Beni-Suef University
Faculty of Veterinary Medicine
Department of Toxicology and Forensic Medicine

Program Specification for Master Degree
2017-2018

A-Basic information:

1- Program title: *MVSC.,*
2- Program type: *Single*
3- Department offering program: Toxicology and Forensic Medicine
4-Academic year: *2017-2018*
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-The aim of the course is to identify the potential harmful effects of chemical compounds to humans, animals and the environment .
2- manage the community medico-legal and ethical problems.
3-It aims to provide some information of how toxic chemicals can be detected and quantified in the environment; how toxic responses can be measured. manage cases of poisoning that will face them after graduation during the general medical practice.

Intended learning outcomes of course (ILOs):

a- Knowledge and understanding:

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

a1. Define the different classification of poison and different toxicity testing

a2. Realize the toxicants different mechanistic pathways, toxicokinetic and toxicodynamic, diagnosis, sample collection , control and treatment of toxicants

a3. Recognize toxicity of heavy metals, insecticides , Aflatoxin, drugs toxicity, poisonous plants and animals.

a4. Recognize the toxic effects in different organs and the corresponding organ toxicity testing and monitor the effects of different environmental hazards.

a5- Identify medical ethics and common hypothesis of medicolegal aspects in different causes of death

a6- Elucidate different types of asphyxia, wound, burns, Sexual crime and head injuries.

a7- Identify blood stain and differentiate it from other stains with medico-legal samples for forensic analysis and identifications.

a8. Determine the sources, different types and classification of environmental Pollutants and toxic impacts and hazards of environmental pollutions on human, animal and aquatic life

a9. Recognize the different instrumentation and the analytical methods used for environmental evaluations (water, air soil pollutants).

a10. Define the different radiation and radioactive materials pollutions and the methods for minimizing their effects

a11 - Identify examples of practical importance of pharmacokinetics and pharmacogenetics in clinical toxicology, fundamentals of immunotoxicity and neurotoxicity, male and female and reproductive toxicity testing.

b- Intellectual skills:

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

b1. Deal with the expected acute and chronic hazards. Correlate the molecular basis and mechanistic pathways of toxic actions.

b2. . Assess the toxicological impacts for different organ toxicity and Interpret the data obtained from the toxicology lab.

b3. Relate the socio-economic for ideal poisoning treatment.

b4- Differentiate between natural and unnatural death, different types of injuries e.g. wound, thermal injuries, explosion injuries, road traffic accidents injuries..

b5- Differentiate between suicidal, accidental or homicidal injuries, different types of violent asphyxia, detect the different fire arms and its medicolegal importance

b6. - Perform rapid simple tests that help diagnosis of the common poisons.

c- Professional and practical skills:

On successful completion of this 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 .

c3. Practice in sampling, labeling, transport and preservation of suspected samples.

c4. Perform different methods of poison detection, Manage and treat the different expected poisoning cases

c5- Write a medico-legal report in English and Arabic, identification of age, sex, and race either living or dead.

c6- Recognize different forensic samples (hair fibers & blood), ideal crime scene investigation and evidence collection

c7. Construct appropriate management plans (both diagnostic and therapeutic) for patients with common diseases especially those expected to have long term sequels.

d- General and transferable skills:
On successful completion of this program the graduate should be able to:

d1. Work effectively as part of a team, demonstrating decision making and time management.

d2. Efficiently make use of library facilities and IT tools.

d3. Explore appropriate computer / keyboard skills including word processing, spreadsheets, presentation packages and graph plotting.

d4. Undertake written assignments and oral presentations.

2- 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 four years. The faculty council has the right to give the applicant another period not excced 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
		theoritical	practical		
	Master Principal course	3	4	Preliminary year	36 weeks
	Research methods	1	3	Preliminary year	36 weeks

2-subsidiary courses

Code	Course title	Hours /week		Academic year	Semester
		Theoretical	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-Suef University requirements, all applicants for postgraduate studies should fulfill preliminary courses on the following subjects:
I- English language (Toefl or equivalent degree)
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 biostatic (212)
-The passing mark in each exam is ⩾ 60%.
-The faculty council has the right to deprive 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 second year.
-The candidate will receive his degree after evaluating and approving the thesis by a committee according to University regulations.
-The applicant should publish at least one scientific papers from the thesis in local or international journals

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 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 veterinary forensic medicine and toxicology 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.The applicant should publish at least one scientific paper from the thesis in local or international journals

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	a1,a3,a4,,a6,a 7-a5-a8-a10	b1,b2, b3, b4	c5,c6,c7,	
Practical exam		b5,b6,	c1,c2,c3,c4	d1,d2
Oral exam	a1,a2,a3,a4,a5 -a9-a11	b1,b2,b3,b5,b 4	c1,c2,c6,c4,c7	d1,d3,d4, ,

Master Program Specification Matrix (Program Courses with ILOS)

Program ILOs		Courses
Knowledge and understanding	a1	MPC+Thesis
	a2	MPC+ Thesis
	a3	M148+M151+200
	a4	M149+M151+33
	a5	M152+M150
	a6	M152+M150+39
	a7	M150+39+212
	a8	M150+39
	a9	M149+ M152
	a10	M149+M151+33
	a11	M151+200
Intellectual skills	b1	M149+ M152+88+thesis
	b2	M148+M152 and thesis
	b3	M151+M152+principle course

	b4	M149+M151+33and thesis
	b5	
	b6	M149+M151and Thesis
Professional and practical skills		
	c1	M149+ M152 and thesis
	c2	M149+ M152 and thesis
	c3	M149+ M152 and thesis
	c4	M149+ M152 and thesis
	c5	M149+M151+33 and Thesis
General and transferable skills	C6	M149+M151+33 and Thesis
	d1	MPC+thesis
	d2	M149+M151+33and thesis
	d3	M149+M151and thesis
	d4	MPC+thesis
	d5	M149+M151+33
	d6	MPC+thesis

Program aims – ILOS Matrix for the Master Degree
مصفوفة اهداف البرنامج مع مخرجات التعلم المستهدفة

Program ILOS		Program aims		
		1- identify the potential harmful effects of chemical compounds to humans, animals and the environment	2- manage the community medico-legal and ethical problems	3-provide some information of how toxic chemicals can be detected and quantified in the environment; how toxic responses can be measured. manage cases of poisoning that will face them after graduation during the general medical practice.
Knowledge and understanding	a1. Define the different classification of poison and different toxicity testing			√
	a2. Realize the toxicants different mechanistic pathways, toxicokinetic and toxicodynamic, diagnosis, sample collection , control and treatment of toxicants			√
	a3. Recognize toxicity of heavy metals, insecticides , Aflatoxin, drugs toxicity, poisonous plants and animals	√		√

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	a4. Recognize the toxic effects in different organs and the corresponding organ toxicity testing and monitor the effects of different environmental hazards.	√	√	
	a5- Identify medical ethics and common hypothesis of medicolegal aspects in different causes of death		√	
	a6- Elucidate different types of asphyxia, wound, burns, Sexual crime and head injuries.	√		
	a7- Identify blood stain and differentiate it from other stains with medico-legal samples for forensic analysis and identifications	√	√	
	a8. - determine the sources, different types and classification of environmental Pollutants and toxic impacts and hazards of environmental pollutions on human, animal and aquatic life			√

