REPUBLIC OF YEMEN
21 SEPTEMBER UMAS

Development Academic Center & Quality Assurance

الجمهورية اليمنية

جامعة 21 سبتمبر
للعلوم الطبية والتطبيقية
مركز التطوير الأكاديمي وضمان الجودة

University of 21 September for Applied and Medical Sciences

Faculty of Clinical Pharmacy

Master of Clinical Pharmacy

Course Specification of Clinical Toxicology

Course No. (CPh106)

2021/2022

Prepared by:	Reviewed by:	Head of the Department:	Dean:
Dr. Ali Almehdar	Dr. Ali Alyahawi		

I. Course Identification and General Information:

1	**Course Title:**	Clinical Toxicology			
2	**Course Code & Number:**	CPh106			
3	**Credit Hours:**	**Credit Hours**	**Theory Hours**		**Lab. Hours**
			Lecture	**Exercise**	
		3	2	--	2
4	**Study Level/ Semester at which this Course is offered:**	Level 1 / Semester 2			
5	**Pre –Requisite (if any):**	-Therapeutics-II			
6	**Co –Requisite (if any):**	None			
7	**Program (s) in which the Course is Offered:**	Master in Clinical Toxicology			
8	**Language of Teaching the Course:**	English			
9	**Study System:**	Semester-based system			
10	**Mode of Delivery:**	Full Time			
11	**Location of Teaching the Course:**	Faculty of Graduate Studies			
12	**Prepared by:**	Dr. Ali Almehdar			
13	**Date of Approval:**				

II. Course Description:

The course is designed to provide students the opportunity to learn how to manage toxicity from common pharmaceutical products. Students will receive basic background information about important areas in toxicology, which includes the principles of toxicology, Dose- response relationships mechanisms of toxic action, the appropriate detoxification methods for general toxicology, the toxicological effect of heavy metals, products like pesticides and household and different groups of medications and compounds on human health, and commonly types of antidotes and their mechanism of action. In addition, the course will cover: assessment of the toxic patient,

monitoring, creation of the management plan including stabilization, antidotal therapy, and elimination enhancement.

III. Course Intended Learning Outcomes (CILOs) : (مخرجات تعلم المقرر)		Referenced PILOs (مخرجات تعلم البرنامج)
A. Knowledge and Understanding: Upon successful completion of the course, students will be able to:		
a1	Understand the pharmacokinetics of toxins, the different sources of toxicants and their mechanism of toxicity.	A1, A2
a2	Define the clinical features, prevention of poisoning, the appropriate general detoxification methods as recommended guidelines and the role of the pharmacotherapist in the evaluation and management of poisoned/overdosed patients.	A1, A2
B. Intellectual Skills: Upon successful completion of the course, students will be able to:		
b1	Design an individualized pharmacotherapy care and monitoring plan for any assigned toxic compound.	B1, B2
b2	Analyze patient data from drug information and evidence-based medicine to identify and manage any assigned toxic compound.	B1, B2
C. Professional and Practical Skills: Upon successful completion of the course, students will be able to:		
c1	Individualize therapeutic regimens and monitoring parameters in management of poisoned/overdosed patients.	C1, C2
c2	Apply the principles of drug information, appropriate techniques, and measurements in determination the toxicity profiles and treatment of various toxic substances.	C1, C2, C3
D. Transferable Skills: Upon successful completion of the course, students will be able to:		
d1	Share successfully appropriate therapeutic decisions for individual poisoned patients.	D1
d2	Develop students critical thinking, decision making abilities, and life-long learning using different resources of toxicology and know how to evaluate the big quantity of information available	D2

