



Course Specification of Toxicology

I. General information about the course :						
1.	Course Title:	Toxicology				
2.	Course Code and Number :	Ph457				
3.	Credit Hours :	Lecture	Seminar/Tutorial	Practical	Training	Total
		1	-	2	-	2
4.	Study Level and Semester:	3 rd year– 1 st semester				
5.	Pre-requisites (if any):	-				
6.	Co-requisites (if any) :	-				
7.	Program in which the course is offered	Bachelor of Pharmacy				
8.	Teaching Language:	English				
9.	Study System :	Semester- based				
10.	Prepared by :	Professor. Nabil H. Al-Hamad i nblhamadi@yahoo.com				
11.	Approval date :					
12.	Approved by:					

II. Course Description :

This course offered to fourth year pharmacy students as a toxicology course. During which common toxicological problems are presented to students to direct their knowledge towards the sources, mode of poisoning, clinical picture and treatment of poisoning, Practically students should be exposed to specific tests for detection of selected types of poisons specially those of common use & of an accidental exposure during their household use or during agricultural or medical applications.

VI. Course Intended Learning Outcomes (CILOs) :

Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
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After completing this program, students would be able to:	After completing this course, students would be able to:
A2. Recognize the physicochemical properties, preparation, structure activity relationship (SAR), toxicity and the modern methods of analysis of various substances of chemical and natural products of therapeutic potential as well as the basic principle of drug discovery, design and development.	a1. Classify and relate different poisons according to the symptoms they cause depending on group classification.
A3. Describe the general cellular, biochemical and physiological aspects of human body and recognize the pharmacokinetics, pharmacodynamics, disease pathophysiology, and pharmacogenetic of therapeutic agents to provide pharmaceutical care and facilitate management of patient's medication, rationalize drug use and overall health needs.	a2. Explain the mode of poisoning either suicidal, homicidal or accidental a3. Establish the most important investigations to be done and biological materials collection. a4. Recognize different procedures of treatment and emergency measures should be followed.

Intellectual Skills :	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
B1. Consolidate the chemical, biochemical and physiological principles to construct the pharmacophores of the structure and their effect on the stability, pharmacokinetic and pharmacodynamic profiles of the drug.	b1. Categorize the most common poisons, their classification, groups and subgroups.
B2. Categorize the synthetic and natural drugs according to their mechanism of action, systemic effect, therapeutic uses, contraindication and toxicity.	b2. Explore the most important symptoms and signs of poisoning and relate them to causative toxicant.
B5. Interpret the prescriptions, patient and clinical data, analysis all the encountered pharmaceutical problems and plan the strategies for their solution to develop the health care.	b3. Formulate an appropriate management plans for treating poisons and emergency measures to be followed.

Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:

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C1. Operate different pharmaceutical equipments and instruments and use emerging technologies in design, synthesis, pre-formulation, formulation, packaging, storage and analysis of pharmaceutical products according to GLP, GSP and cGMP guidelines.	c1. Perform a proper history from patient or relatives related to the circumstances of poisoning.
C2. Handle and dispose chemicals and pharmaceutical preparations including radio-pharmaceuticals safely and effectively.	c2. Interpret the possible cause of poisoning and immediate action to be followed.
	c3. Apply an immediate action to save the life of patient through medical intervention and urgent referral as needed.

Transferable (General) Skills :	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
D1. Practice independent learning needed for continuous professional development	d1. Review with patients and relatives to have an idea about the way of poisoning and the possible cause/causes.
D5. Apply information and communication technology and working effectively in a team.	d2. Negotiate kindly and humanly with patients and concerned relatives regardless of the mode of poisoning.