Program ILOS		Program aims		
		1- identify the potential harmful effects of chemical compounds to humans, animals and the environment	2- manage the community medico-legal and ethical problems	3-provide some information of how toxic chemicals can be detected and quantified in the environment; how toxic responses can be measured. manage cases of poisoning that will face them after graduation during the general medical practice.
	a9. Recognize the different instrumentation and the analytical methods used for environmental evaluations (water, air soil pollutants)		√	
	a10. Define the different radiation and radioactive materials pollutions and the methods for minimizing their effects			√
	a11 - Identify examples of practical importance of pharmacokinetics and pharmacogenetics in clinical toxicology, fundamentals of immunotoxicity and neurotoxicity, male and female and reproductive toxicity testing.			√
Intellectual skills	b1. Deal with the expected acute and chronic hazards. Correlate the molecular basis and mechanistic pathways of toxic actions		√	√
	b2. .Assess the toxicological impacts for different organ toxicity and Interpret the data obtained from the toxicology lab. b3. Relate the socio-economic for ideal	√		

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		1- identify the potential harmful effects of chemical compounds to humans, animals and the environment	2- manage the community medico-legal and ethical problems	3-provide some information of how toxic chemicals can be detected and quantified in the environment; how toxic responses can be measured. manage cases of poisoning that will face them after graduation during the general medical practice.
	poisoning treatment.			
	b4- Differentiate between natural and unnatural death, different types of injuries e.g. wound, thermal injuries, explosion injuries, road traffic accidents injuries..			√
	b5- Differentiate between suicidal, accidental or homicidal injuries, different types of violent asphyxia, detect the different fire arms and its medicolegal importance			√
	b6. - Perform rapid simple tests that help diagnosis of the common poisons.			√
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 own research	√		√

Program ILOS		Program aims		
		1- identify the potential harmful effects of chemical compounds to humans, animals and the environment	2- manage the community medico-legal and ethical problems	3-provide some information of how toxic chemicals can be detected and quantified in the environment; how toxic responses can be measured. manage cases of poisoning that will face them after graduation during the general medical practice.
	c3. Practice in sampling, labeling, transport and preservation of suspected samples.			√
	c4. Perform different methods of poison detection, Manage and treat the different expected poisoning cases		√	
	c5- Write a medico-legal report in English and Arabic, identification of age, sex, and race either living or dead.		√	
	c6- Recognize different forensic samples (hair fibers & blood), ideal crime scene investigation and evidence collection	√		
	c7. Construct appropriate management plans (both diagnostic and therapeutic) for patients with common diseases especially those expected to have long		√	

Program ILOS		Program aims		
		1- identify the potential harmful effects of chemical compounds to humans, animals and the environment	2- manage the community medico-legal and ethical problems	3-provide some information of how toxic chemicals can be detected and quantified in the environment; how toxic responses can be measured. manage cases of poisoning that will face them after graduation during the general medical practice.
	term sequels.			
general and transferable skills	d1. Work effectively as part of a team, demonstrating decision making and time management.			√
	d2. Efficiently make use of library facilities and IT tools.	√		
	d3. Explore appropriate computer keyboard skills including word processing, spreadsheets, presentation packages and graph plotting.		√	
	d4. Undertake written assignments and oral presentations.			√

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		1- identify the potential harmful effects of chemical compounds to humans, animals and the environment	2- manage the community medico-legal and ethical problems	3-provide some information of how toxic chemicals can be detected and quantified in the environment; how toxic responses can be measured. manage cases of poisoning that will face them after graduation during the general medical practice.

Master 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	**a 3**	**a4**	**a5**	**a6**	**b1**	**b 2**	**b 3**	**b4**	**b 5**	**b 6**	**B 7**	**c1**	**c2**	**c3**	**c4**	**d1**	**d2**	**d3**	**d4**	**D5**	**D6**	**D7**
Knowledge and understanding	a1	√				√																			
	a2	√		√		√																			
	a3	√	√																						
	a4		√		√																				
	a5				√		√																		
	a6	√																							
	a7				√																				
	a8		√																						
	a9		√		√																				
	a10		√																						
	a11			√																					
Intellectual skills	b1								√	√		√													
	b2													√											
	b3								√	√															
	b4							√																	
	b5							√																	
	b6									√	√														
Professional and practical skills	c1																	√							
	c2														√										
	c3														√										

	c4														√		√								
	c5															√		√							
	c6														√		√								
	c7																	√							
General and transferable skills	**d1**																						√	√	
	d2																		√		√				
	d3																		√						
	d4																			√					

Course Coordinators
Dr. Walaa A. Moselhy

Head of Department
Prof. Dr. Khaled Abdou

Beni-Suef University
Faculty of Veterinary Medicine
Department of/ Forensic medicine and Toxicology

Course specification OF Postgraduate

1-Basic information

Course Code:	**mpc**
Course title :	Toxicology and forensic medicine
Academic year:	Toxicology and Forensic Medicine, Post graduate students (MVSc)
Program title:	Master degree of Veterinary Medical sciences
Contact hours/ week	7 hours/week, (3Lect./week, 4 Practical/week)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

- Offer the academic knowledge and practical experience about the toxicants, their mode of action, signs, diagnosis and how can treat them and control .
-deliver core knowledge in the forensic medical sciences and the student will be apple to identify ,understand and apply the legal, professional and ethical aspect of forensic medicine.

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 different types of toxicants, factors affecting toxicity, metabolism and the basic lines of diagnosis and treatment

a2- List the classes and types of toxicants.

a3- Recognize different types of pesticides, metallic poison, Plant poisons, animal poisons, Gases &volatile poisons and corrosives

a4- Describe the mode of action of different kind of toxicant

a5- Conclude the diagnosis and treatment of different types of toxicants

a6- Distinguish samples collection for medico legal lab.

a7- Explain direct and indirect causes of death

a8- Recognize the different signs and postmortem changes after death

a9- Describe the different types of weapons and explosion

a10- Recognize the different types of wounds and burns

a11- Distinguish different types of asphyxia.

a12- Recognize the international guidelines for keeping animal rights. .

Course specification OF Postgraduate

b-Intellectual skills

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

b1- analyse sample analysis from poisoned animal.
b2- Organize thinking for how to diagnosis of toxicity.
b3- compare different cases of toxicity and suitable methods for treatment.
b4- Interpret the molecular basis and mechanisms of death.
b5- Formulate the difference between natural and criminal death.
b6- Estimate the socio-economic compensation in wounded and burned animals
b7- Recognize the cases of criminal abortion and sexual crimes by DNA typing
b8- Suggest the real causes of asphyxia

c-Professional and practical skills

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

c1- Practice different methods of collection & preservation of diagnostic specimens.
C2- Assess Clinical, post-mortem, toxicological examinations of samples from poisoned animal
C3- Practice methods of treatment of poisoned animal.
C4- Design control measures to prevent mycotoxicosis.
C5-Detection of irritants
C6- contributes in solving criminals' events.
C7-Conduct methods of sampling, labeling, transport and preservation of suspected samples Perform different method for blood and semen differentiation
C8-Perform different method for blood and semen differentiation, perform ideal crime scene
C9- diagnose criminal abortion and sexual crimes.

d-General and transferable skills

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

d1. Work effectively as part of a team, Enhancing the ability of decision making
d2. Efficiently make use of library facilities and IT tools.
d3. Explore appropriate computer / keyboard skills including word processing, spreadsheets, presentation packages and graph plotting.
d4. Undertake written assignments and oral presentations.

