Journal of Antimicrobial Chemotherapy
*Journal of Antibiotics
*British Journal of Pharmacology
*International Journal of Antimicrobial Agents

Websites:

httpi//www.sciencedirect.com/scince?...

ncbi.nlm.nih.gov/entrez/query.fcgi?...

httpi//www.elsevier.com

Course Coordinators	Head of Department
Dr. Abeer Mohamed Radi	Prof. Dr. Mohamed Abd Allah Tohamy

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	Introduction	1	a3,a4			d1,d3
2	Autonomic receptors	2	a1	b2	c1, c2	d2
3	Parasympathomimetics review	3, 4	a1-a4	b2	c4	d1-d3
4	Choline esters	5	a1,a2,a4	b1-b3	c1-c3	d1-d3
5	Cholinomimetic drugs	6,7	a1,a2,a4	b1-b3	c1-c3	d1-d3
6	Anti-cholinesterases	8	a1,a2,a4	b1-b3	c1-c3	d1-d3
7	Parasympatholytics review	9,10	a1-a4	b2	c4	d1-d3
8	Atropine	11	a1,a2,a4	b1-b3	c1-c3	d1-d3
9	Synthetic and semi-synthetic atropine substitutes	12	a1,a2,a4	b1-b3	c1-c3	d1-d3
10	Drugs acting on autonomic ganglia	13,14	a1,a2,a4	b1-b3	c1-c3	d1-d3
11	Drugs acting on skeletal muscles	15,16	a1,a2,a4	b1-b3	c1-c3	d1-d3
12	Sympathomimetics review	17,18	a1-a4	b2	c4	d1-d3
13	Catecholamines	19,20	a1,a2,a4	b1-b3	c1-c3	d1-d3
14	Non catecholamines	21,22	a1,a2,a4	b1-b3	c1-c3	d1-d3
15	sympatholytics review	24,23	a1-a4	b2	c4	d1-d3
16	Adrenergic receptors blocking drugs	25	a1,a2,a4	b1-b3	c1-c3	d1-d3
17	Adrenergic neurons blocking drugs	26	a1,a2,a4	b1-b3	c1-c3	d1-d3
18	Autacoids	28,27	a1,a2,a4	b1-b3	c1-c3	d1-d3
19	Anti-histaminics	30,29	a1,a2,a4	b1-b3	c1-c3	d1-d3
20	angiotensin	31	a1,a2,a4	b1-b3	c1-c3	d1-d3
21	5-hydroxy tryptamine	32	a1,a2,a4	b1-b3	c1-c3	d1-d3

Course specification

22	prostaglandins	33,34	a1,a2,a4	b1-b3	c1-c3	d1-d3
23	Anti-inflammatory drugs	35,36	a1,a2,a4	b1-b3	c1-c3	d1-d3

Beni-Suef University
Faculty of Veterinary Medicine

Course Specification of Postgraduate

1-Basic information

Course Code:	Ph-106
Course title :	Pharmacology of anesthesia
Program title:	Ph. D of Veterinary Science (Vet. Pharmacology)
Contact hours/ week	4 hours/ week, (Lect. 2hrs/week, Practical. 2hrs/week)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

-Acquire specializes knowledge and skills about the different types of pre anesthetics, anesthetic drugs and its side effects to reach to efficient anesthetic profiles.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a1- Differentiate between anesthetic drugs.
a2- Identify pre anesthetic drugs
a3- explain consideration must be taken for each anesthetic drug
a4- Discuss species difference in using anesthesia

b-Intellectual skills

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

b1- Apply pre-anesthetic medication according to the case.
b2- evaluate the safety and efficacy anesthetic drugs.
b3- Deal pharmacologically with certain cases suffering from veterinary diseases.
b4- Evaluate the effect of anesthetic with lower side effect.

C- Professional and practical skills

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

c1- Utilize the up to date technology in veterinary professional and research practice.
c2- Use the correct drug according to animal species with correct site of injection and correct dose.
c3- Analyze factors that leads to failure of drug treatments.
c4- Perform the research plan of his/her Ph. D thesis about different anesthetic drugs used in veterinary medicine.

d- General and transferable skills

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

d1- Practice self-evaluation and need assessment.
d2- Utilize different available resources for efficient obtaining of knowledge and information.
d3- Lead a team work in a certain professional task.
d4- Own continuous connection with drug companies, pharmacists and the friends in the career.

Course Specification of Postgraduate

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
Pharmacology of anesthesia (Lec. h./week, Pract h./week)	Introduction	4	4	-
	Pre –anesthetic medication	4	4	-
	General anesthesia review	4	6	-
	Classification of general anesthetics	8	8	-
	Volatile anesthetics	8	8	-
	Mechanism of action of volatile anesthetics	8	2	6
	Liquid anesthetics	4	2	-
	Gas anesthetics	8	2	6
	The most common non volatile anesthetics used in veterinary practice	8	2	6
	Non volatile anesthetics	8	2	6
	Mechanism of action of non volatile anesthetics	4	2	4
	Intravenous anesthetics	8	6	-
	Intraperitoneal anesthetics	4	6	-
	Rectal anesthetics	4	2	4
	The most common non volatile anesthetics used in veterinary practice	8	2	4
	Local anesthetics review	8	2	4
	Mechanism of action of local anesthetics	4	2	4
	Methods of producing local anesthesia	4	2	4
	Methods of application of local anesthetics	8	2	4
	Classification of local anesthetics	4	2	4
	Methods of prolonging duration of action of local anesthetics	8	2	6
	General pharmacological actions of local anesthetics	8	2	4
	The most common local anesthetics used in veterinary practice	8	2	6
	Total	**144**	**72**	**72**

5-Teaching and learning methods

5.1- Lectures using board, data shows

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

5.3- Practical (models, samples of anesthetics).

Course Specification of Postgraduate

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-a4	b1-b4		
Practical Exam	a1-a4		c1-c4	d1-d4
Oral Exam	a1-a4	b1-b4		d1-d4

7.2. Assessment schedules

Method	Week(s)
Practical exams	During the last month
Written exams	During the last month
Oral Exam	During the last month

7.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	25 %
Written exams	50 %
Oral Exam	25 %
Total	100 %

8- List of references

8.1. Notes and books

Departmental notes on:

* Basis of pharmacology by Prof. Dr. Mohamed Abd Allah Tohamy (2015/25136).
*Textbook of practical pharmacology

8.2. Essential books:

- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

***Walker, D.G.; Renwick, A.G. and Hillier, K. (2001):**

Medical pharmacology and therapeutics.
First Ed. University of Southampton printed in Spain

8.3. Recommended texts:

-- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

***Nicholas H. Booth and E. Mcdonald (2005):**

5th Edition, Jones Veterinary Pharmacology and Therapeutics (2005)

***Goodman, L.S. and Gilman, A. (2006):**

The pharmacological basis of therapeutics 8th Ed. Iowa State University Press USA

***Robert L. Bill (2006):**

3rd Edition, Clinical Pharmacology and Therapeutics for the Veterinary Technician

***Satish K. Garg (2006):** 1st Edition-Reprint, Veterinary Toxicology

8.4. Journals, Websites ……..etc

Journals:

*Journal of Veterinary Pharmacology and Therapeutics
*The Science and Practice of Pharmacy

Course Specification of Postgraduate

*The Pharmacological Basis of Therapeutics
*Journal of Antimicrobial Chemotherapy
*Journal of Antibiotics
*British Journal of Pharmacology

Websites:

httpi//www.sciencedirect.com/scince?...

ncbi.nlm.nih.gov/entrez/query.fcgi?...