(A) Alignment of Course Intended Learning Outcomes (Knowledge and Understanding) to Teaching Strategies and Assessment Methods:			
	Course Intended Learning Outcomes	**Teaching Strategies**	**Assessment Strategies**
a1	Understand the pharmacokinetics of toxins, the different sources of toxicants and their mechanism of toxicity.	- Lectures - Class Discussion (Problem solving) - Seminars - Office Hours - Assignment	- Exam - Quizzes - Homework-Assignments
a2	Define the clinical features, prevention of poisoning, the appropriate general detoxification methods as recommended guidelines and the role of the pharmacotherapist in the evaluation and management of poisoned/overdosed patients.	- Lectures - Class Discussion (Problem solving) - Seminars - Office Hours - Assignment	- Exam - Quizzes - Homework-Assignments
(B) Alignment of Course Intended Learning Outcomes (Intellectual Skills) to Teaching Strategies and Assessment Methods:			
	Course Intended Learning Outcomes	**Teaching Strategies**	**Assessment Strategies**
b1	Design an individualized pharmacotherapy care and monitoring plan for any assigned toxic compound.	- Lectures - Class Discussion (Problem solving) - Seminars - Office Hours - Assignment	- Exam - Quizzes - Homework-Assignments
b2	Analyze patient data from drug information and evidence-based medicine to identify and manage any assigned toxic compound.	- Lectures - Class Discussion (Problem solving) - Seminars - Office Hours - Assignment	- Exam - Quizzes - Homework - Assignments
(C) Alignment of Course Intended Learning Outcomes (Professional and Practical Skills) to Teaching Strategies and Assessment Methods:			
	Course Intended Learning Outcomes	**Teaching Strategies**	**Assessment Strategies**
c1	Individualize therapeutic regimens and monitoring parameters in management of poisoned/overdosed patients.	- Lectures - Class Discussion (Problem solving) - Seminars - Office Hours - Assignment	- Exam - Quizzes - Homework-Assignments - Class discussion evaluation
c2	Apply the principles of drug	- Lectures	- Exam

	information and evidence-based medicine for the antidotes and treatment of various toxic substances.	- Class Discussion (Problem solving) - Seminars - Office Hours - Assignment	- Quizzes - Assignments

(D) Alignment of Course Intended Learning Outcomes (Transferable Skills) to Teaching Strategies and Assessment Methods:

	Course Intended Learning Outcomes	Teaching Strategies	Assessment Strategies
d1	Share successfully appropriate therapeutic decisions for individual poisoned patients.	- Class Discussion - Seminars - Office Hours	- Classroom Participation - Quizzes - Oral Presentation
d2	Develop students critical thinking, decision making abilities, and life-long learning using different resources of toxicology and know how to evaluate the big quantity of information available	- Class Discussion - Seminars - Office Hours - Assignments	- Exam - Classroom Participation reports - Quizzes - Assignments

IV. Course Contents:

A. Theoretical Aspect:

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	**Introduction**	– Definition & Terminology	1	2	a 1
2	**Pharmacokinetics and pharmacodynamics of toxicants**	– Review of relevant toxicokinetic principles – Review of relevant toxicodynamic principles – Factors that influence toxicity	2	4	a 1, a2
3	**The Management of Poisoned Patients: General Approaches**	– Evaluation of Patient – Initial assessment – Certain toxicokinetics – Pathophysiologyical mechanisms of toxicants – Identification of patient	2	4	b 1, b2, c1, c2, d2

		and toxicant – Decontamination – Inhalation exposure – Ocular exposure – GIT decontamination – Enhancement of elimination – Extracorporeal methods			
4	**Household & Industrial Toxiccant**	– Nitrates and nitrites – Carbon monoxide – Cyanide – Pesticides	1	2	a 1, a2, b1, b2, c1, c2, d2
5	**Midterm Exam**	–	1	2	a 1, a2, b1, b2, c1, c2, d2
6	**Heavy metals toxicology**	- Common Heavy Metals & Chelators: • Cyanide • Iron • Cadmium • Arsenic • Lead • Mercury • copper	1	2	a 1, a2, b1, b2, c1, c2, d2
7	**Poisoning with Drugs**	- Analgesics - Digoxin toxicity - CNS Depressants - CNS Stimulants	1	2	a 1, a2, b1, b2, c1, c2, d1, d2
8	**Overview of Plant Toxicology**	- Common plant toxin - Clinical presentation & findings - Management	1	2	a 1, a2, b1, b2, c1, c2, d1, d2
9	**Overview of Animal Toxicology**	- Common animal toxin - Clinical presentation & findings - Management	1	2	a 1, a2, b1, b2, c1, c2, d1, d2
10	**Foodborne**	- Mechanism of toxicity	1	2	a 1, a2, b1, b2,