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Course specification OF Postgraduate

4-Topics and contents

Course	Topic	Week	No. of hours	Lectures	Practical
Toxicology (Lec3h./week, Pract. 4h./week)	General toxicology	1-3	21	9	12
	Toxicity evaluation tests	4	7	3	4
	Reproductive toxicity tests and Teratology tests	5	7	3	4
	Irritants	6	7	3	4
	Corrosive poisons	7	7	3	4
	Mycotoxins &mycotoxicosis	8-9	14	6	8
	Pesticides Toxicology	10	7	3	4
	Plant poisons	11	7	3	4
	Animal poisons	12-13	14	6	8
	Gases &volatile poisons	14	7	3	4
	Eco toxicology	15	7	3	4
	Drug toxicity	16	7	3	4
	Necropsy protocol and Veterinary analytical toxicology	17-20	28	12	16

Course	Topic	Week	No. of hours	Lectures	Practical
Forensic medicine (Lec. 2h./week,	Samples and sampling	21	7	3	4
	Death and postmortem changes	22	7	3	4
	Determination of animals types and sex by examination of bones and animal hair	23-25	21	9	12
	Death from heat , cold ,starvation and Burns	26	7	3	4

Course specification OF Postgraduate

	Wounds and Firearm wounds	27	7	3	4
	Examination of blood and seminal stains	28	7	3	4
Forensic medicine (Lec.2 h./week, Pract. 2h./week)	Asphyxia	29	7	3	4
	Determination of animal types and age by examination of teeth	30-31	14	6	8
	criminal aboration	32	7	3	4
	Animal Doping	33	7	3	4
	Animal euthanasia	34	7	3	4
	serology and DNA typing	35	7	3	4
	Medico legal report	36	7	3	4
			252	108	144

5-Teaching and learning methods

5.1- Lectures (brain storming, 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 different antidote ,pesticides, poisonous plants , scorpions and snakes).

6-Teaching and learning methods for the students with disabilities

Not applicable

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-a12	B1-b4, b6, b5, b7, b8.	-	-
Practical exam	-	-	C1-c9, c4,c7	D1-d4
Oral exam	A1-a12	B1-b4,b6.	-	-

7.2. Assessment schedules/semester:

Method	Week(s)
written exam	During December
Practical exam	During December
Oral exam	During December

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7.3. Weight of assessments:

Assessment	Weight of assessment
Practical exams	30%
written exams	50%
Oral exam	20%
Total	100%

8- List of references

8.1. Notes and books

Not applicable

8.2. Essential books:

1- Principles and Methods of Toxicology (2001). A. Wallace Hayes 4th Ed. Taylor & Francts
2- Veterinary toxicology (1995). E.G.C. Clarke and Myral. Clarke.1st, 2nd and 3rd Ed. Macmillan publishing Co. Inc., New York.
3- Veterinary Jurisprudence.(1981). S.N. Sharma. 3rd Ed. Oxford of IBH Publishing Co. Put. LTD.
4- Veterinary Jurisprudence.(1981). S.N. Sharma. 3rd Ed. Oxford of IBH Publishing Co. Put. LTD.

These books are found in the library of faculty of vetrinary medicine , Beni-suef Univ.

8.3. Recommended texts

1- Forensic Taphonomy. (1997). The postmortem fate of Human remains. William D. Haglund Marcella H. Sorg. Boca Raton New york. London Tokyo.
2- Molecular Toxicology. (2003). N. Plant Garland Science / Bios scientific publisher Taylor& Francis group.
3- Small animal Toxicology. (1998). Roger. W. Feller, DUM Shawn P. Messonnier, DUM.St. Louis Baltimane Boston Carlsbad. Chicago Miuneapolis New York.
4- Hand Book of toxicology. (1995). Michael. J. Derelanko and Mannfred A. Hollinger. DNLM/DLC for library of Congerss. Boca. Raton New York London Tokyo.
5- Ecotoxicology (1996). Michael C. Newman and charles H. Jagoe. Lewis Publisher.
6- Developmental toxicology. (1997). Ronald d. hood. CRC Press INC. United State America.
7- Poisoning and Toxicology (1998).Jerrold. B. Leikin and Frank P. paloucek. Lexi-comp INC. Canada.

These books are found in the library of faculty of vetrinary medicine , Beni-suef Univ.

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8.4. Journals, Websites ……..etc

Journals:

- Toxicology& applied pharmacology.
- Toxicology letters.
- American journal of clinical nitration.
- Animal feed science & technology.
- journal of forensic medicine
- journal of forensic toxicology
- journal of eco toxicology

Websites:

- Chtt:// www.toxicology.net/
- Chtt://www.ncbi.nlm.nih.gov
- C http://www.Google.com
- Chttp://intl.clinchem.org/
- www. Journal. of Toxicology and applied pharmacology.
- www.ivis.com
- www. Egyptian society of natural toxin
- www. Egyptian society of environmental toxin

Course Coordinators	Head of Department
Dr. Walaa A. Moselhy	Prof. Khaled Abdou

Course specification

Topic	Week	Intended learning outcomes of course (ILOs)			
		K&U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
General toxicology	1-3	1	1	1	1
Toxicity evaluation tests	4	2, 3,4	2, 3	1, 2,3	1
Reproductive toxicity tests and Teratology tests	5	2,3,4	2, 3	1,2	1
Irritants	6	2,3,4	2, 3	1,2	2
Corrosive poisons	7	1,3	2,3	1,2	2
Mycotoxins &mycotoxicosis	8-9	2,3,4	2, 3	5	2
Pesticides Toxicology	10	2,4,5	1,2,3	4	1
Plant poisons	11	2,3,5	2,3	2,3	1
Animal poisons	12-13	2,3,4	3,4	2,3	1,2
Gases &volatile poisons	14	2,3,4	2,3	2,3	1,2
Eco toxicology	15	2,3	2	2,3	2
Drug toxicity	16	1	1,2,3,4	1,2	2
Necropsy protocol and Veterinary analytical toxicology	17-20	2,3	2	2,3	1

Topic	Week	Intended learning outcomes of course (ILOs)			
		K&U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Samples and sampling	21	6	1	1,2	1
Death and postmortem changes	22	-	-	6	1
Determination of animals types and sex by examination of bones and animal hair	23-25	7,8	4,5	7	1
Death from heat , cold ,starvation and Burns	26	8	4	6,7,8	1
Wounds and Firearm wounds	27	-	-	6	2
Examination of blood and seminal stains	28	7,8	5	6	2
Asphyxia	29	10	6	6	2
Determination of animal types and age by examination of teeth	30-31	10	6	6	1
criminal aboration	32	9,10	-	6	2
Animal Doping	33	-	-	7	1
Animal euthanasia	34	11	8	6	1,2
serology and DNA typing	35	-	-	6	1,2
Medico legal report	36	-	-	6	1

Beni-Suef University
Faculty of Veterinary Medicine

Course Specification of Postgraduate

1-Basic information

Course Code:	M-148
Course title :	Forensic medicine
Program title:	Toxicology and Forensic Medicine
Contact hours/ week	3 hours/ week, (2 Lect./week, 1 Practical/week)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

-The course aim is to build the competencies of the postgraduate student to manage the community medico-legal and ethical problems.

