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
PHL 419	**Toxicology**	**2**	0	-	**2**
Pre-requisites for this course**: (PHL 322)** Co-requisites for this course (if any):-					
Level/year at which this course is offered**: 8th level**					
Name of faculty member responsible for the course: **Dr. Saleh A. Bakheet, Dr. Sabry Attia, Dr. Abdullah Aldossery.**					

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.

C. Course Description

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.

1. Topics to be Covered

Topic	Weeks	Contact hours
Basic Principles of Toxicology**,** Different areas of toxicology**,** Spectrum of toxic effects: allergic reactions, idiosyncratic reactions, immediate versus delayed toxicity, reversible versus irreversible toxic effects, local versus systemic toxicity	**1**	**2**
Dose-response relationship: types, LD50, ED50, TD50, TI and IC50, Animal toxicity tests, Prevention and Management of Poisoning: ABC Supportive management	**2**	**2**
Diagnosis of Poisoning, Prevention of further absorption or exposure	**3**	**2**
Enhanced elimination of poisons, Antidotes: non-specific & specific, Toxicity of salicylates	**4**	**2**
Toxicity of paracetamol, Toxicity of Barbiturates	**5**	**2**
Toxicity of benzodiazepines, Toxicity of opioids	**6**	**2**
Toxicity of amphetamines, Toxicity of cocaine	**7**	**2**
Toxicity of antidepressants, First Test	**8**	**2**
Toxicity of digoxin, Toxicity of common heavy metals (1): lead and mercury	**9**	**2**
Toxicity of common heavy metals (2): Cadmium, arsenic and iron, Toxicity of household toxicants: cleaning agents (soaps, detergents, bleachs, ammonia solution).	**10**	**2**
Toxicity of alcohols: ethanol, methanol and glycols, Toxicity of insecticides (1): organophosphorus compounds	**11**	**2**
Toxicity of insecticides(2): carbamates, organochlorines and pyrethroid esters, Toxicity of: carbon monoxide	**12**	**2**
Toxicity of cyanide and sulphur dioxide, Teratogenic and other toxic effects of drugs and chemicals on reproduction (1)	**13**	**2**
Teratogenic and other toxic effects of drugs and chemicals on reproduction (2), Second Test	**14**	**2**
Chemical carcinogenesis (1): Carcinogenic agents, Mode of action, Chemical carcinogenesis (2): Stages of chemical induction of cancer(initiation, promotion, progression).	**15**	**2**

Course components (total contact hours per semester):			
Lecture:	**Tutorial**	**Practical**	**Other**
30	**-**	**-**	**-**

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)

30 hours

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.

a. Knowledge

(i) Description of the knowledge to be acquired

- **Knowledge about the various means of possible exposure to therapeutic and non therapeutic agents.**
- **The students will gain an overview of protocols for managing various toxic ingestions, and the antidotes and treatments associated with their pathology.**
- **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**
- **The students will become more knowledgeable to respond to the threat of toxins.**

(ii) Teaching strategies to be used to develop that knowledge

- **Lectures**
- **Assignments**

(iii) Methods of assessment of knowledge acquired

- **Exams**
- **Assignments**

b. Cognitive Skills

(i) Cognitive skills to be developed • **Understanding the serious consequences of toxic drugs and chemicals exposure and develop knowledge for how to prevent, manage and respond to toxin threats,**
(ii) Teaching strategies to be used to develop these cognitive skills • **Give students a problem and toxicity case that requires collecting information from internet.**
(iii) Methods of assessment of students cognitive skills • **Exams** • **Assignments**
c. Interpersonal Skills and Responsibility
(i) Description of the interpersonal skills and capacity to carry responsibility to be developed **Not Applicable**
(ii) Teaching strategies to be used to develop these skills and abilities **Not Applicable**
(iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility **Not Applicable**

d. Communication, Information Technology and Numerical Skills
(i) Description of the skills to be developed in this domain. **Not Applicable**
(ii) Teaching strategies to be used to develop these skills **Not Applicable**
(iii) Methods of assessment of students numerical and communication skills **Not Applicable**

e. Psychomotor Skills (if applicable)
(i) Description of the psychomotor skills to be developed and the level of performance required **Not Applicable**
(ii) Teaching strategies to be used to develop these skills **Not Applicable**
(iii) Methods of assessment of students psychomotor skills **Not Applicable**

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	**First midterm exam**	**7**	**30**
2	**2nd midterm exam**	**13**	**30**
3	**Final exam**	**16**	**40**

D. Student Support

Arrangements for availability of faculty for individual student consultations and academic advice. (include amount of time faculty are available each week)

- **Faculty web-page with communication tolls.**
- **office hours: 2**

E. Learning Resources

Required Text(s)

***Casarett and Doull's Toxicology*: The Basic Science of Poisons. C.D. Klaassen, McGraw Hill, New York. (Latest edition).**

Essential Reference

- **Kent R. Olson. Poisoning and drug overdose (3rd edition).**

Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)

- **Toxicology**
- **Toxicological sciences**

Electronic Materials, Web Sites etc

www.PubMed.com

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (ie number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Lecture rooms, laboratories, etc.)

- **Lecture room (30)**

2. Computing resources

- **Internet access**

3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list)

Not Applicable

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • **Students evaluation in each semester** • **Meeting with students** • **e- suggestions**
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department • **Self evaluation**
3. Processes for Improvement of Teaching • **Studying reports**
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) **Not Applicable**
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • **Collecting all reports and evaluations at the end of the semester for a reviewing purpose.**