	Botulism	- Toxic dose - Clinical presentation - Management			c1, c2, d1, d2
11	**Maternal-Fetal Toxicology**	Teratogenic and Toxic Effects of Drugs and Chemicals	1	2	a 1, a2, b1, b2, c1, c2, d1, d2
12	**Common human toxicology**	- **Common human toxin , clinical findings, mechanisms of action and management:** • Toxic Responses of the Liver: Hepatotoxicology • Toxic Responses of the Kidney: Renal Toxicology • Toxic Responses of the Heart: Cardiovascular Toxicology • Endocrine Toxicology	1	2	a 1, a2, b1, b2, c1, c2, d1, d2
13	**Final Theoretical Exam**		1	2	a 1, a2, b1, b2, c1, c2, d2
Number of Weeks /and Units Per Semester			**16**	**32**	

B. Practical Aspect:

No.	Tasks/ Experiments	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	- Introduction and different fields of toxicology and antidotal therapy	2	4	a 1, a2
2	- CNS stimulants and CNS depressants	2	4	b 1, b2, c1, c2, d1, d2
3	- Mercury poisoning	1	2	b 1, b2, c1, c2, d1, d2
4	- Lead poisoning	1	2	b 1, b2, c1, c2, d1, d2

5	- Mid-Exam	1	2	b 1, b2, c1, c2
6	- Cyanide poisoning	1	2	b 1, b2, c1, c2, d1, d2
7	- Carbon monoxide poisoning	1	2	b 1, b2, c1, c2, d1, d2
8	- Digoxin toxicity	1	2	b 1, b2, c1, c2, d1, d2
9	- Corrosives	1	2	b 1, b2, c1, c2, d1, d2
10	- Salicylate poisoning	1	2	b 1, b2, c1, c2, d1, d2
11	- Revision	1	2	b 1, b2, c1, c2, d1, d2
12	- Final Exam	1	2	b 1, b2, c1, c2
Number of Weeks /and Units Per Semester		**14**	**28**	

C. Tutorial Aspect:

No.	Tutorial	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

11				
12				
Number of Weeks /and Units Per Semester		15	30	

V. Teaching Strategies of the Course:

- Lectures
- Class Discussion (Problem solving)
- Seminars
- Office Hours
- Assignment

VI. Assessment Methods of the Course:

- Exam
- Quizzes
- Class Discussion
- Assignments
- Oral Presentation

VII. Assignments:

No.	Assignments	Week Due	Mark	Aligned CILOs (symbols)
1	**Assignment 1:** Present Evidence-based case presentation on toxicity and management for poisoned/overdosed patient (Individual).	Week 1-12	5	a 1, a2, b1, b2, c1, c2, d1, d2
2	**Assignment 2:** Present a seminar on toxicity and management for poisoned/overdosed drugs in the course under study (Student Group).	Week 12	5	a 1, a2, b1, b2, c1, c2, d1, d2
Total			10	

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	**Assignments**	Week 6-12	10	10%	a 1, a2, b1, b2, c1, c2, d1, d2
2	**Quiz (1)**	Week 6	5	5%	a 1, a2, b1, b2, c1, c2, d2
3	**Midterm Exam**	Week 8	20	20%	a 1, a2, b1, b2, c1, c2, d2
4	**Quiz (2)**	Week 12	5	5%	a 1, a2, b1, b2, c1, c2, d2
5	**Final Exam**	Week 16	60	60%	a 1, a2, b1, b2, c1, c2, d2
Total			**100**	**100%**	

IX. Learning Resources:

- *Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).*

1- Required Textbook(s) (maximum two).