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

- Acquaint with various Medicolegal problems in civil and criminal cases.
- Identify living & dead bodies, blood and semen stain (by chemical & serological tests).
- Acquaint with the postmortem examinations (Autopsy) and to write a medicolegal report.
- Acquaint with the histopathological examination of any suspicious tissue to identify the cause of death.
- Acquaint with forgery and falsification.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a1- Identify medical ethics
a2- Describe common hypothesis of medicolegal aspects in different causes of death
a3- Elucidate different types of asphyxia
a4- Describe different types of wound and head injuries
a5- Identify blood stain and differentiate it from other stains
a6- Define the different types and medicolegal importance of burns.
a7- Manage cases sexual assaults.
a8- Realize the medico-legal samples for forensic analysis and identifications.

b-Intellectual skills

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

b1- Differentiate between natural and unnatural death.
b2- Diagnose different types of injuries e.g. wound, thermal injuries, explosion injuries, road traffic accidents injuries..
b3- Differentiate between suicidal, accidental or homicidal injuries

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b4- Deal with different types of violent asphyxia
b5- detect the different fire arms and its medicolegal importance

C- Professional and practical skills

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

c1- Write a medico-legal report in English and Arabic..
c2- Apply methods for identification of age, sex, and race either living or dead.
c3- Recognize different forensic samples (hair fibers & blood).
c4- Perform ideal crime scene investigation
c5- Collect the corrected evidences.

d- General and transferable skills

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

d1. Work effectively as part of a team, demonstrating decision making and time management.
d2. Efficiently make use of library facilities and IT tools.
d3. Explore appropriate computer / keyboard skills including word processing, spreadsheets, presentation packages and graph plotting.
d4. Undertake written assignments and oral presentations.

4-Topics and contents

Time/ Week	Topics	No. of hours	Credit Hours/week	
			T	P
1	The veterinarian as expert witness	3	2	1
2	Collection of animal forensic samples	3	2	1
3	Forensic report writing	3	2	1
4	Forensic odontology: Large animals	3	2	1
5	Forensic odontology: Small animals	3	2	1
6	Identification of animal species and sex	3	2	1
7	Early postmortem changes	3	2	1
8	Hypostasis and rigor mortis	3	2	1
9	Decomposition and putrefaction	3	2	1
10	Mummification and adipocere	3	2	1
11	Forensic entomology: Collection of entomological evidence	3	2	1

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12	Burns: Types and causes of death	3	2	1
13	Age and vitality of burns	3	2	1
14	Analysis and interpretation of fire scene evidence	3	2	1
15	Electrocutions and lightening	3	2	1
16	Lethal Hypothermia	3	2	1
17	Animal neglection (starvation and thirst)	3	2	1
18	Asphyxial death: Signs and phases	3	3	-------
19	Asphyxial death: Hanging and strangulation	3	3	-------
20	Asphyxial death: suffocation, smothering, gagging, choking	3	2	1
21	Asphyxial death: Drowning	3	2	-------
22	Laboratory diagnosis of drowning	3	2	1
23	Wounds: Blunt force injuries	3	2	1
24	Laboratory estimation of wound vitality and age	3	2	1
25	Wounds: Sharp force and bite injuries	3	2	1
26	Wounds: Head injuries	3	2	-1
27	Transportation injuries	3	2	1
28	Wounds: causes of death	3	2	1
29	Types of firearms	3	2	1
30	Gunshot wounds	3	2	1
31	Sexual abuse of animals – abortion	3	2	1
32	Fetal and perinatal death	3	2	1
33	Sexual crimes: semen and vaginal secretions	3	2	1
34	Asaay and oral presentation	3	2	1
35	Practical Revision	3		3
Total		108	70	38

5-Teaching and learning methods

5.1- Lecture using PowerPoint presentations.

5.2- Learning through tutorials.

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5.3- Independent reading throughout basic Text books and research papers.

5.4- small group discussion

6-Student assessment

6.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	**I.S**	**P&P.S**	**G.S**
Final Exam	a1-a8	b1-b5	c1- c5	d2-d4
Practical Exam	a1,a4, a5, a7	b1- b5	c1- c5	d1
Oral Exam	a1-a8	b1-b4	c1- c5	d3-d5

6.2. Assessment schedules

Method	Week(s)
Practical exams	according to faculty exam schedule
Final exams	according to faculty exam schedule
Oral Exam	according to faculty exam schedule

6.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	25%
Final exams	50 %
Oral Exam	25 %
total	100 %

7- List of references

7.1. Notes and books

Course Notes: Prepared by departments' staff

- Notebook: Forensic Medicine

7.2. Essential books:

- **Fundamental of Analytical Toxicology.** Flanagan, R.J., Taylor, A., Watson, I.D. and Whelpton, R., John Wiley & Sons Ltd, England, 2007.
- **Clarke's Analysis of Drugs and Poisons.** Moffat,A.C., Osselton, M.D., Widdop, B., and Galichet, L.W., 3rd ed, Pharmaceutical Press., London, 2005.

`7.3. Recommended texts:

- **Forensic Chemistry.** Bell, S., 1st ed., Prentice Hall, New Jersy, 2006.
- **Handbook of Forensic Drug Analysis.** Smith, F. and Siegel, J.A., Elsevier Academic Press, USA, 2005.
- **Handbook of Forensic Toxicology for medical Examiners**. Molina, D.K., CRC Press, Boca Raton, 2010.

- **Web Sites, … etc**

- http://www.ivis.org/advances/Beasley/
- http://www.sciencedirect.com/

Beni-Suef University
Faculty of Veterinary Medicine

Course Specification of Postgraduate

Course Coordinators
Dr. Nour El Houda Yassein

Head of Department
Prof. Dr. Khaled Abdou

Course specification

Beni-Suef University
Faculty of Veterinary Medicine

Course Specification of Postgraduate

1-Basic information

Course Code:	M-149
Course title :	Advanced General Toxicology
Program title:	Toxicology and Forensic Medicine
Contact hours/ week	4 hours/ week, (2 Lect./week, 2 Practical/week)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

The aim of the course is to identify the potential harmful effects of chemical compounds to humans, animals and the environment, and to provide their prevention and treatment. As well as Appropriate risk assessment experimentation and expert judgment to minimize the probability of the occurrence of adverse effects.