Course Coordinators
Dr. Abeer Mohamed Radi

Head of Department
Prof. Dr. Mohamed Abd Allah Tohamy

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	Introduction	1	a1-a4	b1-b4	c1-c4	d1-d4
2	Pre –anesthetic medication	2	a1	b1-b4	c1	d1,d2,d4
3	General anesthesia review	3	a1	b1-b4	c1	d1,d2,d4
4	Classification of general anesthetics	4,5	a2	b1-b4	c1	d1,d2,d4
5	Volatile anesthetics	6,7	a2	b1-b2	c1	d1,d2,d4
6	Mechanism of action of volatile anesthetics	8,9	a2	b1-b2	c1	d1,d2,d4
7	Liquid anesthetics	10	a2	b1-b2	c1	d1,d2,d4
8	Gas anesthetics	11,12	a2	b1-b2	c1	d1,d2,d4
9	The most common non volatile anesthetics used in veterinary practice	13,14	a1-a4	b1-b2	c1	d1,d2,d4
10	Non volatile anesthetics	15,16	a1-a4	b1-b4	c1	d1-d4
11	Mechanism of action of non volatile anesthetics	17	a2- a4	b2	c1	d1-d4
12	Intravenous anesthetics	18,19	a2- a4	b2	c1	d1-d4
13	Intraperitoneal anesthetics	20	a2- a4	b2	c1	d1-d4
14	Rectal anesthetics	21	a2- a4	b3	c1	d1-d4
15	The most common non volatile anesthetics used in veterinary practice	22,23	a2- a4	b1-b2	c1	d1-d4
16	Local anesthetics review	24,25	a2- a4	b1-b4	c1	d1-d4
17	Mechanism of action of local anesthetics	26	a2- a4	b1-b4	c1-c4	d1-d4
18	Methods of producing local anesthesia	27	a2- a4	b1-b2	c1-c4	d1-d4
19	Methods of application of local anesthetics	28,29	a2- a4	b1-b4	c1-c4	d1-d4
20	Classification of local anesthetics	30	a2- a4	b1-b2	c1-c4	d1-d4

Course specification

21	Methods of prolonging duration of action of local anesthetics	31,32	a2- a4	b1-b4	c1-c4	d1-d4
22	General pharmacological actions of local anesthetics	33,34	a2- a4	b1-b4	c1-c4	d1-d4
23	The most common local anesthetics used in veterinary practice	35,36	a2	b1-b4	c1-c4	d1-d4

Beni-Suef University
Faculty of Veterinary Medicine

Course Specification of Postgraduate

1-Basic information

Course Code:	Ph-107
Course title :	Pharmacology of the systems
Program title:	Ph. D of Veterinary Science (Vet. Pharmacology)
Contact hours/ week	4 hours/ week, (Lect. 2hrs/week, Practical. 2hrs/week)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

-Acquire specialized knowledge and skills about the drugs affecting each system of the body, their pharmacological actions and therapeutic uses.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a1- Describe the pharmacokinetic & pharmacodynamic of drugs used in each system.

a2- Explain side effects and drug interactions of different drugs.

a3- Discuss pharmacological action of different drugs.

a4- Summarize .different drugs used in each system.

b-Intellectual skills

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

b1- Apply how to use drugs according to the case.

b2- Interpret the cause of using specific drug in the treatment.

b3- Take decisions regarding the drug of choice in treatment of the disease and its doses.

b4- Evaluate the best drug used according to the cure percent.

C- Professional and practical skills

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

c1- Use different drugs used in the treatment of different diseases according to bode system affected.

c2- Apply the knowledge about side effects of drugs &how overcome it.

c2- Write efficiently prescriptions for treating diseases.

c3- Analyze factors that leads to failure of drug treatments.

c4- Perform the research plan of his/her Ph. D thesis.

d- General and transferable skills

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

d1- Practice self-evaluation and need assessment.

d2- Utilize different available resources for efficient obtaining of knowledge and information.

d3- Own continuous and self-learning of programs of computer related to pharmacology such as (R-strip, Micromath, Scientific software, USA).

Course Specification of Postgraduate

d4- Lead a team work in a certain professional task.
d5- Own continuous connection with drug companies, pharmacists and the friends in the career.

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
Pharmacology of the systems (Lec. h./week, Pract h./week)	Introduction	4	2	2
	Pharmacology of cardiovascular system review	4	2	2
	Cardiac stimulants	4	2	2
	Cardiac depressants	4	2	2
	Drugs acting on blood vessels	4	2	2
	Drugs acting on blood	4	2	2
	Pharmacology of urinary system review	4	2	2
	Classification of diuretics	4	2	2
	Therapeutic uses of diuretics	4	2	2
	Adverse effects of diuretics	4	2	2
	Antidiuretic drugs	4	2	2
	Drugs for treating of gout and hyperuricemia	4	2	2
	Pharmacology of respiratory system review	4	2	2
	Respiratory stimulants	4	2	2
	Respiratory depressants	4	2	2
	Pharmacology of bronchial smooth muscle	4	2	2
	Pharmacology of bronchial asthma	4	2	2
	Pharmacology of digestive system review	4	2	2
	Drugs affecting mouth, pharynx and esophagus	4	2	2
	Drugs affecting stomach	4	2	2
	Drugs affecting the intestinal tract	4	2	2
	Drugs affecting liver	4	2	2
	Drugs affecting rumen	4	2	2
	Pharmacology of reproductive system review	4	2	2
	Uterine stimulants	4	2	2
	Uterine relaxants	4	2	2
	Reproductive endocrinology	4	2	2
	Pharmacology of eye review	4	2	2
	Drugs affecting size of eye pupil	4	2	2
	Drugs affecting accommodation	4	2	2
	Drugs affecting intraocular pressure	4	2	2
	Drugs for treating eye infection	4	2	2
	Routes of administration of ophthalmic drugs	4	2	2
	Pharmacology of skin review	4	2	2
	Skin astringents	4	2	2
	Counter irritants	4	2	2
	Total	**144**	**72**	**72**

Course Specification of Postgraduate

5-Teaching and learning methods

5.1- Lectures using board, data shows.

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

5.3- Practical (models, samples of drugs).

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-a4	b1-b4		
Practical Exam	a1-a4		c1-c4	d1-d5
Oral Exam	a1-a4	b1-b4		d1-d5

7.2. Assessment schedules

Method	Week(s)
Practical exams	During the last month
Written exams	During the last month
Oral Exam	During the last month

7.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	25 %
Written exams	50 %
Oral Exam	25 %
Total	100 %

8- List of references

8.1. Notes and books

Departmental notes on:

* Basis of pharmacology by Prof. Dr. Mohamed Abd Allah Tohamy (2015/25136).

*Textbook of practical pharmacology

8.2. Essential books:

- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

***Walker, D.G.; Renwick, A.G. and Hillier, K. (2001):**

Medical pharmacology and therapeutics.

First Ed. University of Southampton printed in Spain

8.3. Recommended texts:

-- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

***Nicholas H. Booth and E. Mcdonald (2005):**

5th Edition, Jones Veterinary Pharmacology and Therapeutics (2005)

Course Specification of Postgraduate

***Goodman, L.S. and Gilman, A. (2006):**
The pharmacological basis of therapeutics 8th Ed. Iowa State University Press USA
***Satish K. Garg (2006):** 1st Edition-Reprint, Veterinary Toxicology
Norman Holland and Michael Patrick Adams (2007):
2nd Edition, Core Concepts In Pharmacology

8.4. Journals, Websites ……..etc

Journals:

*Journal of Veterinary Pharmacology and Therapeutics
*The Science and Practice of Pharmacy
*Journal of Antimicrobial Chemotherapy
*British Journal of Pharmacology
*International Journal of Antimicrobial Agents

Websites:

httpi//www.sciencedirect.com/scince?...

ncbi.nlm.nih.gov/entrez/query.fcgi?...