1- Curtis D. Klaassen Casarett and Doull's (2013). Toxicology: The Basic Science of Poisons, 8th Ed. (ISBN: 978-0071769235)
2- Katzung (2018). Basic & Clinical Pharmacology, ed. 14th edition.

2- Essential References.

1. Curtis Klaassen and John Watkins Casarett & Doull's (2010). Essentials of Toxicology, 2nd (ISBN: 978-0071622400)
2. Kent R. Olson (2012). Poisoning and Drug Overdose, 6th Ed. (ISBN: 978-0071668330)
3. Robert S. Hoffman, Mary Ann Howland, Neal A. Lewin, Lewis S. Nelson, and Lewis R. Goldfrank (2014). Goldfrank's Toxicologic Emergencies, 10th Ed. (ISBN: 978-0-07-180184-
4. Barile, Frank A. (2010). Clinical toxicology : principles and mechanisms, 2nd Ed. (ISBN: 97 1420092257)

3- Electronic Materials and Web Sites *etc.*

Websites:
- American College of Toxicology, www.actox.org
- International journal of toxicology, ijt.sagepub.com
- https://accesspharmacy.mhmedical.com/

X. Course Policies: (Based on the Uniform Students' By law (2007) تترك كما هي	
1	**Class Attendance:** Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes.
2	**Tardiness:** A student will be considered late if he/she is not in class after 10 minutes of the start time of class.
3	**Exam Attendance/Punctuality:** No student shall be allowed to the exam hall after 30 minutes of the start time, and shall not leave the hall before half of the exam time has passed.
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5	**Cheating:** Cheating is an act of fraud that results in the cancelation of the student's exam or assignment. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
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7	**Other policies:** The University official regulations in force will be strictly observed and students shall comply with all rules and regulations of the examination set by the Department, Faculty and University Administration.

University of 21 September for Applied and Medical Sciences

Faculty of Clinical Pharmacy

Master of Clinical Pharmacy

Course Specification of Clinical Toxicology

Course No. (CPh106)

2021/2022

I. Information about Faculty Member Responsible for the Course:								
Name of Faculty Member:	Dr. Ali Almehdar							
Location& Telephone No.:	-----							
E-mail:	--@--.--	SAT	SUN	MON	TUE	WED	THU	
Office Hours								

I. Course Identification and General Information:					
	Course Title:	Clinical Toxicology			
2	Course Code & Number:	CPh106			
3	Credit Hours:	Credit Hours	Theory Hours		Lab. Hours
			Lecture	Exercise	
		3	2	--	2
4	Study Level/ Semester at which this Course is offered:	Level 1 / Semester 2			
5	Pre –Requisite (if any):	-Therapeutics-II			
6	Co –Requisite (if any):	None			
7	Program (s) in which the Course is Offered:	Master in Clinical Pharmacy			
8	Language of Teaching the Course:	English			
9	Study System:	Semester-based system			
10	Mode of Delivery:	Full Time			
11	Location of Teaching the Course:	Faculty of Clinical Pharmacy			
12	Prepared by:	Dr. Ali Almehdar			
13	Date of Approval:				

II. Course Description:

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III. Course Intended Learning Outcomes (CILOs) :(مخرجات تعلم المقرر)

A. Knowledge and Understanding: Upon successful completion of the course, students will be able to:	
a1	Understand the pharmacokinetics of toxins, the different sources of toxicants and their mechanism of toxicity.
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c1	Individualize therapeutic regimens and monitoring parameters in management of poisoned/overdosed patients.
c2	Apply the principles of drug information, appropriate techniques, and measurements in determination the toxicity profiles and treatment of various toxic substances.
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d1	Share successfully appropriate therapeutic decisions for individual poisoned patients.
d2	Develop students critical thinking, decision making abilities, and life-long learning using different resources of toxicology and know how to evaluate the big quantity of information available