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

- Identify and to characterize adverse effects of chemical compounds, factors affecting toxicity, metabolism and the basic line of diagnosis and treatment.
- Elucidate mechanisms of action at the cellular, biochemical and molecular level.
- Review and to assess safety data generated for a specific chemical.
- Understand the different methods of poison detection and interpretation of the analytical results
- Estimate the probability of the occurrence of adverse effects (risk assessment).
- Contribute responsibly to risk-benefit evaluation, risk management and risk communication.
- Differential diagnosis and treatment of different types of intoxication
- Develop approaches for prevention, diagnosis and treatment of adverse effects.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a1. Understand the different toxicological concepts

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a2. Understand the different classification of poison and dose relationship.

a3. Recognize the different toxicity testing (acute, chronic toxicity ,teratology,male fertility…..) and the animal models requirements.

a4. Realize the toxicological biotransformation and different mechanistic pathways.

a5. Familiarize to collect suspected samples and detect the expected toxicants.

a6.Recognize toxicity of heavy metals, insecticides , Aflatoxin, drugs toxicity, poisonous plants and animals.

a7. Emphasize the toxicokinetic and toxicodynamic of poison.
a8. Recognize the different methods for diagnosis and treatment of poisoning
a9. Recognize the toxic effects in different organs and the corresponding organ toxicity testing.
a10. Monitor the effects of different environmental hazards.

b-Intellectual skills

The students will be able to:

b1. Deal with the expected acute and chronic hazards.
b2. Correlate the molecular basis and mechanistic pathways of toxic actions.
b3. Assess the toxicological impacts for different organ toxicity.
b4. Relate the socio-economic for ideal poisoning treatment.
b.5.Interpret the data obtained from the toxicology lab.

C- Professional and practical skills

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

c1. Employ to follow the NIH and WHO guidelines of safety.

c2. Practice in sampling, labeling, transport and preservation of suspected samples.

c3. Perform different methods of poison detection.

C4. Practice in lab animal managment

C5. Monitor the main organ target for toxicants.

C6. Manage and treat the different expected poisoning cases in animals.

d- General and transferable skills

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

d1. Work effectively as part of a team, demonstrating decision making and time management.

d2. Efficiently make use of library facilities and IT tools.

D3. Professional in Statistics for toxicologists

D4. Explore appropriate computer / keyboard skills including word processing, spreadsheets, presentation packages and graph plotting.

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D5. Undertake written assignments, and oral presentations.

4-Topics and contents

Time/ Week	Topics	No. of hours	Credit Hours/week	
			T	P
1	Toxicological concepts and terminology	4	2	-------
	Calculations in toxicology		-------	2
2	Dose-response relationship	4	2	-------
	Animal models for toxicity testing		-------	2
3	Classification of poisons and toxic effects	4	2	2
4	Statistics for toxicologists	4	2	2
5	Common causes of animal poisoning	4	2	-------
	Laboratory animal management (a): Minimum requirements		-------	2
6	Transport of poisons across membranes	4	2	-------
	Lab animal management (b): Anesthesia and euthanasia		-------	2
7	Absorption of poisons	4	2	-------
	Mouse: Strains, minimum cage space requirements, physiology		-------	2
8	Distribution and excretion of poisons	4	2	-------
	Rat: Strains, minimum cage space requirements, physiology		-------	2
9	Biotransformation: Phase I	4	2	-------
	Guinea pig: Strains, minimum cage space requirements, physiology		-------	2
10	Biotransformation: Phase II	4	2	-------
	Rabbit: Strains, minimum cage space requirements, physiology		-------	2
11	Bioactivation: Free radicals and electrophiles formation	4	2	-------
	Dog: Strains, minimum cage space requirements, physiology		-------	2
12	Mechanistic toxicology (a): Lipid peroxidation and antioxidants	4	2	-------
	Transgenic animals in toxicology		-------	2
13	Mechanistic toxicology (b): covalent and non-covalent bindings	4	2	-------
	Nonhuman primates as animal models for toxicology research		-------	2

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14	Dose/Vehicle selection and dose formulation	**4**	**2**	**2**
15	Mechanistic toxicology (c): Reaction with enzymes	**4**	**2**	**2**
16	Mechanistic toxicology (d): Interaction with receptor	**4**	**2**	**2**
17	Collection of samples from Lab animals	**4**	**2**	**2**
18	Factors affecting toxicological action	**4**	**4**	**-------**
19	Diagnosis of toxicosis	**4**	**2**	**-------**
	Acute toxicity testing (a): LD_{50} determination and significance		**-------**	**2**
20	Preservation of biological samples	**4**	**2**	**2**
21	Developmental toxicity and Teratology	**4**	**2**	**2**
22	Male fertility Assessment	**4**	**2**	**2**
23	Treatment of poisoning (a): Supportive measures	**4**	**2**	**-------**
	Acute toxicity testing (b): Significance of non-lethal parameters		**-------**	**2**
24	Monitor the effects of different environmental hazards	**4**	**4**	**-------**
25	Heavy metals toxicity	**4**	**4**	**……..**
26	Heavy metal detection in samples	**2**	**……**	**2**
27	Insecticide	**4**	**2**	**2**
28	Aflatoxin	**4**	**2**	**2**
29	Drug toxicity	**4**	**4**	**……**
30	Animal poison	**4**	**4**	**……..**
31	Poisonous plants	**4**	**2**	**2**
32	Treatment of poisoning (b): decontamination	**4**	**2**	**-------**
	Subchronic toxicity testing		**-------**	**2**
33	Treatment of poisoning (c): Common antidotes in veterinary practice	**4**	**2**	**-------**
	Asaay and oral presentation	**4**		**4**
	Practical Revision	**4**		**4**
total		**140**	**76**	**64**

5-Teaching and learning methods

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5.1- Lecture using PowerPoint presentations.

5.2- Learning through tutorials.

5.3- Independent reading throughout basic Text books and research papers.

5.4- small group discussion

6-Student assessment

6.1. 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,a6,a7,a8,a9,a10	B1	c1, c5,c6	D3
Practical Exam	A5	B2,b3,b5	C2,c3,c4	d1,d2,d4
Oral Exam	a1,a2,a4,a6,a8,a10	b1-b4	c1- c5	D5

6.2. Assessment schedules

Method	Week(s)
Practical exams	according to faculty exam schedule
Final exams	according to faculty exam schedule
Oral Exam	according to faculty exam schedule

6.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	25%
Final exams	50 %
Oral Exam	25 %
total	100 %

7- List of references

7.1. Notes and books

Course Notes: Prepared by departments' staff

- Notebook: Advanced General Toxicology

7.2. Essential books:

- Casarett and Doull's Toxicology. The Basic Science of Poisons: Klaassen, C.D., McGraw-Hill, New York.7*th* ed., 2008.
- Introduction to toxicology. Timbrell, J., - 3rd ed., Taylor & Francis, USA< 2003.

