The Hashemite University

الجامعـــــــــة الهاشميـــــــــــة

Faculty of Pharmaceutical Sciences

كلية العلوم الصيدلانية

Toxicology (131702456)

First Semester 2024 /2025

COURSE INFORMATION	
Course Name: Toxicology (blended education) **Semester: First** **Department: Clinical Pharmacy & Pharmacy Practice** **Faculty: Pharmaceutical Sciences**	**Course Code: 131702456** **Section: per semester** **Core Curriculum: 2013 Study Plan**
Day(s) and Time(s): According to HU course timetable/semester **Classroom: As per semester**	**Credit Hours: 2** **Prerequisites: 131702462**

COURSE DESCRIPTION

The course introduces the students to toxicology fundamentals at both molecular and clinical aspects. It also introduces the general concepts behind poison treatments. The course starts with introducing the student to toxicological terms such as LD50. Then, it describes animal toxicological studies and dose-response curves focusing on acute and chronic intoxications. Afterward, the basic pharmacokinetics of toxicants, such as absorption, metabolism, distribution, and elimination, are described, emphasizing the last aspect as a detoxification mechanism.

Part of the course focuses on famous toxicants such as cyanide and carbon monoxide toxicities and their clinical treatment strategies. By the end of the week, every student will present a case study of a drug that caused significant toxicity and how this was managed pharmacologically and clinically.

DELIVERY METHODS

The course will be delivered through a combination of active learning strategies. These will include:

- PowerPoint lectures and active classroom-based discussion
- Collaborative learning through small groups acting in an interdisciplinary context.
- Relevant films and documentaries
- Video lectures
- E-learning resources: e-reading assignments and practice quizzes through Model and Microsoft Team
- Workshops , and brain storming.

The course will be delivered through a combination of active learning strategies. These include:

- PowerPoint lectures and active classroom-based discussion
  Students will be encouraged to participate and be actively involved in the learning process.

Lectures will start with questions to inquire about the students' prior knowledge of the topic. These questions will also be repeated at the end of the lecture to gain insight into the students' competences (to verify whether students have understood the topic). During delivering the lecture presentation, time will be given to allow students to reflect about what they have learnt and think in and discuss some examples of short case studies.

- Relevant speakers
- Video lectures

FACULTY INFORMATION

Name	Dr Saba Madae'en
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Office hour:	As announced per semester

References

1. **Casarett & Doull's: Essentials of Toxicology, 3rd Ed. 2015 by Curtis Klaassen and John Watkins III (ISBN:978-0071622400)**
2. **Casarett and Doull's Toxicology: The Basic Science of Poisons, 8th Ed. 2013 by Curtis D. Klaassen (ISBN:978-0071769235)**
3. **Poisoning and Drug Overdose, 6th Ed. 2012 by Kent R. Olson (ISBN: 978-0071668330)**
4. **Goldfrank's Toxicologic Emergencies, 10th Ed. 2014 by Robert S. Hoffman, Mary Ann Howland, Neal A.Lewin, Lewis S. Nelson, and Lewis R. Goldfrank (ISBN: 978-0-07-180184-3)**
5. **Clinical toxicology : principles and mechanisms, 2nd Ed. 2010 by Barile, Frank A. (ISBN: 978-1420092257)**

Course Objectives

1. Define basic toxicology terms such as LD50, acute, and chronic toxicity.
2. Define routes of toxicant exposure and kinetics in living systems such as absorption, metabolism, distribution, and elimination. (pharmacokinetics)
3. Describe the fundamentals of toxicity mechanisms; this includes drug-receptor interactions
4. Describe different classes of toxicants
5. Describe the general rules behind molecular mutagenesis.
6. Explain the rationale and mechanisms behind emetics, lavage, and dialysis
7. Describe the clinical treatment and supportive measures of intoxication cases

Intended Learning Outcomes

A. Foundational Knowledge

A1. Identify the basic toxicological principles and how different chemicals are taken up by, processed in, and eliminated from the body

A2. Recognize the symptoms of the commonly encountered toxidromes

A3. Identify the treatment and supportive measures and their alternatives regarding intoxication of acute and chronic cases.

