

# Course Specification

College: **College of Pharmacy**

Institution: **King Saud University**

Department: **Department of Pharmacology**

Degree: **B. Pharm.**

## A Course Identification and General Information

Course code	Course title	Credit Hours			
		Lecture	Lab.	Other	Credit
<b>PHL 471</b>	<b>Toxicology</b>	<b>2</b>	<b>0</b>	<b>-</b>	<b>2</b>
Pre-requisites for this course: <b>(PHL 451)</b>					
Co-requisites for this course (if any):-					
Level/year at which this course is offered: <b>8<sup>th</sup> level</b>					
Name of faculty member responsible for the course: <b>Dr. Saleh A. Bakheet, Dr. Hesham M. Korashy, Dr. Sabry Attia</b>					

## B Objectives

### 1. Summary of the main learning outcomes for students enrolled in the course.

- **To understand the basic principles of toxicology and the different disciplines of toxicology.**
- **To gain knowledge regarding the supportive measures, therapeutic interventions, specific antidotes as general guidelines of treatment modalities.**
- **To understand the mechanism of toxicity, toxicokinetics, clinical presentation, diagnosis and medications indicated and contraindicated in the treatment of toxicity of common drug and chemical groups.**
- **To understand the serious consequences of exposure to therapeutic drugs and environmental and occupational chemicals.**
- **Gaining knowledge regarding the special considerations with maternal, foetal, and neonatal health.**

### 2. Briefly describe any plans for developing and improving the course that are being implemented. - **Providing Updated software and Reference to web material.**

<b>C. Course Description</b>		
The course includes the study of the general principles of toxicology, prevention and management of poisoning, the mechanism(s) of toxicity of the drugs commonly used, the commonly encountered chemicals, radiation and radioactive materials and drugs affecting maternal, foetal and neonatal health. Signs and symptoms of toxicity and managements of the cases are stressed.		
<b>1. Topics to be Covered</b>		
<b>Topic</b>	<b>Weeks</b>	<b>Contact hours</b>
General Principles of Toxicology: Toxicity, hazard, risk. Branches of toxicology: Occupational, Environmental, Ecotoxicology, Analytical and Clinical.	1	2
Types of exposure and toxic responses Spectrum of toxicity. Evaluation of safety of chemicals and drugs.	1	2
Prevention and Management of Poisoning: Poisoning episodes: Accidental, Suicidal, Homicidal, Non-accidental Prevention of poisoning:	1	2
Management of Poisoning: Maintenance of vital functions Antidotes: non-specific & specific	1	2
Prevention of absorption of poisons Enhanced elimination of poisons Supportive management	1	2
Poisoning with Common Drugs: Selected OTC Products: Aspirin, Paracetamol, Iron	1	2
CNS Depressants: Barbiturates, Benzodiazepines:	1	2
CNS Stimulants: Amphetamine & Cocaine	1	2
Poisoning with Common Chemicals: Household Toxicants: Solvents, corrosives, gases, cleaning agents (soaps, detergents, bleaches, ammonia solution).	2	4
Pesticides: Halogenated & cholinesterase inhibitor insecticides Rodenticides, Herbicides, Fungicides	1	2
Common Heavy Metals and Chelators	1	2
Teratogenic and Toxic Effects of Drugs and Chemicals on Reproduction: Possible site of action of teratogens: Effects on father, mother, feto-placental unit and fetus. Principles of teratology as applied to man: Stages of pregnancy, Drug dosage, placental transfer, use of drugs during pregnancy.	2	4
Radiation and Radioactive Material Toxicity	1	2

<b>Course components (total contact hours per semester):</b>			
<b>Lecture:</b>	<b>Tutorial</b>	<b>Practical</b>	<b>Other</b>
<b>30</b>	-	-	-
<b>Additional private study/learning hours expected for students per week. (This should be an average for the semester not a specific requirement in each week)</b>			
<b>30 hours</b>			

**Development of Learning Outcomes in Domains of Learning**

**For each of the domains of learning shown below indicate:**

- A brief summary of the knowledge or skill the course is intended to develop;
- A description of the teaching strategies to be used in the course to develop that knowledge or skill;
- The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned.

<b>a. Knowledge</b>
<p><b>(i) Description of the knowledge to be acquired</b></p> <ul style="list-style-type: none"> <li>• <b>Knowledge about the various means of possible exposure to therapeutic and non therapeutic agents.</b></li> <li>• <b>The students will gain an overview of protocols for managing various toxic ingestions, and the antidotes and treatments associated with their pathology.</b></li> <li>• <b>The students will develop a greater awareness and appreciation for the consequences of ingesting prescription medicines, of exposure of non therapeutic compounds and of the risk from environmental and biological threats to public safety</b></li> <li>• <b>The students will become more knowledgeable to respond to the threat of toxins.</b></li> </ul>
<p><b>(ii) Teaching strategies to be used to develop that knowledge</b></p> <ul style="list-style-type: none"> <li>• <b>Lectures</b></li> <li>• <b>Assignments</b></li> </ul>
<p><b>(iii) Methods of assessment of knowledge acquired</b></p> <ul style="list-style-type: none"> <li>• <b>Exams</b></li> <li>• <b>Assignments</b></li> </ul>