`7.3. Recommended texts:

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

- **Web Sites, … etc**

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- *Toxicol. Appl. Pharmacol.*
- *Toxicol. In vitro.*
- *http://www.toxicology.org/*
- *http://www.ivis.org/advances/Beasley/*
- *http://www.sciencedirect.com/*
-

Course Coordinators
Dr. Walaa A. Moselhy

Head of Department
Prof. Dr. Khaled Abdou

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	Toxicological concepts and terminology	1	1	1	1,2	1
2	Dose-response relationship	2	2	1,2	2	2
3	Classification of poisons and toxic effects	3	2,3	1,2	2	2
4	Common causes of animal poisoning	4	3	1	2	1,2
5	Transport of poisons across membranes	5	3	1	2	3,4
6	Absorption of poisons	6	2	1	2	1
7	Distribution and excretion of poisons	7	2	1	1,2	2
8	Biotransformation: Phase I	8	2,3	1,2	2	3
9	Biotransformation: Phase II	9	3	1,2	1,2	2
10	Bioactivation: Free radicals and electrophiles formation	10	3	1,2	2	1
11	Mechanistic toxicology (a): Lipid peroxidation and antioxidants	11	2	1,2	1,2	1
12	Mechanistic toxicology (b): covalent and non-covalent bindings	12	2,3	1,2	1,2	1
13	Mechanistic toxicology (c): Reaction with enzymes	13	2	1,2	2	2,4
14	Mechanistic toxicology (d): Interaction with receptor	14	3	1,2	2	1
15	Factors affecting toxicological action	15	3	1,2	2	1,3
16	Diagnosis of toxicosis	16	8	3,4	5	4
17	Treatment of poisoning (a): Supportive	17	3,4	5	3	

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	measures					
18	Treatment of poisoning (b): decontamination	18	24	1,4	2	2
19	Treatment of poisoning (c): Common antidotes in veterinary practice	19	3	3,5	1	3
20	Toxic responses of blood	20	6	3	3,5	2,4
21	Hepatotoxicity	21	7	2	3	1,3
22	Nephrotoxicity	22	4	5	2	2,4
23	Neuronopathy and axonopathy	23	5,7	3,4	1	3
24	Treatment of poisoning (b): decontamination	24	3,8	1,3	5	1
25	Treatment of poisoning (c): Common antidotes in veterinary practice	25	3,5	5	3	3
26	Toxic responses of blood	26	6,8	4	2	4
27	Hepatotoxicity	27	4,7,8	3	4	2,4
28	Female reproductive toxicity	28	5,7	1	2	3
29	Toxic responses of endocrine system	29	4,7	3	1,5	2
30	Toxic responses of skin	30	7,8	5	3,5	1
31	Toxic responses of respiratory system	31	4,7	3	2,3	3
32	Female reproductive toxicity	32	2,8	5	4,5	4
33	Toxic responses of endocrine system	33	1,5	3	2	2
34	Toxic responses of skin	34	3,5	1	5	4
35	Mutagenesis	35	6,7	5	3	1,2
36	Carcinogenesis	36	2,6,8	3,4,5	1	3

Beni-Suef University
Faculty of Veterinary Medicine

Course Specification of Postgraduate

1-Basic information

Course Code:	M-150
Course title :	Environmental pollution
Program title:	Toxicology and Forensic Medicine
Contact hours/ week	4 hours/ week, (2 Lect./week, 2 Practical/week)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

The course is concerned with the toxicological effects of environmental chemicals (both natural and anthropogenic) on living organisms.
It also aims to provide some understanding of how toxic chemicals can be detected and quantified in the environment; how toxic responses can be measured.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a1. Understand the sources, different types and classification of environmental pollutants.

a2. Recognize the toxic impacts and hazards of environmental pollutions on human, animal and aquatic life.

a3. Be aware of the proper sampling and handling and storage for environmental analysis.

a4. Identify the toxicological aspects and mechanisms of environmental pollutants.

a5. Be able to collect suspected samples and analyze and detect the expected pollutants.

a6. Recognize the different types of non particulate and particulate air pollutants.

a7. Understand the different instrumentation and the analytical methods used for environmental evaluations

a8. Be aware with the different atmospheric layers and world wide atmospheric changes.

a9. Define the different radiation and radioactive materials pollutions and the methods for minimizing their effects

b-Intellectual skills

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

b1. Weigh up the expected acute and chronic hazards of environmental

Course Specification of Postgraduate

pollution.

b2. Appraise the molecular basis and mechanistic pass ways for induction of environmental pollution.

B3. Estimate the socio-economic and environmental impacts of persistent and non-persistent pesticides.

C- Professional and practical skills

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

c1. Follow the NIH and WHO guidelines of safety and environmental permissible limits.

c2. Carry out sampling, labeling, transport and preservation of suspected samples.

c3. Perform different methods of environmental pollutants detection.

c4. Monitor the main pollutant in water samples.

d- General and transferable skills

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

d1. Work effectively as part of a team, demonstrating decision making and time management.

d2. Efficiently make use of library facilities and IT tools.

D3. Professional in Statistics for toxicologists

D4. Explore appropriate computer / keyboard skills including word processing, spreadsheets, presentation packages and graph plotting.

D5. Undertake written assignments, and oral presentations.

4-Topics and contents

Time/ Week	Topics	No. of hours	Credit Hours/week	
			T	P
1	Introduction (definitions and classification of pollutants)	4	2	2
2	Proper sampling for environmental pollution assessment	4	2	2
3	Types and sources of environmental pollutants	4	2	2
4	Preservatives for Environmental pollution samples	4	2	2
5	Environmental samples handling and shipping for analysis	4	2	2
6	Air pollution sources	4	4	-------

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7	Types of air pollutants (particulate and non-particulate)	4	4	-------
8	Hazard effects caused by air pollutants (acute effects)	4	4	-------
9	Hazard effects caused by air pollutants (chronic effects)	4	4	-------
10	Major non-particulate air pollutants and its significance	4	2	2
11	Carbon dioxide and carbon monoxide and sulfur oxides and their adverse effects	4	2	2
12	Photochemical smog, definition and factors enhancing its formation	4	2	2
13	Nitrogen oxide and its photochemical reactions and its hazard effects	4	2	2
14	Ozone as a secondary pollutants resulted from photochemical reactions and its hazard effects (acute and chronic)	4	2	2
15	Hydrocarbons and aldehydes and their role in air pollution and its hazard effects	4	2	2
16	Metals as particulate air pollutants, sources and its major effects	4	2	2
17	Lead and fluorine as particulate air pollutants and its hazard effects	4	2	2
18	Cadmium and mercury as particulate air pollutants and its hazard effects	4	2	2
19	Asbestosis and silicosis as particulate non-metal air pollutants	4	2	2
20	Ozone hole and its mechanisms of formation	4	2	2
21	Main threats to ozone layer, nitrous oxide and halocarbons and Freon and their hazard effects	4	4	-------
22	Water pollution sources and water sampling	4	2	2
23	Water pollution classification and hazards	4	4	-------
24	Transport , mobility and disposition of water pollution	4	4	-------
25	Hazard effects of water pollution (acute effects)	4	4	-------
26	Hazard effects of water pollution (chronic effects)	4	4	-------
27	Water disinfectant and chlorination by-products	4	2	2
28	Persistent pesticides pollution	4	2	2
29	Non- Persistent pesticides pollution	4	2	2
30	Radiation and Radioactive materials pollutions	4	2	2
31	Ionizing radiation	4	2	2
32	Non-ionizing radiation	4	2	2

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33	**Methods for minimize the adverse effects of environmental pollutants**	**4**	**2**	**2**
34	Asaay and oral presentation	**4**	**2**	**2**
35	Practical Revision	**4**		**4**
total		**140**	**76**	**68**

5-Teaching and learning methods

5.1- Lecture using PowerPoint presentations.