V. Alignment of CILOs to Teaching and Assessment Strategies		
First: Alignment of Knowledge and Understanding CILOs		
Knowledge and Understanding CILOs	Teaching Strategies	Assessment Strategies
A1. Describe the common types of poisons.	Lectures	1.Essay questions
A2. Outline the causes of poisoning	Discussions	2.Multiple choice questions
A3. Describe the clinical symptoms and signs of the most important types of toxicants.	Problem solving and collaboration learning.	3.Case study (problem solving)

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A4. Determine & apply the most appropriate diagnostic methods to reach a proper diagnosis.	Practical tests for most common poisons (Lab. Work)	4. Written examination: <ul style="list-style-type: none"> 2 long essays (Practical sheet) to determine the ability to understand the topic properly and interpret it clearly. 20 MCQs to evaluate the ability to student to recall knowledge in a specific period of time. Report evaluation.
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Second: Alignment of Intellectual Skills CILOs		
Intellectual Skills CILOs	Teaching Strategies	Assessment Strategies
b1. Categorize the most important poisons threatening life	1. Lectures.	1. written examination: -Essays -problem solving
b2. Test the appropriate methods of diagnosing intoxication.	2. Discussions. 3. Lab. Work (practical lessons)	2.MCQs. 3. Lab sheet work evaluation.

Third: Alignment of Professional and Practical Skills CILOs		
Professional and Practical Skills CILOs	Teaching Strategies	Assessment Strategies
c1. Perform necessary investigations.	- Demonstrations. - Practical lessons. - Laboratory tests.	- Written exam. - Laboratory Sheet evaluation. - Report evaluation.
c2. Apply a proper action in managing poisoning.	- Lectures. - Problem solving.	- Supervisor evaluation. - Report evaluation.

Fourth: Alignment of Transferable (General) Skills CILOs		
Transferable (General) Skills CILOs	Teaching Strategies	Assessment Strategies
d1. Review the case with patients and relatives to have a relevant data related to poisoning.	- Demonstrations. - Practical (lab.tests). - Problem solving.	- Supervisor evaluation. - Case report.

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d2. Negotiate kindly and nicely to the patients during intervention.	- Demonstrations. - Problem solving.	
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VI. Course topics and sub-topics (theoretical and practical) with contact hours and alignment to CILOs

Topics/Units of Course Contents

First: Theoretical Aspects

No.	Course Topics/Units	Sub-topics	No. of Weeks	Contact Hours	CILOs
1	Introduction to Occupational Environmental & Medical Toxicology	Definitions, types & mode of poisoning	1	1	a1,a2,b1
2	General diagnosis of poisoning	Clinical & laboratory approach	1	1	a1,a2&b1
3	General treatment of poisoning	ABC, decontamination & antidotes	1	1	a1,a2&b1
4	Corrosive poisons	Household acids and alkalis	1	1	a1,a2&b1
5	Metallic poisons	Toxicology of heavy metals	1	1	a1,a2&b1
6	Non metallic poisons	Insecticides, rodenticides and biocides	1	1	a1,a2&b1
7	Analgesics	Non-steroidal antiinflammatory drugs	1	1	a1,a2&b1
8	Hypnotics	Barbiturates & benzodiazepines	1	1	a1,a2&b1
9	Narcotics	Opium, opiates & drug addiction	1	1	a1,a2&b1
10	Hallucinogens	Cannabis, LSD & datura	1	1	a1,a2&b1

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11	Stimulants	Amphetamine& khat	1	1	a1,a2&b1
12	Volatile poisons	Alcohols, CO, Petroleum distillates	1	1	a1,a2&b1
13	Animal Envenomation	Snakes, scorpions, insects & rabies	1	1	a1,a2&b1
14	Harmful effects of drugs on organs.	CNS, CVS and renal intoxicants	1	1	a1,a2&b1
15	Allergic reactions to drugs		1	1	a1,a2&b1
16	Free radicals and antioxidants		1	1	a1,a2&b1
Total number of weeks and hours			16weeks	16	

Second: Practical/Tutorial/Clinical Aspects				
Write up practical/tutorial/clinical topics				
No.	Practical/Tutorial/Clinical topics	No. of Weeks	Contact Hours	CILOs
1	Detection of corrosive poisons.	2	4	a1,a2,b1,b2,c1
2	Detection of metallic poisons	2	4	a1,a2,b1,b2,c1 ,d1
3	Detection of organophosphorous, estimation of anticholinesterase.	2	4	a1,a2,b1,b2,c1 ,d1
4	Midterm exam	1	2	a1,a2,b1,b2,c1 ,d1
5	Detection NSAID	2	4	a1,a2,b1,b2,c1 ,d1
6	Detections of sedative, Narcotics	2	4	a1,a2,b1,b2,c1 ,d1
7	Detection of alcohols in urine	2	4	a1,a2,b1

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8	Water contamination (nitrate, nitrite, metals)	2	4	a1,a2,b1
9	Final exam	1	2	a1,a2,b1,b2,c1,d1
Total number of weeks and hours		16	32	

VII. Teaching Strategies

III. Teaching Strategies

- Lectures.
- Practical lessons (laboratory)
- Demonstrations.
- Small group discussions.
- Self-learning.