Course Coordinators	Head of Department
Dr. Abeer Mohamed Radi	Prof. Dr. Mohamed Abd Allah Tohamy

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	Introduction	1	a1-a4	b1-b4		d1-d5
2	Pharmacology of cardiovascular system review	2	a1	b1-b2	c1-c4	d1,d2,d4
3	Cardiac stimulants	3	a1	b1-b2	c1-c4	d1,d2,d4
4	Cardiac depressants	4	a2	b1-b2	c1-c4	d1,d2,d4
5	Drugs acting on blood vessels	5	a2	b1-b2	c1-c4	d1,d2,d4
6	Drugs acting on blood	6	a2	b1-b2	c1-c4	d1,d2,d4
7	Pharmacology of urinary system review	7	a2	b1-b2	c1-c4	d1,d2,d4
8	Classification of diuretics	8	a2	b1-b2	c1-c4	d1,d2,d4
9	Therapeutic uses of diuretics	9	a1-a4	b1-b2	c1-c4	d1,d2,d4
10	Adverse effects of diuretics	10	a1-a4	b1-b2	c1-c4	d1-d5
11	Antidiuretic drugs	11	a2- a4	b2	c1-c4	d1-d5
12	Drugs for treating of gout and hyperuricemia	12	a2- a4	b2	c1-c4	d1-d5
13	Pharmacology of respiratory system review	13	a2- a4	b2	c1-c4	d1-d5
14	Respiratory stimulants	14	a2- a4	b3	c1-c4	d1-d5
15	Respiratory depressants	15	a2- a4	b1-b2	c1-c4	d1-d5
16	Pharmacology of bronchial smooth muscle	16	a2- a4	b1-b2	c1-c4	d1-d5
17	Pharmacology of bronchial asthma	17	a2- a4	b1-b2	c1-c4	d1-d5
18	Pharmacology of digestive system review	18	a2- a4	b1-b2	c1-c4	d1-d5
19	Drugs affecting mouth, pharynx and esophagus	19	a2- a4	b1-b2	c1-c4	d1-d5
20	Drugs affecting stomach	20	a2- a4	b1-b2	c1-c4	d1-d5
21	Drugs affecting the intestinal tract	21	a2- a4	b1-b2	c1-c4	d1-d5
22	Drugs affecting liver	22	a2- a4	b1-b2	c1-c4	d1-d5

Course specification

23	Drugs affecting rumen	23	a2	b1-b2	c1-c4	d1-d5
24	Pharmacology of reproductive system review	24	a2	b1-b2	c1-c4	d1-d5
25	Uterine stimulants	25	a2	b1-b2	c1-c4	d1-d5
26	Uterine relaxants	26	a2	b1-b2	c1-c4	d1-d5
27	Reproductive endocrinology	27	a2	b1-b2	c1-c4	d1-d5
28	Pharmacology of eye review	28	a2- a4	b3	c1-c4	d1-d5
29	Drugs affecting size of eye pupil	29	a2- a4	b3	c1-c4	d1-d5
30	Drugs affecting accommodation	30	a2- a4	b3	c1-c4	d1-d5
31	Drugs affecting intraocular pressure	31	a2- a4	b3	c1-c4	d1-d5
32	Drugs for treating eye infection	32	a2- a4	b3	c1-c4	d1-d5
33	Routes of administration of ophthalmic drugs	33	a2- a4	b3	c1-c4	d1-d5
34	Pharmacology of skin review	34	a2- a4	b3	c1-c4	d1-d5
35	Skin astringents	35	a2- a4	b1-b4	c1-c4	d1-d5
36	Counter irritants	36	a2- a4	b1-b4	c1-c4	d1-d5

Beni-Suef University
Faculty of Veterinary Medicine

Course Specification of Postgraduate

1-Basic information

Course Code:	Ph-108
Course title :	Pharmacology of food metabolism
Program title:	Ph. D of Veterinary Science (Vet. Pharmacology)
Contact hours/ week	4 hours/ week, (Lect. 2hrs/week, Practical. 2hrs/week)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

-Acquire knowledge and skills about drugs affecting tissue metabolism, metabolic hormones& feed additives, Analyze statistical data about results and use advanced tools for evaluating the metabolic activities of different drugs.

3- Intended learning outcomes of course (ILOs)

a-Knowledge and understanding:

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

a1- Discover the main and new manufactured drugs affecting tissue metabolism.
a2- Understand method of evaluating metabolic hormones, vitamins and minerals toxcisty.
a3- Realize the importance of growth promoters and methods of its use in poultry farms.
a4- Explain the cause for choosing specific drugs in the treatment of metabolic diseases.

b-Intellectual skills

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

b1- Suggest according to his knowledge the drug of choice for treatment different metabolic diseases.
b2- Perform accurate plane for hormonal drug uses in animal and poultry farms.
b3- Solve the problems of metabolic veterinary diseases pharmacologically accurately.

C- Professional and practical skills

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

c1- Solve pharmacologically the treatment of different metabolic disease.
c2- Practice his knowledge about growth promoters and hormons in animal and poultry farms.
c3- Write efficiently prescriptions for treating diseases.
c4- organize the research plan of his/her Master thesis.

d- General and transferable skills

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

d1- Statistical analysis of his/her thesis and result conclusion.
d2- Report about different available resources for efficient obtaining of knowledge and information.
d3- Design team work tasks in a definite solving problem in animals.
d4- Mange different communications in his/her career.

Course Specification of Postgraduate

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
Pharmacology of food metabolism (Lec. h./week, Pract h./week)	Introduction	8	4	4
	Drugs affecting water and electrolyte balance	8	4	4
	Drugs affecting in-organic metabolism	8	4	4
	Drugs affecting tissue metabolism	8	4	4
	Drugs affecting carbohydrates metabolism	8	4	4
	Growth promoters and feed additives	8	4	4
	Antimicrobials	8	4	4
	Non -specific chemicals	8	4	4
	Tranquilizers	8	4	4
	Vitamins	8	4	4
	Tissue extracts	8	4	4
	Blood	8	4	4
	Fresh adult ruminal contents	8	4	4
	Sex hormones	8	4	4
	Anti-thyroid drugs	8	4	4
	Ionophores	8	4	4
	Probiotics	8	4	4
	Prebiotics	8	4	4
	Total	**144**	**72**	**72**

5-Teaching and learning methods

5.1- Lectures using board, data shows

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

5.3- Practical (models, samples of……..).

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-a4	b1-b3	C1,C3	d1-d4
Practical Exam	a1-a4	b3	c1-c4	d1-d4
Oral Exam	a1-a4	b1-b3	C2,C4	d1-d4

Course Specification of Postgraduate

7.2. Assessment schedules

Method	Week(s)
Practical exams	During the last month
Written exams	During the last month
Oral Exam	During the last month

7.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	25 %
Written exams	50 %
Oral Exam	25 %
Total	100 %

8- List of references

8.1. Notes and books

Departmental notes on:

* Basis of pharmacology by Prof. Dr. Mohamed Abd Allah Tohamy (2015/25136).

*Textbook of practical pharmacology

8.2. Essential books:

- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

***Walker, D.G.; Renwick, A.G. and Hillier, K. (2001):**

Medical pharmacology and therapeutics.

First Ed. University of Southampton printed in Spain.

-Veterinary Pharmacology and therapeutics, Brander and Bugh.

8.3. Recommended texts:

-- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

***Nicholas H. Booth and E. Mcdonald (2005):**

5th Edition, Jones Veterinary Pharmacology and Therapeutics (2005).