5.2- Learning through tutorials.

5.3- Independent reading throughout basic Text books and research papers.

6-Student assessment

6.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	**I.S**	**P&P.S**	**G.S**
Final Exam	a1-a2-a4-a6-a8-a9	b1-b2	c1- c4	d2-d4
Practical Exam	A3-a5-a7	B3	C2- c3	d1
Oral Exam	a1-a2-a8-a9	B1-b2	c1- c3-c4	d3-d5

6.2. Assessment schedules

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

6.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	25%
Final exams	50 %
Oral Exam	25 %
total	100 %

7- List of references

7.1. Notes and books

Course Notes: Prepared by departments' staff

- Notebook: Environmental Toxicology

7.2. Essential books:

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- Environmental hazards: assessing risk and reducing disaster, by Keith Smith (2004)

- Principles and methods of toxicology, by Andrew Wallace Hayes (2007)

- Casarett and Doull's toxicology: the basic science of poisons, by Louis J. Casarett,Curtis D. Klaassen,John Doull (2008)

7.3. Recommended texts:

- Fundamentals of Air Pollution, Third Edition by Richard W. Boubel , Donald L. Fox ،Bruce Turner, Arthur C. Stern (2004)

- Chemical Principles of Environmental Pollution, B.J. Alloway and D.C. Ayres (1998)

- **Web Sites, … etc**

- Environmental pollution (http://www.sciencedirect.com/science/journal/02697491)
- United states of environmental agencies (http://www.epa.gov)

Course Coordinators
Dr.Walaa A. Moselhy

Head of Department
Prof. Dr. Khaled Abdou

Beni-Suef University
Faculty of Veterinary Medicine

Course Specification of Postgraduate

1-Basic information

Course Code:	M-151
Course title :	Forensic Toxicology
Program title:	Toxicology and Forensic Medicine
Contact hours/ week	4 hours/ week, (2 Lect./week, 2 Practical/week)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

- Understanding the technology and the techniques that are used in obtaining and interpreting the results.
- Collecting, management and identification of different biological samples.
- Measurement of drugs and other toxic substances in the biological specimens along with the interpretation of the results in medico-legal contexts.
- Detection of drugs and other toxic substances present in the biological first by an initial screening and then a further confirmation of the right compound and the quantification of the compound by using different analytical methods.
- Writing toxicology reports.

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

- Mange the biological samples.
- Equipmentation of forensic toxicology laboratories.
- Using different methods and techniques for analysis.
- Screening and confirm toxic substances in biological samples either qualitatively and quantitatively.
- Interpretation of obtained results of analysis.
- Writing a toxicological report.

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- Understanding methods of; samples collection, identification, preservation and management.

a_2- Knowing of using different apparatuses, techniques and methods used in forensic toxicology laboratory.

a_3- Recognize how to interpret ate the obtained results.

a_4- trained to write toxicological reports.

b-Intellectual skills

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

b_1- Identify and manage the different instruments and glass ware of the laboratory and safety.

b_2- Handling, labeling, preservation and management of samples.

Course Specification of Postgraduate

b_3- detecting toxic materials in different samples qualitatively and quantitatively.
b_4- Interperitate the obtained analysis data.
b_5- Writing toxicological report.

C- Professional and practical skills

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

c_1- Flow the guidelines of safety.
c_2- Manipulation, identification and preservation of samples.
c_3- Perform different types of equipments.
c_4- Perform different methods of analysis
c_5- Interpretation of the results of analysis
c_6- Writing toxicological reports.

d- General and transferable skills

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

d_1-work as a part of a team in effective manner, demonstrating decision making and time management.
d_2- Use of library facilities and its tools.
d_3- Use of computers and its programmes specially word, excel sheet and plotting graphs.
d_4- Undertake written assignments and oral presentation.

4-Topics and contents

Time / week	Topics	No. of hours	Credit Hours	
			T	P
1	Overview and safety	4	4	--
2	Identification, manipulation and preservation of samples	4	2	2
3-5	Equepmentation of forensic toxicology laboratory	9	6	3
6-8	Qualitative detection of narcotics	9	6	3
9-11	Quantitative analysis of narcotics	9	6	3
12	Interpretation of analysis	4	2	2
13	Reporting	4	2	2
14-16	Qualitative detection of metalloids	9	6	3
16-19	Quantitative analysis of metalloids	9	6	3
20	Interpretation of analysis	4	2	2
21	Reporting	4	2	2

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22-24	Qualitative detection of pesticides	9	6	3
25-26	Quantitative analysis of pesticides	9	6	3
27	Interpretation of analysis	4	2	2
28	Reporting	6	4	2
29-30	Qualitative analysis of plants active principals	9	6	3
31-32	Quantitative analysis of plants active principals	9	6	3
33	Interpretation of analysis	4	2	2
34	Asaay and oral presentation	4	2	2
35	Revision	4	2	
Total		127	82	45

5-Teaching and learning methods

5.1- Lecture using PowerPoint presentations.

5.2- Learning through tutorials.

5.3- Independent reading throughout basic Text books and research papers.

6-Student assessment

6.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	**I.S**	**P&P.S**	**G.S**
Final Exam	A3-a4	B4-b5	C1-c5-c6	d2-d4
Practical Exam	A1-a2	B1-b2-b3	C2-c3-c4	d1
Oral Exam	A3-a4-a2	B4-b5-b3	C1-c6-c3-c4	d3-d5

6.2. Assessment schedules

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

6.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	25%

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Final exams	50 %
Oral Exam	25 %
total	100 %

7- List of references

7.1. Notes and books

Course Notes: Prepared by departments' staff

- Notebook: -Forensic Toxicology Note

7.2. Essential books:

- Principles of Forensic Toxicology: Barry Levine, Taylor and Francis, Philadelphia, 2009
- Principles of Forensic Toxicology: Paperback, Barry Leume and Barry Levine, Logman group limited, London, 2008

7.3. Recommended texts:

- - Handbook of Forensic Toxicology for Medical Examiners: D. K. Molina, Johan Wiley & sons, Inc., Sydney 2007
- - Progress of Capillary Electrophoresis in Therapeutic Drug Monitoring and Clinical and Forensic Toxicology: Thormann, Wolfgang, Blackwell Scienti c Publications, Oxford, 2009
- - Drug Testing in Alternate Biological Specimens: Amanda J. Jenkins, Churchill Livingstone, London, 2007
- - Clarke's Analytical Forensic Toxicology: Sue Jickells and Adam Negrusz, University of Illinois, Chicago, USA, 2009
- **Web Sites, … etc**

-The international association of forensic toxicology
http://www.tiaft.org

Course Coordinators
Dr. Walaa A. Moselhy

Head of Department
Prof. Dr. Khaled Abdou

Course specification

Beni-Suef University
Faculty of Veterinary Medicine

Course Specification of Postgraduate

1-Basic information

Course Code:	M-152
Course title :	**Clinical Toxicology**
Program title:	Toxicology and Forensic Medicine
Contact hours/ week	4 hours/ week, (2 Lect./week, 2 Practical/week)
Approval Date	

2-Professional information

Overall aims of course:

This course aims to:

The main goal of the course is to build the competencies of the graduate medical student to manage cases of poisoning that will face them after graduation during the general medical practice.