VIII. Tasks and Assignments:

No.	Task/Assignment	CILOs	Week due	Mark
1	Exam preparation: Ask questions to clarify and increase knowledge	a1,c2,d1,d2	5 th	20
2	Writing notes as case studies	a1,c2,d1,d2	8 th	
3	Practical tests: selective Exam	a1,c2,d1,d2	14 th	

IX. Learning Assessment:

No.	Assessment Tasks	Week due	Mark	Proportion of Final Assessment	Aligned CILOs
1	Homework/Tasks/Assignments	Through the course	10		b1,c1,d1,d2
2	Quiz 1	1 st month	5		b1,c1,d1,d2
3	Midterm Exam	2 nd month	20		b1,c1,d1,d2

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4	Quiz 2	3 rd month	5		b1,c1,d1,d2
5	Final Exam	End of course	60		b1,c1,d1,d2
Total			100%		

X. Learning Resources :
(Author, (Year), Book Title, Edition, Publisher, Country of publishing)
Textbooks-not more than 2
1. Nabil H.Hamadi (2010), Clinical &Forensic Toxicology, 3 rd Edition, Sana'a University. 2. Hassan M.Mahbashi (2015), Toxicology, 1 st ed. Sana'a University
Essential References-not less than 4
1. Staff.Membs.Ain Shams University (2012), Principles of Clinical Toxicology,Elmanar press 2. Robert Hoffman, Mary Howland (2014),Manual of Tox.Emergencies, 10 th ed,USA 3. Curtis Klaassen (2013),Casarett &Doull's Toxicology, 8 th ed, USA.
Electronic Materials and Web Sites
1.Forensic Toxicology Encyclopedia 2.Metropolitan Crime Scene investigations.

XI. Course Policies (To be determined by Faculty Deanship):
Based on university regulations, the following aspects should be figured out:
1. (Class Attendance): Attendance is mandatory for all students for credit to be received and will be monitored. The student is excluded from class if absence percentage exceeds 15% with no excuse or 25% with an accepted excuse.
2. (Tardy) :



3.	(Exam Attendance/Punctuality) : All students registered for the course are required to attend the assigned exams. Dates and locations will be posted prior to the examination date. No re-sit exams are carried out for in-course examinations. If the student misses an in-course examination and his/her excuse was accepted, the missed exam grade will be calculated from the final exam grade. If a student misses the final exam, and unless he/she provides an accepted excuse, a grade of F will be granted. If the excuse was accepted, a student may take the exam as first attempt in the second attempt examinations.
4.	(Assignments & Projects) :
5.	(Cheating) : Cheating in examinations or tests may take the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones). Exam cheating can also include exam impersonation. A student found guilty of contributing to cheating in examinations or term assignments is also subject to serious academic penalty. Please refer to the academic regulations of UST for further details.
6.	(Plagiarism) : "To plagiarize is to take ideas or words of another person & pass them off as one's own". Plagiarism or any other form of cheating in examinations, term tests or academic work is subject to serious academic penalty (e.g. suspension or expulsion from the faculty or university).
7.	(Other policies) :

Template of Course Syllabus

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I. General information about the course instructor :							
Name	Professor. Nabil H. Al-Hamadi	Office Hours(3 Hours Weekly)					
Location & phone number		Sat	Sun	Mon	Tue	Wed	Thu
Email	nblhamadi@yahoo.com						