***Goodman, L.S. and Gilman, A. (2006):**

The pharmacological basis of therapeutics 8th Ed. Iowa State University Press USA

***Robert L. Bill (2006):**

3rd Edition, Clinical Pharmacology and Therapeutics for the Veterinary Technician

***Satish K. Garg (2006):** 1st Edition-Reprint, Veterinary Toxicology

Norman Holland and Michael Patrick Adams (2007):

2nd Edition, Core Concepts In Pharmacology

8.4. Journals, Websites ……..etc

Course Specification of Postgraduate

Journals:

*Journal of Veterinary Pharmacology and Therapeutics
-Brazilian journal of pharmacology
-British poultry sciences
-International journal of animal and veterinary research
-Animal and Veterinary Advances journal
*The Science and Practice of Pharmacy
*The Pharmacological Basis of Therapeutics
*British Journal of Pharmacology
*International Journal of Antimicrobial Agents
Canadian journal of animal and veterinary advances
Indian journal of pharmacology

Websites:

httpi//www.sciencedirect.com/scince?...

ncbi.nlm.nih.gov/entrez/query.fcgi?...

httpi//www.sciencedirect.com/scince?...

http//www.altavista.com

http//www.librarygenesis.com

Course Coordinators	Head of Department
Dr. Abeer Mohamed Radi	Prof. Dr. Mohamed Abd Allah Tohamy

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	Introduction	1,2	a1-a4	b1-b3	c1-c3	d1-d4
2	Drugs affecting water and electrolyte balance	3,4	a1	b1-b2	c1	d1,d2,d4
3	Drugs affecting in-organic metabolism	5,6	a1	b1-b2	c1	d1,d2,d4
4	Drugs affecting tissue metabolism	7,8	a2	b1-b2	c1	d1,d2,d4
5	Drugs affecting carbohyderate metabolism	9,10	a2	b1-b2	c1	d1,d2,d4
6	Growth promoters and feed additives	11,12	a2	b1-b2	c1	d1,d2,d4
7	Antimicrobials	13,14	a2	b1-b2	c1	d1,d2,d4
8	Non-specific chemicals	15,16	a2	b1-b2	c1	d1,d2,d4
9	Tranquilizers	17,18	a1-a4	b1-b2	c1	d1,d2,d4
10	Vitamins	19,20	a1-a4	b1-b2	c1	d1-d4
11	Tissue extracts	21,22	a2- a4	b2	c1	d1-d4
12	Blood	23,24	a2- a4	b2	c1	d1-d4
13	Fresh adult ruminal contents	25,26	a2- a4	b2	c1	d1-d4
14	Sex hormones	27,28	a2- a4	b3	c1	d1-d4
15	Anti-thyroid drugs	29,30	a2- a4	b1-b2	c1	d1-d4
16	Ionophores	31,32	a2- a4	b1-b2	c1	d1-d4
17	Probiotics	33,34	a2- a4	b1-b2	c1-c3	d1-d4
18	Prebiotics	35,36	a2- a4	b1-b2	c1-c3	d1-d4

Beni-Suef University
Faculty of Veterinary Medicine

Course Specification of Postgraduate

1-Basic information

Course Code:	Ph-109
Course title :	Pharmacology of hormones
Program title:	Ph. D of Veterinary Science (Vet. Pharmacology)
Contact hours/ week	4 hours/ week, (Lect. 2hrs/week, Practical/ 2hrsweek)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

a1- Describes the different drugs affecting hormons levels in the body with qualified graduates for the requirements of the hormones.
a2- Suggest drug of choice that keep balanced hormonal levels without disturbance.
a3- Assesse the use of advanced technology for hormonal level determination.

3- Intended learning outcomes of course (ILOs)

a-Knowledge and understanding:

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

a1- Recognize the advanced and specialized principles, theories and hypotheses of hormones.
a2- Conclude all pharmacological principles of the drugs affecting hormones.
a3- Understand specialized and advanced knowledge about drugs affecting hormones.
a4- Recognize therapeutic uses, side effects and toxicity of different drugs affecting hormones and method for solving these effects.

b-Intellectual skills

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

b1- Discover the tocxcisty, its antagonizing and treatments of different drugs affecting hormonal balance.
b2- Compare and choose between the effects of different hormones act on body systems.
b3- Analyze data perfectly with appropriate conclusion.
b4- Design and creates a good planning technique for performing and analysis of drug bioassays and use advanced techniques for evaluation.

C- Professional and practical skills

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

c1-Suggest the appropriate method for injection of living laboratory animals with different drugs.
c2- Choose the suitable drug forms necessary for treatment certain diseases.
c3- Recognize factors that leads to failure of drug treatments.
c4- Discover the pharmacological effects of tested drugs on laboratory animals as well as isolated tissue preparations.

d- General and transferable skills

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

Course Specification of Postgraduate

d1- Tend to self-evaluation and assessment.
d2- Recognize and choose different available resources for efficient obtaining of knowledge and information.
d3- Set and Lead a team work in a certain professional task.
d4- Arrange different meetings and connection in the career.

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
Pharmacology of hormones (Lec. h./week, Pract h./week)	Introduction	8	4	4
	Classification of hormones	8	4	4
	Pharmacological actions of hormones	8	4	4
	Mechanism of action of hormones	8	4	4
	Sources of hormones	8	4	4
	Therapeutic uses of hormones	8	4	4
	Hormones of anterior pituitary lobe of pituitary gland	8	4	4
	Hormones of posterior pituitary lobe of pituitary gland	8	4	4
	Adrenal cortex hormones	8	4	4
	Adrenal medulla hormones	8	4	4
	Thyroid gland hormones	8	4	4
	Antithyroid drugs	8	4	4
	Parathyroid gland hormone	8	4	4
	Endocrine pancreas	8	4	4
	Insulin hormone	8	4	4
	Glucagon hormone	8	4	4
	Oral hypoglycemic drugs	8	4	4
	Glucogenic agents	8	4	4
	Total	**144**	**72**	**72**

5-Teaching and learning methods

5.1- Lectures using board, data shows
5.2- Self learning by preparing essays and presentations (computer researches and faculty library)
5.3- Practical (models, samples of……..).

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-a4	b1-b4	C2,C4	d1-d4
Practical Exam	a1-a4	b4	c1-c4	d1-d4
Oral Exam	a1-a4	b1-b4	C3	d1-d4

Course Specification of Postgraduate

7.2. Assessment schedules

Method	Week(s)
Practical exams	During the last month
written exams	During the last month
Oral Exam	During the last month

7.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	25 %
Written exams	50 %
Oral Exam	25 %
Total	100 %

8- List of references

8.1. Notes and books

Departmental notes on:

* Basis of pharmacology by Prof. Dr. Mohamed Abd Allah Tohamy (2015/25136).

*Textbook of practical pharmacology

8.2. Essential books:

- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

***Walker, D.G.; Renwick, A.G. and Hillier, K. (2001):**

Medical pharmacology and therapeutics.

First Ed. University of Southampton printed in Spain.

-Applied Veterinary Pharmacology and therapeutics, Brander and Bugh.

8.3. Recommended texts:

-- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

***Nicholas H. Booth and E. Mcdonald (2005):**

5th Edition, Jones Veterinary Pharmacology and Therapeutics (2005).