IV. Course Contents:

A. Theoretical Aspect:

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours
1	**Introduction**	– Definition & Terminology	1	2
2	**Pharmacokinetics and pharmacodynamics of toxicants**	– Review of relevant toxicokinetic principles – Review of relevant toxicodynamic principles – Factors that influence toxicity	2	4
3	**The Management of Poisoned Patients: General Approaches**	– Evaluation of Patient – Initial assessment – Certain toxicokinetics – Pathophysiologyical mechanisms of toxicants – Identification of patient and toxicant – Decontamination – Inhalation exposure – Ocular exposure – GIT decontamination – Enhancement of elimination – Extracorporeal methods	2	4
4	**Household & Industrial Toxiccant**	– Nitrates and nitrites – Carbon monoxide – Cyanide – Pesticides	1	2
5	**Midterm Exam**	–	1	2
6	**Heavy metals toxicology**	- Common Heavy Metals & Chelators: • Cyanide • Iron • Cadmium • Arsenic	1	2

		• Lead • Mercury • copper		
7	**Poisoning with Drugs**	- Analgesics - Digoxin toxicity - CNS Depressants - CNS Stimulants	1	2
8	**Overview of Plant Toxicology**	- Common plant toxin - Clinical presentation & findings - Management	1	2
9	**Overview of Animal Toxicology**	- Common animal toxin - Clinical presentation & findings - Management	1	2
10	**Foodborne Botulism**	- Mechanism of toxicity - Toxic dose - Clinical presentation - Management	1	2
11	**Maternal-Fetal Toxicology**	Teratogenic and Toxic Effects of Drugs and Chemicals	1	2
12	**Common human toxicology**	- **Common human toxin , clinical findings, mechanisms of action and management:** • Toxic Responses of the Liver: Hepatotoxicology • Toxic Responses of the Kidney: Renal Toxicology • Toxic Responses of the Heart: Cardiovascular Toxicology • Endocrine Toxicology	1	2
13	**Final Theoretical Exam**		1	2
Number of Weeks /and Units Per Semester			**16**	**32**

B. Practical Aspect:			
No.	**Tasks/ Experiments**	**Number of Weeks**	**Contact Hours**
1	Introduction and different fields of toxicology and antidotal therapy	2	4
2	CNS stimulants and CNS depressants	2	4
3	- Mercury poisoning	1	2
4	- Lead poisoning	1	2
5	- Mid-Exam	1	2
6	- Cyanide poisoning	1	2
7	- Carbon monoxide poisoning	1	2
8	- Digoxin toxicity	1	2
9	Corrosives	1	2
10	- Salicylate poisoning	1	2
11	- Revision	1	2
12	- Final Exam	1	2
Number of Weeks /and Units Per Semester		**14**	**28**

C. Tutorial Aspect:			
No.	**Tutorial**	**Number of Weeks**	**Contact Hours**
1			
2			
3			
4			
5			

6			
7			
8			
9			
10			
11			
12			
Number of Weeks /and Units Per Semester		15	30

V. Teaching Strategies of the Course:

- Lectures
- Class Discussion (Problem solving)
- Seminars
- Office Hours
- Assignment

VI. Assessment Methods of the Course:

- Exam
- Quizzes
- Class Discussion
- Assignment
- Oral Presentation

VII. Assignments:

No.	Assignments	Week Due	Mark
1	**Assignment 1:** Present Evidence-based case presentation on toxicity and management for poisoned/overdosed patient (Individual).	Week 1-12	5
2	**Assignment 2:** Present a seminar on toxicity and management for poisoned/overdosed drugs in the course under study (Student	Week 12	5

	Group).		
Total			**10**

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	**Assignments**	Week 6-12	10	10%
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Total			**100**	**100%**

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