

Toxicology, Bioassay, and First aid Course Specification

Benghazi University

Faculty: Pharmacy

Department: Pharmacology and Toxicology

Course title: Toxicology, Bioassay, and First aid

Course Specifications

Program on which the course is given: B.Sc. in Pharmaceutical Sciences

Academic year / level: Fourth year

Date of course specification approval: 2012

1. Basic Information:

Title: Toxicology, Bioassay, and First aid Code: Credit hours: 85

Lecture: 75 Tutorial: 10 Practical: 30 Clinical practice 15 Total: 4 hours/week

2. Course Objectives:

- 2.1 To provide an understanding of the basic principles and applications of toxicology.
- 2.2 To know the basic methods of bioassay and drug screening.
- 2.3 To know the basic principles of emergency medicine.

3. Intended Learning Outcomes (ILOs):

On course completion the student will be able to:

a. Knowledge and understanding:

- a1- Illustrate different routes of exposure to toxicants, their metabolic pathways, and experimental techniques used to assess their harmful effects on cellular organ system and the whole body.
- a2- Classify environmental toxic substances that have known effects on individuals or populations.
- a3- Demonstrate the different methods of biological assays and the application of statistical tests in these assays.

b. Intellectual Skills:

- b1- Analyze, evaluate, and interpret toxicological information in daily practice e.g., information regarding overdoses of drugs and management of poisoning.
- b2- Recognize different populations at risk due to occupational and environmental exposure.
- b3- Design screening methods for different drug groups.

c. Professional and Practical Skills:

- c1- Assess the relative toxicity or safety of various compounds.
- c2- Screening of newly discovered drugs.
- c3- Use different materials and techniques in first aid properly.

d. General and Transferable Skills:

- d1- Design a research project using biological assay methods.
- d2- Interpret, critically analyze, and discuss different experimental results and research papers.
- d3- Provide advice and help in poisoning and emergency cases.

4. Contents:

Toxicology:

No.	Toxicology theoretical topics	No. of hours	Lecture (1hr)	Practical (3hrs)	Tutorial (1hr)
1.	General Toxicology	4	4	1	1
2.	Genetic Toxicology	2	2		
3.	Carcinogenicity	2	2		1
4.	Developmental Toxicology	4	4		
5.	Systemic Toxicology	15	15	2	2
6.	Clinical Toxicology	3	3		
7.	Toxic agents	7	7	2	1
8.	Environmental Toxicology	2	2		
9.	Risk Assessment	2	2		

Experimental Toxicology

- 1 Lethality studies and determination of LD50
- 2 Toxic response to blood
- 3 Corrosives and irritants
- 4 CNS stimulants (Picrotoxin and strychnine poisoning)
- 5 Cyanide toxicity

Bioassay:

No.	Bioassay theoretical topics	No. of hours	Lecture (1hr)	Practical (3hrs)	Tutorial (1hr)
1.	Introduction	1	1	1	1
2.	Methods of bioassay	2	2	1	
3.	Bioassay of hormones	4	4		1
4.	Bioassay and screening of drugs	3	3	1	
5.	Screening of important systemic drugs	18	18	2	1
6.	Clinical trials	2	2		
7.	Miscellaneous topics	4	4		1

Experimental Bioassay

- 1 Introduction to bioassay
- 2 Methods of bioassay
- 3 Irwin primary test table
- 4 Screening of drugs for psychotropic activity
- 5 Screening of analgesic activity.

First aid

No.	First aid topics	No. of hours	Lecture (1hr)	Clinical practice (3hrs)	Tutorial (1hr)
1.	Introduction	1	1	1	
2.	Physical injuries, signs and symptoms and first aid treatment	2	2	1	
3.	Foreign bodies	½	½	1	
4.	Water drowning	½	½		
5.	Accidents with chemicals	1	1		
6.	Emergencies with temperature	1	1		
7.	Complications and their treatment	1	1		
8.	Animal bites	1	1		
9.	Physiological emergency	1	1	1	1
10.	Materials and techniques in first aid	1	1	1	

5. Teaching and Learning Methods:

- 5.1 Lectures
- 5.2 Practical classes (Lab experiments+ computerized experiments simulation)
- 5.3 Tutorials and group discussions
- 5.4 E-tutorials (if applicable)
- 5.5 Presentations
- 5.6 Assignments (if applicable)
- 5.7 Videos

6. Student Assessment Methods:

a. Assessment methods:

1-	A fortnight quiz	to assess	a1, a2, a3, b1, b2, b3, d1 & d3
2-	A midyear exam	to assess	a1, a2, a3, b1, b2, b3, d1 & d3
3-	A fortnight practical session	to assess	c1, c2, c3 & d4
4-	A final practical exam	to assess	c1, c2, c3 & d4
5-	A final written exam	to assess	a1, a2, a3, b1, b2, b3, d1 & d3
6-	A final oral exam	to assess	a1, a2, a3, b1, b2, b3, d1 & d3
7-	Presentations	to assess	b1, b2, b3 & d2

b. Assessment schedule:

A quiz	Every fortnight
A midyear exam	Week 10
Practical sessions	Every fortnight
A final practical exam	Week 22
A final written exam	At the end of the year
A final oral exam	At the end of the year

c. Weighing of Assessments:

Midyear Examination	10.0%
Practical continuous Assessment	10.0%
Final practical Examination	10.0%
Final written Examination	45.0%
Final oral Examination	15.0%
Other types of assessment	10.0%
Total	100%

7. List of References:

No.	Reference	type
1.	Casarett & Doull's: The Basic Science of Poisons (7 th Edition)	Textbooks
2.	Loomis's Essentials of Toxicology (4 th Edition)	
3.	Drug screening methods (Editor SK Gupta)	
4.	Essentials of Bioassay & Screening of drugs (A.S. Elhwuegi & S.S. Ahmed)	
5.	Clinical Toxicology	Periodicals
6.	Science	
7.	http://www.benghazi.edu.ly/	Websites
8.	http://toxnet.nlm.nih.gov/	
9.	Practical notes	Course notes