***Goodman, L.S. and Gilman, A. (2006):**

The pharmacological basis of therapeutics 8th Ed. Iowa State University Press USA

***Robert L. Bill (2006):**

3rd Edition, Clinical Pharmacology and Therapeutics for the Veterinary Technician

***Satish K. Garg (2006):** 1st Edition-Reprint, Veterinary Toxicology

Norman Holland and Michael Patrick Adams (2007):

2nd Edition, Core Concepts In Pharmacology

8.4. Journals, Websites ……..etc

Course Specification of Postgraduate

Journals:

*Journal of Veterinary Pharmacology and Therapeutics
-Brazilian journal of pharmacology
-British poultry sciences
-International journal of animal and veterinary research
-Animal and Veterinary Advances journal
*The Science and Practice of Pharmacy
*The Pharmacological Basis of Therapeutics
*British Journal of Pharmacology
*International Journal of Antimicrobial Agents
Canadian journal of animal and veterinary advances
Indian journal of pharmacology

Websites:

httpi//www.sciencedirect.com/scince?...

ncbi.nlm.nih.gov/entrez/query.fcgi?...

httpi//www.sciencedirect.com/scince?...

http//www.altavista.com

http//www.librarygenesis.com

Course Coordinators	Head of Department
Dr. Abeer Mohamed Radi	Prof. Dr. Mohamed Abd Allah Tohamy

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	Introduction	1,2	a1-a4	b1-b4	c1-c4	d1-d4
2	Classification of hormones	3,4	a1	b1-b4	c1-c4	d1,d2,d4
3	Pharmacological actions of hormones	5,6	a1	b1-b4	c1-c4	d1,d2,d4
4	Mechanism of action of hormones	7,8	a2	b1-b4	c1-c4	d1,d2,d4
5	Sources of hormones	9,10	a2	b1-b2	c1-c4	d1,d2,d4
6	Therapeutic uses of hormones	11,12	a2	b1-b2	c1-c4	d1,d2,d4
7	Hormones of anterior pituitary lobe of pituitary gland	13,14	a2	b1-b2	c1	d1,d2,d4
8	Hormones of posterior pituitary lobe of pituitary gland	15,16	a2	b1-b2	c1	d1,d2,d4
9	Adrenal cortex hormones	17, 18	a1-a4	b1-b2	c1	d1,d2,d4
10	Adrenal medulla hormones	19,20	a1-a4	b1-b4	c1	d1-d4
11	Thyroid gland hormones	21,22	a2- a4	b2	c1	d1-d4
12	Antithyroid drugs	23,24	a2- a4	b2	c1	d1-d4
13	Parathyroid gland hormone	25,26	a2- a4	b2	c1	d1-d4
14	Endocrine pancreas	27,28	a2- a4	b3	c1	d1-d4
15	Insulin hormone	29, 30	a2- a4	b1-b2	c1	d1-d4
16	Glucagon hormone	31,32	a2- a4	b1-b4	c1	d1-d4
17	Oral hypoglycemic drugs	33,34	a2- a4	b1-b4	c1-c4	d1-d4
18	Glucogenic agents	35,36	a2- a4	b1-b2	c1-c4	d1-d4

Beni-Suef University
Faculty of Veterinary Medicine

Course Specification of Postgraduate

1-Basic information

Course Code:	Ph-110
Course title :	Chemotherapy
Program title:	Ph. D of Veterinary Science (Vet. Pharmacology)
Contact hours/ week	4 hours/ week, (Lect. 2hrs/week, Practical 2hrs/ week)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

a2-Identify and choose ordinary and advanced quality principles and basics in veterinary pharmacology.
a3- Practice the information technology skills of veterinary pharmacology .
a4-Detect specific Knowledge about Chemotherapy and Clinical pharmacology.
a5- Assesse general and specific Knowledge about Drug toxicology and Fish pharmacology.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a1- Acquire specialized principles, theories and hypotheses in the chemotherapy.
a2- Describe the pharmacokinetics and pharmacodynamics of drugs.
a3- Explain therapeutic uses, side effects and toxicity of different drugs.

b-Intellectual skills

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

b1- Design the appropriate methods for determination of the drug actions, mechanism of action, kinetics, side effects and toxicity.
b2- Compare between the effects of different drugs act on body systems.
b3- Solve problems on pharmacologically basis for cases suffering from veterinary diseases.
b4- Detect and design a good planning technique for performing and analysis of drug bioassays.

C- Professional and practical skills

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

c1-Evaluate the practical laboratory animal injection skills and its accuracy.
c2- Design different drug forms necessary for treatment certain diseases.
c3- Write efficiently prescriptions for treating diseases.
c4- Analyze and conclude factors that leads to failure of drug treatments.
c5- Practice the pharmacological effects of drugs on laboratory animals as well as isolated tissue preparations.

d- General and transferable skills

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

d1- Practice self-evaluation and need assessment.

Course Specification of Postgraduate

d2- Choose different available resources for efficient obtaining of knowledge and information.
d3- Acquire self-learning of programs of computer related to pharmacology such as (R-strip, Win-non lin, SPSS, Micromath, Scientific software, USA).
d4- Manage a team work in a certain professional task.
d5- Lead continuous connection with drug companies, pharmacists and the friends in the career.

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
Chemotherapy (Lec. h./week, Pract h./week)	Introduction	4	2	2
	Classification of antimicrobial agents	4	2	2
	Factors determining for choice of antimicrobials	4	2	2
	Antimicrobial drugs combination	4	2	2
	Pencillins	4	2	2
	Cephalosporins	4	2	2
	Beta-lactamase inhibitors	4	2	2
	Aminoglycosides	4	2	2
	Broad spectrum antibiotics	4	2	2
	Polypeptide antibiotics	4	2	2
	Lincosamides antibiotics	4	2	2
	Macrolides antibiotics	4	2	2
	Sulphonamides	4	2	2
	Trimethoprim	4	2	2
	Potentiated sulphonamides	4	2	2
	Other antimicrobial agents	4	2	2
	Anti-parasitic drugs	4	2	2
	General mode of action of antiparasitic drugs	4	2	2
	Drugs for treating of internal parasites	4	2	2
	Chemotherapy of nematodes	4	2	2
	Chemotherapy of cestodes	4	2	2
	Chemotherapy of trematodes	4	2	2
	Pesticides	4	2	2
	Chemotherapy of coccidiosis	4	2	2
	Chemotherapy of amoebiasis	4	2	2
	Chemotherapy of babesiasis	4	2	2
	Chemotherapy of anaplasmosis	4	2	2
	Chemotherapy of trypanosomiasis	4	2	2
	Antifungal drugs for topical use	4	2	2
	Antifungal drugs for systemic use	4	2	2
	Antiviral drugs	4	2	2
	Immuno-stimulants	4	2	2
	First line drugs in tuberculosis	4	2	2

Course Specification of Postgraduate

	Second line drugs in tuberculosis	4	2	2
	Anti-cancer drugs	4	2	2
	Adverse effects and toxicity of anti-cancer drugs	4	2	2
	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 faculty library)

5.3- Practical (models, samples of……..).

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-a3	b1-b4	C3	d1-d5
Practical Exam	a1-a3	b3	c1-c5	d1-d5
Oral Exam	a1-a3	b1-b4	C3	d1-d5

7.2. Assessment schedules

Method	Week(s)
Practical exams	During the last month
Written exams	During the last month
Oral Exam	During the last month

7.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	25 %
Written exams	50 %
Oral Exam	25 %
Total	100 %

8- List of references

8.1. Notes and books

Departmental notes on:

* Basis of pharmacology by Prof. Dr. Mohamed Abd Allah Tohamy (2015/25136).

*Textbook of practical pharmacology

8.2. Essential books:

- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

***Walker, D.G.; Renwick, A.G. and Hillier, K. (2001):**

Medical pharmacology and therapeutics.