II. General information about the course:						
1.	Course Title :	Toxicology				
2.	Course Code and Number :	Ph457				
3.	Credit Hours :	Credit Hours				Total
		Theoretical	Seminar/Tutorial	Practical	Training	
		I	-	2	-	2
4.	Study Level and Semester:	3 rd Year Pharmacy – 1 st Semester				
5.	Pre-requisites (if any):					
6.	Co-requisites (if any):					
7.	Program in which the course is offered:	Bachelor of Pharmacy				
8.	Teaching Language:	English				
9.	Instruction location:					

I. Course Description :
This course offered to fourth year pharmacy students as a toxicology course. During which common toxicological problems are presented to students to direct their knowledge towards the sources, mode of poisoning, clinical picture and treatment of poisoning, Practically students should be exposed to specific tests for detection of selected types of poisons specially those of common use & of an accidental exposure during their household use or during agricultural or medical applications.

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III. Course Contents:

1st :Theoretical Aspect

No.	Course Topics/Units	Sub-topics	No. of Weeks	Contact Hours
1	Introduction to Occupational Environmental & Medical Toxicology	Definitions, types & mode of poisoning	1	1
2	General diagnosis of poisoning	Clinical & laboratory approach	2	1
3	General treatment of poisoning	ABC, decontamination & antidotes	3	1
4	Corrosive poisons	Household acids and alkalis	4	1
5	Metallic poisons	Toxicology of heavy metals	5	1
6	Non metallic poisons	Insecticides, rodenticides and biocides	6	1
7	Analgesics	Non-steroidal antiinflammatory drugs	7	1
8	Hypnotics	Barbiturates & benzodiazepines	8	1
9	Narcotics	Opium, opiates & drug addiction	9	1

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10	Hallucinogens	Cannabis, LSD & datura	10	1
11	Stimulants	Amphetamine & khat	11	1
12	Volatile poisons	Alcohols, CO, Petroleum distillates	12	1
13	Animal Envenomation	Snakes, scorpions, insects & rabies	13	1
14	Harmful effects of drugs on organs.	CNS, CVS and renal intoxicants	14	1
15	Allergic reactions to drugs		15	1
16	Free radicals and antioxidants		16	1
Total number of weeks and hours			16weeks	16

Second: Practical/Tutorial/Clinical Aspects				
Write up practical/tutorial/clinical topics				
No.	Practical/Tutorial/Clinical topics	Weeks due	Contact Hours	CILOs
1	Detection of corrosive poisons.	1,2	4	a1,a2,b1,b2,c1
2	Detection of metallic poisons	3,4	4	a1,a2,b1,b2,c1,d1
3	Detection of organophosphorous, estimation of anticholinesterase.	5,6	4	a1,a2,b1,b2,c1,d1
4	Midterm exam	7	2	a1,a2,b1,b2,c1,d1
5	Detection NSAID	8,9	4	a1,a2,b1,b2,c1,d1

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6	Detections of sedative, Narcotics	10,11	4	a1,a2,b1,b2,c1,d1
7	Detection of alcohols in urine	12,13	4	a1,a2,b1
8	Water contamination (nitrate, nitrite, metals)	14,15	4	a1,a2,b1
9	Final exam	16	2	a1,a2,b1,b2,c1,d1
Total number of weeks and hours		16	32	

V. Teaching Strategies

1. lectures
2. Practical lessons
3. Small group discussion
4. Problem solving/ case study
5. Self learning

VI. Tasks and Assignments

No.	Task/Assignment	Week due	Mark
.1	Exam preparation – Ask questions to clarify & increase knowledge	5 th	20
.2	Writing notes as case studies	8 th	
.3	Practical tests: selective Exam	14 th	

VII. Learning Assessment:

No.	Assessment Tasks	Assessment day & date	Mark	Weight
1	Homework/Tasks/Assignments	Throughout the cou	10	

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	Quiz 1	1 st month	5	
2	Midterm Exam	2 nd month	20	
3	Quiz 2	3 rd month	5	
4	Final Exam	End course	60	
Total			100	

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(Author, (Year), Book Title, Edition, Publisher, Country of publishing)	
Textbooks-not more than 2	
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12.	(Cheating) : Cheating in examinations or tests may take the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones). Exam cheating can also include exam impersonation. A student found guilty of contributing to cheating in examinations or term assignments is also subject to serious academic penalty. Please refer to the academic regulations of UST for further details.
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14.	(Other policies) :

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