<b>b. Cognitive Skills</b>
<p>(i) Cognitive skills to be developed</p> <ul style="list-style-type: none"> <li>• <b>Understanding the serious consequences of toxic drugs and chemicals exposure and develop knowledge for how to prevent, manage and respond to toxin threats,</b></li> </ul>
<p>(ii) Teaching strategies to be used to develop these cognitive skills</p> <ul style="list-style-type: none"> <li>• <b>Give students a problem and toxicity case that requires collecting information from internet.</b></li> </ul>
<p>(iii) Methods of assessment of students cognitive skills</p> <ul style="list-style-type: none"> <li>• <b>Exams</b></li> <li>• <b>Assignments</b></li> </ul>
<b>c. Interpersonal Skills and Responsibility</b>
<p>(i) Description of the interpersonal skills and capacity to carry responsibility to be developed</p> <p style="text-align: center;"><b>Not Applicable</b></p>
<p>(ii) Teaching strategies to be used to develop these skills and abilities</p> <p style="text-align: center;"><b>Not Applicable</b></p>
<p>(iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility</p> <p style="text-align: center;"><b>Not Applicable</b></p>
<b>d. Communication, Information Technology and Numerical Skills</b>
<p>(i) Description of the skills to be developed in this domain.</p> <p style="text-align: center;"><b>Not Applicable</b></p>
<p>(ii) Teaching strategies to be used to develop these skills</p> <p style="text-align: center;"><b>Not Applicable</b></p>
<p>(iii) Methods of assessment of students numerical and communication skills</p> <p style="text-align: center;"><b>Not Applicable</b></p>
<b>e. Psychomotor Skills (if applicable)</b>
<p>(i) Description of the psychomotor skills to be developed and the level of performance required</p> <p style="text-align: center;"><b>Not Applicable</b></p>
<p>(ii) Teaching strategies to be used to develop these skills</p> <p style="text-align: center;"><b>Not Applicable</b></p>
<p>(iii) Methods of assessment of students psychomotor skills</p> <p style="text-align: center;"><b>Not Applicable</b></p>

5. Schedule of Assessment Tasks for Students During the Semester			
Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Proportion of Final Assessment
1	<b>First midterm exam</b>	<b>7</b>	<b>30</b>
2	<b>2<sup>nd</sup> midterm exam</b>	<b>13</b>	<b>30</b>
3	<b>Final exam</b>	<b>16</b>	<b>40</b>

D. Student Support
<p>Arrangements for availability of faculty for individual student consultations and academic advice. (include amount of time faculty are available each week)</p> <ul style="list-style-type: none"> <li>• <b>Faculty web-page with communication tolls.</b></li> <li>• <b>office hours: 2</b></li> </ul>

E. Learning Resources
<p><b>Required Text(s)</b></p> <p><i>Casarett and Doull's Toxicology: The Basic Science of Poisons. C.D. Klaassen, McGraw Hill, New York. (Latest edition).</i></p> <p><b>Essential Reference</b></p> <ul style="list-style-type: none"> <li>• <b>Kent R. Olson. Poisoning and drug overdose (3<sup>rd</sup> edition).</b></li> </ul> <p><b>Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)</b></p> <ul style="list-style-type: none"> <li>• <b>Toxicology</b></li> <li>• <b>Toxicological sciences</b></li> </ul> <p><b>Electronic Materials, Web Sites etc</b></p> <p><a href="http://www.PubMed.com">www.PubMed.com</a></p>

F. Facilities Required
<p>Indicate requirements for the course including size of classrooms and laboratories (ie number of seats in classrooms and laboratories, extent of computer access etc.)</p>
<p><b>1. Accommodation (Lecture rooms, laboratories, etc.)</b></p> <ul style="list-style-type: none"> <li>• <b>Lecture room (30)</b></li> </ul>
<p><b>2. Computing resources</b></p> <ul style="list-style-type: none"> <li>• <b>Internet access</b></li> </ul>
<p><b>3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list)</b></p> <p style="text-align: center;"><b>Not Applicable</b></p>

<b>G Course Evaluation and Improvement Processes</b>	
1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching	<ul style="list-style-type: none"> <li>• <b>Students evaluation in each semester</b></li> <li>• <b>Meeting with students</b></li> <li>• <b>e- suggestions</b></li> </ul>
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department	<ul style="list-style-type: none"> <li>• <b>Self evaluation</b></li> </ul>
3. Processes for Improvement of Teaching	<ul style="list-style-type: none"> <li>• <b>Studying reports</b></li> </ul>
4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution)	<b>Not Applicable</b>
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.	<ul style="list-style-type: none"> <li>• <b>Collecting all reports and evaluations at the end of the semester for a reviewing purpose.</b></li> </ul>