Course Specification of Postgraduate

First Ed. University of Southampton printed in Spain

8.3. Recommended texts:

-- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

***Nicholas H. Booth and E. Mcdonald (2005):**
5th Edition, Jones Veterinary Pharmacology and Therapeutics (2005)

***Goodman, L.S. and Gilman, A. (2006):**
The pharmacological basis of therapeutics 8th Ed. Iowa State University Press USA

***Robert L. Bill (2006):**
3rd Edition, Clinical Pharmacology and Therapeutics for the Veterinary Technician

***Satish K. Garg (2006):** 1st Edition-Reprint, Veterinary Toxicology

Norman Holland and Michael Patrick Adams (2007):
2nd Edition, Core Concepts In Pharmacology

8.4. Journals, Websites ……..etc

Journals:

- Journal of Antimicrobial Chemotherapy
*Journal of Veterinary Pharmacology and Therapeutics
*The Science and Practice of Pharmacy
*The Pharmacological Basis of Therapeutics
*Journal of Antimicrobial Chemotherapy
*Journal of Antibiotics
*British Journal of Pharmacology
*International Journal of Antimicrobial Agents

Websites:
httpi//www.sciencedirect.com/scince?...

ncbi.nlm.nih.gov/entrez/query.fcgi?...

httpi//www.sciencedirect.com/scince?...

ncbi.nlm.nih.gov/entrez/query.fcgi?...

Course Coordinators	Head of Department
Dr. Abeer Mohamed Radi	Prof. Dr. Mohamed Abd Allah Tohamy

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	Introduction	1	a1-a3	b1-b4	c1-c5	d1-d5
2	Classification of antimicrobial agents	2	a1	b1-b2	c1-c5	d1,d2,d4
3	Factors determining for choice of antimicrobials	3	a1	b1-b2	c1-c5	d1,d2,d4
4	Antimicrobial drugs combination	4	a2	b1-b2	c1-c5	d1,d2,d4
5	Pencillins	5	a2	b1-b2	c1-c5	d1,d2,d4
6	Cephalosporins	6	a2	b1-b2	c1-c5	d1,d2,d4
7	Beta-lactamase inhibitors	7	a2	b1-b2	c1-c5	d1,d2,d4
8	Aminoglycosides	8	a2	b1-b2	c1-c5	d1,d2,d4
9	Broad spectrum antibiotics	9	a1- a3	b1-b2	c1-c5	d1,d2,d4
10	Polypeptide antibiotics	10	a1- a3	b1-b2	c1-c5	d1-d5
11	Lincosamides antibiotics	11	a2- a3	b2	c1-c5	d1-d5
12	Macrolides antibiotics	12	a2- a3	b2	c1-c5	d1-d5
13	Sulphonamides	13	a2- a3	b2	c1-c5	d1-d5
14	Trimethoprim	14	a2- a3	b3	c1-c5	d1-d5
15	Potentiated sulphonamides	15	a2- a3	b1-b2	c1-c5	d1-d5
16	Other antimicrobial agents	16	a2- a3	b1-b2	c1-c5	d1-d5
17	Anti-parasitic drugs	17	a2- a3	b1-b2	c1-c5	d1-d5
18	General mode of action of antiparasitic drugs	18	a2- a3	b1-b2	c1-c5	d1-d5
19	Drugs for treating of internal parasites	19	a2- a3	b1-b2	c1-c5	d1-d5
20	Chemotherapy of nematodes	20	a2- a3	b1-b2	c1-c5	d1-d5
21	Chemotherapy of cestodes	21	a2- a3	b1-b2	c1-c5	d1-d5
22	Chemotherapy of trematodes	22	a2- a3	b1-b2	c1-c5	d1-d5

Course specification

23	Pesticides	23	a2	b1-b2	c1-c5	d1-d5
24	Chemotherapy of coccidiosis	24	a2	b1-b2	c1-c5	d1-d5
25	Chemotherapy of amoebiasis	25	a2	b1-b2	c1-c5	d1-d5
26	Chemotherapy of babesiasis	26	a2	b1-b2	c1-c5	d1-d5
27	Chemotherapy of anaplasmosis	27	a2	b1-b2	c1-c5	d1-d5
28	Chemotherapy of trypanosomiasis	28	a2- a3	b3	c1-c5	d1-d5
29	Antifungal drugs for topical use	29	a2- a3	b3	c1-c5	d1-d5
30	Antifungal drugs for systemic use	30	a2- a3	b3	c1-c5	d1-d5
31	Antiviral drugs	31	a2- a3	b3	c1-c5	d1-d5
32	Immuno-stimulants	32	a2- a3	b3	c1-c5	d1-d5
33	First line drugs in tuberculosis	33	a2- a3	b3	c1-c5	d1-d5
34	Second line drugs in tuberculosis	34	a2- a3	b3	c1-c5	d1-d5
35	Anti-cancer drugs	35	a2- a3	b1-b4	c1-c5	d1-d5
36	Adverse effects and toxicity of anti-cancer drugs	36	a2- a3	b1-b4	c1-c5	d1-d5

Beni-Suef University
Faculty of Veterinary Medicine

Course Specification of Postgraduate

1-Basic information

Course Code:	Ph-111
Course title :	Drug toxicology
Program title:	Ph. D of Veterinary Science (Vet. Pharmacology)
Contact hours/ week	3 hours/ week, (Lect. 2hrs/week, Practical 2hrs/ week)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

a1-perform qualified graduates for the requirements of the veterinary pharmacology specially Drug toxicology.
a2-Assesse quality principles, basics and special advances in veterinary pharmacology.
a3- Advances the information technology skills of veterinary pharmacology .
a4-Recognize specific Knowledge about Chemotherapy and Clinical pharmacology.
a5- Describes specific Knowledge about Drug toxicology and Fish pharmacology.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a1- Recognize specialized principles, theories and hypotheses in the drug toxicology with evidences.
a2- Assesse about the pharmacokinetics and pharmacodynamics of drugs.
a3- Explain therapeutic uses, side effects and toxicity of different drugs.

b-Intellectual skills

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

b1- Choose the advanced and appropriate methods for determination levels of heavy metals and other toxicological agents.
b2- Determine and evaluate the effects of different drugs act on body systems.
b3- Solve on pharmacologically basis how deal with certain cases suffering from veterinary diseases.
b4- Design and Creates a good planning technique for performing and analysis of drug bioassays.

C- Professional and practical skills

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

c1-perform professionally the appropriate method of injection of living laboratory animals with different drugs.
c2- suggest the postgraduate to make the drug forms necessary for treatment certain diseases.
c3- Perform and write efficiently prescriptions for treating diseases.
c4- Analyze and conclude factors that leads to failure of drug treatments.
c5- Recognize pharmacological effects of drugs on laboratory animals as well as isolated

Course Specification of Postgraduate

tissue preparations.

d- General and transferable skills

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

d1- Recognize and practice the advanced techniques for evaluation the Toxcisty in vivo.

d2- Choose and evaluate different available resources for efficient obtaining of knowledge and information.

d3- Suugest different self-learning of programs of computer related to pharmacology such as (R-strip,Wiin-Non Lin, SPSS, Micromath, Scientific software, USA).

d4- Manage and organize a team work in a certain professional task.

d5- Organize continuous connection with drug companies, pharmacists and the friends in the career.