By completion of the course, students should have an understanding of:

- State the general principles of care of poisoned patient.
- Define pathophysiology, adverse effects, diagnosis and management of the most common poisonings.
- Locate specific and crucial laboratory investigations and antidotal management of particular poisonings,
- Outline the epidemiology, categories, and side effects, and management of drug addiction with special reference to common categories of drugs abused in our community.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a1- State the general principles of care of poisoned animals.
a2- Define pathophysiology, adverse effects, diagnosis and management of the most common poisonings.
a3- Locate specific and crucial laboratory investigations and antidotal management of particular poisonings,
a4- Outline the epidemiology, categories, and side effects, and management of metals, pesticides, solvents and toxic plants with special reference to common osed in our community.
a5- Cite examples of practical importance of pharmacokinetics and pharmacogenetics in clinical toxicology.
a6-. Understand the fundamentals of immunotoxicity and neurotoxicity
a7- Recognize the male and female and reproductive toxicity testing.

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b-Intellectual skills

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

b1- differentiate cases of poisoning for proper diagnosis and proper management
b2- Correlate the procedure of obtaining samples for toxicological analysis.
b3- Perform rapid simple tests that help diagnosis of the common poisons.

C- Professional and practical skills

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

c1- Obtain an accurate medical history that covers all essential aspects of poisoning and perform both a complete and a focused clinical examination.
c2- Perform routine technical procedures
c3- Perform general lines for management of a poisoned animals.
c4- Interpret results of commonly needed diagnostic laboratory tests and procedures.
c5- Construct appropriate management plans (both diagnostic and therapeutic) for patients with common diseases especially those expected to have long term sequels.

d- General and transferable skills

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

d1. Work effectively as part of a team, demonstrating decision making and time management.
d2. Efficiently make use of library facilities and IT tools.
d3. Explore appropriate computer / keyboard skills including word processing, spreadsheets, presentation packages and graph plotting.
d4. Undertake written assignments and oral presentations.

4-Topics and contents

Time/ Week	Topics	No. of hours	Credit Hours/week	
			T	P
1	Corrosive acids and alkalis	4	4	-------
2	Ocular toxicity studies: Comparative anatomy and physiology of eye	4	2	2
3	Organic acid poisoning	4	4	-------
4	Metal intoxication: Introduction and chelating agents	4	4	-------
5	Arsenic poisoning with special refer to lab.diagnosis	4	2	2
6	Phosphorus and antimony intoxication		2	2

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		4		
7	Lead poisoning (toxic effects and lab. Diagnosis)	4	2	2
8	Mercury poisoning and different methods of lab diagnosis	4	2	2
9	Cadmium poisoning	4	2	2
10	Molybdenum, thallium, tin Poisoning	4	2	---2----
11	Copper, iron and zinc toxicosis	4	2	2
12	Nickel, chromium and aluminum poisoning	4	2	2
13	Fluorine and selenium intoxications	4	2	2
14	Nitrites and urea poisoning	4	2	2
15	Insecticides (a): organophosphates	4	4	-
16	Insecticides (b): Delayed neurotoxicity - Carbamates	4	4	-
17	Insecticides (c): DDT and its analogs and lab diagnosis	4	2	2
18	Insecticides (d): Hexachlorocyclohexanes and cyclodienes	4	4	-------
19	Insecticides (e): Pyrethroid insecticides	4	4	-------
20	Herbicides (a): Chlorophenoxy compounds, chloroacetanilides, triazines, pPhosphonomethyl amino acids	4	4	-------
21	Herbicides (b): Bipyridil compounds (paraquat and diquat), lab.diagnosis	4	2	2
22	Fundamental Neurotoxicology (a): Testing strategies-anatomy and physiology	4	2	2
23	Applied Neurotoxicology (b): Neurochemical and neuropathological endpoints	4	2	2
24	Immunotoxicity assessment	4	2	2
25	Male reproductive toxicity testing (a): Anatomy and physiology of Lab animals	4	2	2
26	Male reproductive toxicity testing (b): Screening assays	4	2	2
27	Endocrine toxicology of male reproduction	4	2	2
28	Female reproductive toxicity testing (a): Anatomy and physiology in Lab animals	4	2	2
29	Female reproductive toxicity testing (b): Screening assays	4	2	2

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30	Female reproductive toxicity testing (c): Teratogenicity studies	**4**	**2**	**2**
31	Rat Embryo cultures for in vitro teratology	**4**	**2**	**2**
32	Using chicken embryos for teratology studies	**4**	**2**	**2**
33	Endocrine toxicology of female reproduction	**4**	**2**	**2**
34	Asaay and oral presentation	**4**	**2**	**2**
35	Practical Revision	**4**		**4**
Total		**140**	**84**	**56**

5-Teaching and learning methods

5.1- Lecture using PowerPoint presentations.

5.2- Learning through tutorials.

5.3- Independent reading throughout basic Text books and research papers.

6-Student assessment

6.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	**I.S**	**P&P.S**	**G.S**
Final Exam	**a1-a4-a5-a6**	**b1-**	**c1- c3-c5**	**d2-d4**
Practical Exam	**A2-a3-a7**	**B2- b3**	**C2- c4**	**d1**
Oral Exam	**a1-a4-a6-a7**	**b1-b3**	**c1- c4-c5**	**d3**

6.2. Assessment schedules

Method	**Week(s)**
Practical exams	**according to faculty exam schedule**
Final exams	**according to faculty exam schedule**
Oral Exam	**according to faculty exam schedule**

6.3. Weight of assessments

Assessment	Weight of assessment
Practical exams	25%
Final exams	50 %
Oral Exam	25 %
total	100 %

7- List of references

7.1. Notes and books

Course Specification of Postgraduate

Course Notes: Prepared by departments' staff
- Notebook: - Clinical Toxicology

7.2. Essential books:

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

7.3. Recommended texts:

- Nonhuman DNA Typing: Theory and Casework Applications (Forensic Science Series). Coyle, H.M., CRC Press, Boca Raton, 2007.
- Forensic Entomology. The Utility of Arthropods in Legal Investigations. Byrd, J.H. and Castner, J.L., CRC Press, Boca Raton, 2009.
- Color Atlas of Forensic Medicine and Pathology. Catanese, C.A., CRC Press, Boca Raton, 2010.
- **Web Sites, … etc**

- *Toxicol. Appl. Pharmacol.*
- *Toxicol. In vitro.*
- http://www.toxicology.org/
- http://www.ivis.org/advances/Beasley/
- http://www.sciencedirect.com/

Course Coordinators
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Head of Department
Prof. Dr. Khaled Abdo

Course specification