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
Drug toxicology (Lec. h./week, Pract h./week)	Introduction	4	2	2
	General toxicology	4	2	2
	Causes of poisoning	4	2	2
	Fate of poison in the body	4	2	2
	Factors modifying effect of poisons	4	2	2
	General signs of poisoning	4	2	2
	Universal antidote	4	2	2
	Chelating agents	4	2	2
	Classification of poisons	4	2	2
	Diagnosis of poisoning	4	2	2
	General treatment of poisoning	4	2	2
	Special toxicology	4	2	2
	Metallic poisoning	4	2	2
	Lead poisoning	4	2	2
	Mercury poisoning	4	2	2
	Arsenic poisoning	4	2	2
	Copper poisoning	4	2	2
	Cyanide poisoning	4	2	2
	Selenium poisoning	4	2	2
	Pesticides	4	2	2
	Sources of pesticides poisoning	4	2	2
	Chlorinated hydrocarbon pesticides	4	2	2
	Organophosphorus compounds	4	2	2
	Carbamate pesticides	4	2	2
	Poisons of plant origin	4	2	2
	Atropine toxicity	4	2	2
	Strychnine toxicity	4	2	2
	Nicotine toxicity	4	2	2
	Morphine toxicity	4	2	2

Course Specification of Postgraduate

	Digitoxin toxicity	4	2	2
	Ergot alkaloids toxicity	4	2	2
	Aflatoxins toxicity	4	2	2
	Tricothrecene toxicity	4	2	2
	Poisons of animal origin	4	2	2
	Snake and vipers venom	4	2	2
	Scorpion poisons	4	2	2
	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 faculty library)

5.3- Practical (models, samples of……..).

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-a3	b1-b4	C3	d1-d5
Practical Exam	a1-a3	b1	c1-c5	d1-d5
Oral Exam	a1-a3	b1-b4		d1-d5

7.2. Assessment schedules

Method	Week(s)
Practical exams	During the last month
Written exams	During the last month
Oral Exam	During the last month

7.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	25 %
Written exams	50 %
Oral Exam	25 %
Total	100 %

8- List of references

8.1. Notes and books

Departmental notes on:

* Basis of pharmacology by Prof. Dr. Mohamed Abd Allah Tohamy (2015/25136).

*Textbook of practical pharmacology

8.2. Essential books:

Course Specification of Postgraduate

- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

***Walker, D.G.; Renwick, A.G. and Hillier, K. (2001):**
Medical pharmacology and therapeutics.
First Ed. University of Southampton printed in Spain

8.3. Recommended texts:

-- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***

***Nicholas H. Booth and E. Mcdonald (2005):**
5th Edition, Jones Veterinary Pharmacology and Therapeutics (2005)

***Goodman, L.S. and Gilman, A. (2006):**
The pharmacological basis of therapeutics 8th Ed. Iowa State University Press USA

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3rd Edition, Clinical Pharmacology and Therapeutics for the Veterinary Technician

***Satish K. Garg (2006):** 1st Edition-Reprint, Veterinary Toxicology

Norman Holland and Michael Patrick Adams (2007):
2nd Edition, Core Concepts In Pharmacology

8.4. Journals, Websites ……..etc

Journals:

*Journal of Veterinary Pharmacology and Therapeutics
*The Science and Practice of Pharmacy
*The Pharmacological Basis of Therapeutics
*Journal of Antimicrobial Chemotherapy
*Journal of Antibiotics
*British Journal of Pharmacology
*International Journal of Antimicrobial Agents

Websites:

httpi//www.sciencedirect.com/scince?...

ncbi.nlm.nih.gov/entrez/query.fcgi?...

httpi//www.sciencedirect.com/scince?...

ncbi.nlm.nih.gov/entrez/query.fcgi?...

Course Coordinators	Head of Department
Dr. Abeer Mohamed Radi	Prof. Dr. Mohamed Abd Allah Tohamy

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	Introduction	1	a1-a3	b1-b4	c1-c5	d1-d5
2	General toxicology	2	a1	b1-b2	c1-c5	d1,d2,d4
3	Causes of poisoning	3	a1	b1-b2	c1-c5	d1,d2,d4
4	Fate of poison in the body	4	a2	b1-b2	c1-c5	d1,d2,d4
5	Factors modifying effect of poisons	5	a2	b1-b2	c1-c5	d1,d2,d4
6	General signs of poisoning	6	a2	b1-b2	c1-c5	d1,d2,d4
7	Universal antidote	7	a2	b1-b2	c1-c5	d1,d2,d4
8	Chelating agents	8	a2	b1-b2	c1-c5	d1,d2,d4
9	Classification of poisons	9	a1-a3	b1-b2	c1-c5	d1,d2,d4
10	Diagnosis of poisoning	10	a1-a3	b1-b2	c1-c5	d1-d5
11	General treatment of poisoning	11	a2- a3	b2	c1-c5	d1-d5
12	Special toxicology	12	a2- a3	b2	c1-c5	d1-d5
13	Metallic poisoning	13	a2- a3	b2	c1-c5	d1-d5
14	Lead poisoning	14	a2- a3	b3	c1-c5	d1-d5
15	Mercury poisoning	15	a2- a3	b1-b2	c1-c5	d1-d5
16	Arsenic poisoning	16	a2- a3	b1-b2	c1-c5	d1-d5
17	Copper poisoning	17	a2- a3	b1-b2	c1-c5	d1-d5
18	Cyanide poisoning	18	a2- a3	b1-b2	c1-c5	d1-d5
19	Selenium poisoning	19	a2- a3	b1-b2	c1-c5	d1-d5
20	Pesticides	20	a2- a3	b1-b2	c1-c5	d1-d5
21	Sources of pesticides poisoning	21	a2- a3	b1-b2	c1-c5	d1-d5
22	Chlorinated hydrocarbon pesticides	22	a2- a3	b1-b2	c1-c5	d1-d5

Course specification

23	Organophosphorus compounds	23	a2	b1-b2	c1-c5	d1-d5
24	Carbamate pesticides	24	a2	b1-b2	c1-c5	d1-d5
25	Poisons of plant origin	25	a2	b1-b2	c1-c5	d1-d5
26	Atropine toxicity	26	a2	b1-b2	c1-c5	d1-d5
27	Strychnine toxicity	27	a2	b1-b2	c1-c5	d1-d5
28	Nicotine toxicity	28	a2- a3	b3	c1-c5	d1-d5
29	Morphine toxicity	29	a2- a3	b3	c1-c5	d1-d5
30	Digitoxin toxicity	30	a2- a3	b3	c1-c5	d1-d5
31	Ergot alkaloids toxicity	31	a2- a3	b3	c1-c5	d1-d5
32	Aflatoxins toxicity	32	a2- a3	b3	c1-c5	d1-d5
33	Tricothrecene toxicity	33	a2- a3	b3	c1-c5	d1-d5
34	Poisons of animal origin	34	a2- a3	b3	c1-c5	d1-d5
35	Snake and vipers venom	35	a2- a3	b1-b4	c1-c5	d1-d5
36	Scorpion poisons	36	a2- a3	b1-b4	c1-c5	d1-d5

Beni-Suef University
Faculty of Veterinary Medicine

Course Specification of Postgraduate

1-Basic information

Course Code:	Ph-112
Course title :	Drug bioassay
Program title:	Ph. D of Veterinary Science (Vet. Pharmacology)
Contact hours/ week	2 hours/ week ,(Lect. 2hrs/week, Practical 2hrs/ week)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

a1-Recognize regular and advanced techniques used for drug bioassay estimation and determination.

a2- Assesses quality principles and basics in drug bioassay by advanced and ordinary tools.

a3- Suggest the information technology skills needed for drug bioassay.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a1- Categorize different methods for bioassay of drugs.

a2- Choose the appropriate method assay activity of drugs in vitro or intact animals.

a3- Conclude and Analyze the data of bioassay results.

a4- Describe and evaluate the method of bioassay of different drugs.

b- Intellectual skills

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

b1- Perform and Design experiment for bioassay of different drug to evaluate activity.

b2- Assesse different procedures for drugs bioassays.

b3- Design and creates a good planning technique for performing and analysis of drug bioassays with final conclusion.

C- Professional and practical skills

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

c1-Choose and practice the suitable way for injection of living laboratory animals with different drugs.

c2- Practice and evaluate bioassay of drugs both in vitro and intact animal.

c3- Perform and design bioassay of detecting activity of different extracts, patent drugs or chemical.

d- General and transferable skills

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

d1- Estimate practice self-evaluation and assessment.

d2- Choose different available resources for efficient obtaining of knowledge and information.

d3- Manage and organize a team work in a certain professional task.

d4- Assesse, arrange and coordinates with different connection with drug companies,

Course Specification of Postgraduate

pharmacists and the friends in the career.

4-Topics and contents

Course	Topic	No. of hours	Lectures	Practical
Drug bioassay (Lec. h./week, Pract h./week)	Introduction	2	2	-
	Experiments of isolated tissue preparations	4	2	2
	The effect of drugs on rabbit intestine	2	1	1
	Determination the site of action of drugs	2	1	1
	The effect of drugs on rat uterus	4	2	2
	The effect of drugs on fasciola flukes	4	2	2
	Effect of drugs on the muscle of eye	2	1	1
	Corneal anesthetic effect of drugs	4	2	2
	Local anesthetic effect of drugs in rabbits	2	1	1
	Effect of drugs on skeletal muscle preparations	2	1	1
	Effect of drugs on isolated heart of frogs	2	1	1
	Effect of digitalis on isolated heart of frogs	2	1	1
	Effect of drugs on isolated perfused rabbit heart	2	1	1
	Effect of drugs on guinea pig tracheal strip	2	1	1
	Effect of drugs on arterial blood pressure and respiration	2	1	1
	Effect of drugs on glucose level	2	1	1
	Determination of antifungal activity of drugs	2	1	1
	effect of anticoagulants on clotting time	2	1	1
	Determination of LD_{50} of drugs	2	1	1
	Effect of drugs and medicinal preparations on CNS	2	1	1
	Anti-ulcer activity of drugs	2	1	1
	Anti-histaminic activity of drugs	2	1	1
	Anti-arthritic activity of drugs	2	1	1
	Hepatoprotective activity of drugs	4	2	2
	Hypnotic and anesthetic activity of drugs	2	1	1
	Biological assay of drugs	4	2	2
	Extraction technique of medicinal plants	2	1	1
	Phytochemical screening and evaluation of biological activities of medicinal plants	2	1	1
	Drug excretion	2	1	1
	Conversion of dose from human to animals	2	2	2
	Total	**72**	**36**	**36**

5-Teaching and learning methods

Course Specification of Postgraduate

5.1- Lectures (brain storm, discussion) using board, data shows
5.2- Self learning by preparing essays and presentations (computer researches and faculty library)
5.3- Practical (models, samples of……..).

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-a4	b1-b3		d1-d4
Practical Exam	a1-a4		c1-c3	d1-d4
Oral Exam	a1-a4	b1-b3		d1-d4

7.2. Assessment schedules

Method	Week(s)
Practical exams	During the last month
Written exams	During the last month
Oral Exam	During the last month

7.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	25 %
Written exams	50 %
Oral Exam	25 %
Total	100 %

8- List of references

8.1. Notes and books
Departmental notes on:
* Basis of pharmacology by Prof. Dr. Mohamed Abd Allah Tohamy (2015/25136).
*Textbook of practical pharmacology

8.2. Essential books:
- ***(Present in library of Faculty of Veterinary Medicine, Beni-Suef University)***
***Walker, D.G.; Renwick, A.G. and Hillier, K. (2001):**
Medical pharmacology and therapeutics.
First Ed. University of Southampton printed in Spain

8.3. Recommended texts:
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5th Edition, Jones Veterinary Pharmacology and Therapeutics (2005)
***Goodman, L.S. and Gilman, A. (2006):**

Course Specification of Postgraduate

The pharmacological basis of therapeutics 8th Ed. Iowa State University Press USA
***Robert L. Bill (2006):**
3rd Edition, Clinical Pharmacology and Therapeutics for the Veterinary Technician
***Satish K. Garg (2006):** 1st Edition-Reprint, Veterinary Toxicology
Norman Holland and Michael Patrick Adams (2007):
2nd Edition, Core Concepts In Pharmacology

8.4. Journals, Websites ……..etc

Journals:

*Journal of Veterinary Pharmacology and Therapeutics
*The Science and Practice of Pharmacy
*The Pharmacological Basis of Therapeutics
*Journal of Antimicrobial Chemotherapy
*Journal of Antibiotics
*British Journal of Pharmacology
*International Journal of Antimicrobial Agents

Websites:

httpi//www.sciencedirect.com/scince?...

ncbi.nlm.nih.gov/entrez/query.fcgi?...

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ncbi.nlm.nih.gov/entrez/query.fcgi?...

Course Coordinators	Head of Department
Dr. Abeer Mohamed Radi	Prof. Dr. Mohamed Abd Allah Tohamy

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	Introduction	1	a1-a4	b1-b3	c1-c3	d1-d4
2	Experiments of isolated tissue preparations	2,3	a1	b1-b2	c1	d1,d2,d4
3	The effect of drugs on rabbit intestine	4	a1	b1-b2	c1	d1,d2,d4
4	Determination the site of action of drugs	5	a2	b1-b2	c1	d1,d2,d4
5	The effect of drugs on rat uterus	6,7	a2	b1-b2	c1	d1,d2,d4
6	The effect of drugs on fasciola flukes	8,9	a2	b1-b2	c1	d1,d2,d4
7	Effect of drugs on the muscle of eye	10	a2	b1-b2	c1	d1,d2,d4
8	Corneal anesthetic effect of drugs	11,12	a2	b1-b2	c1	d1,d2,d4
9	Local anesthetic effect of drugs in rabbits	13	a1-a4	b1-b2	c1	d1,d2,d4
10	Effect of drugs on skeletal muscle preparations	14	a1-a4	b1-b2	c1	d1-d4
11	Effect of drugs on isolated heart of frogs	15	a2- a4	b2	c1	d1-d4
12	Effect of digitalis on isolated heart of frogs	16	a2- a4	b2	c1	d1-d4
13	Effect of drugs on isolated perfused rabbit heart	17	a2- a4	b2	c1	d1-d4
14	Effect of drugs on guinea pig tracheal strip	18	a2- a4	b3	c1	d1-d4
15	Effect of drugs on arterial blood pressure and respiration	19	a2- a4	b1-b2	c1	d1-d4
16	Effect of drugs on glucose level	20	a2- a4	b1-b2	c1	d1-d4
17	Determination of antifungal activity of drugs	21	a2- a4	b1-b2	c1-c3	d1-d4
18	effect of anticoagulants on clotting time	22	a2- a4	b1-b2	c1-c3	d1-d4
19	Determination of LD_{50} of drugs	23	a2- a4	b1-b2	c1-c3	d1-d4
20	Effect of drugs and medicinal preparations on CNS	24	a2- a4	b1-b2	c1-c3	d1-d4

Course specification

21	Anti-ulcer activity of drugs	25	a2- a4	b1-b2	c1-c3	d1-d4
22	Anti-histaminic activity of drugs	26	a2- a4	b1-b2	c1-c3	d1-d4
23	Anti-arthritic activity of drugs	27	a2	b1-b2	c1-c3	d1-d4
24	Hepatoprotective activity of drugs	28, 29	a2	b1-b2	c1-c3	d1-d4
25	Hypnotic and anesthetic activity of drugs	30	a2	b1-b2	c1-c3	d1-d4
26	Biological assay of drugs	31, 32	a2	b1-b2	c1-c3	d1-d4
27	Extraction technique of medicinal plants	33	a2	b1-b2	c1-c3	d1-d4
28	Phytochemical screening and evaluation of biological activities of medicinal plants	34	a2- a4	b3	c1-c3	d1-d4
29	Drug excretion	35	a2- a4	b3	c1-c3	d1-d4
30	Conversion of dose from human to animals	36	a2- a4	b3	c1-c3	d1-d4