B. Essential for Practice and Care (Intellectual Skills):

B1. Analyze the medical problems related to clinical toxicology

B2. Evaluate toxin-related problems to recommend the appropriate pharmacological and non-pharmacological treatment methods.

C. Approach to Practice and Care (competencies)

C.1. Apply learned information to optimize patient therapy based on the patient's condition.

C.2. Implement the knowledge in patient counseling to optimize the safe use of drugs and exposure to chemicals

D. Personal and Professional Development:

D.1 Demonstrate responsibility for managing the patient’s toxicity problems according to the patient’s condition.

ACADEMIC SUPPORT

It is The Hashemite University policy to provide educational opportunities that ensure fair, appropriate and reasonable accommodation to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities are encouraged to contact their instructor to ensure that their individual needs are met. The University through its Special Need section will exert all efforts to accommodate for individual's needs.

Special Needs Section:
Tel: 00962-5-3903333 **Extension:** 4209 **Location:** Students Affairs Deanship/ Department of Student Welfare Services **Email**: amalomoush@hu.edu.jo
amalomoush@staff.hu.edu.jo

COURSE REGULATIONS

Participation

Class participation and attendance are important elements of every student's learning experience at The Hashemite University, and the student is expected to attend all classes. A student should not miss more than 15% of the classes during a semester. *Those exceeding this limit of 15% will receive a failing grade regardless of their performance*. It is a student's responsibility to monitor the frequency of their own absences. **Attendance record begins on the first day of class irrespective of the period allotted to drop/add and late registration. It is a student's responsibility to sign-in; failure to do so will result in a non-attendance being recorded.**

In exceptional cases, the student, with the instructor's prior permission, could be exempted from attending a class provided that the number of such occasions does not exceed the limit allowed by the University. The instructor will determine the acceptability of an absence for being absent. A student who misses more than 25% of classes and has a valid excuse for being absent will be allowed to withdraw from the course.

On average, students must spend 15 hrs of study and preparation weekly. At the beginning of the lectures, be on time and don't leave before the end of the lecture without an accepted excuse. **If you missed a class, you must find out about any announcements or assignments you missed.** For any clarification, please communicate your instructor at her posted office hour by appointment. Listen well to the lecture, if you have a question, ask your instructor. You will findthe course material at the course team after the lecture.

Sharing of course materials is forbidden. No course material including, but not limited to, course outline, lecture hand-outs, videos, exams, and assignments may be shared online or with anyone outside the class. Any suspected unauthorized sharing of materials, will be reported to the university's Legal Affairs Office. If a student violates this restriction, it could lead to student misconduct procedures.

Plagiarism

Plagiarism is considered a serious academic offence and can result in your work losing marks or being failed. HU expects its students to adopt and abide by the highest standards of conduct in their interaction with their professors, peers, and the wider University community. As such, a student is expected not to engage in behaviours that compromise his/her own integrity as well as that of The Hashemite University.

Plagiarism includes the following examples, and it applies to all student assignments or submitted work:

- **Use of the work, ideas, images or words of someone else without his/her permission or reference to them.**
- **Use of someone else's wording, name, phrase, sentence, paragraph or essay without using quotation marks.**
- **Misrepresentation of the sources that were used.**

The instructor has the right to fail the coursework or deduct marks where plagiarism is detected

Late or Missed Assignments

In all cases of assessment, students who fails to attend an exam, class project or deliver a presentation on the scheduled date without prior permission, and/or are unable to provide a medical note, will automatically receive a fail grade for this part of the assessment.

- Submitting a term paper on time is a key part of the assessment process. Students who fail to submit their work by the deadline specified will automatically receive a 10% penalty. Assignments handed in more than 24 hours late will receive a further 10% penalty. Each subsequent 24 hours will result in a further 10% penalty.
- In cases where a student misses an assessment on account of a medical reason or with prior permission; in line with University regulations an incomplete grade for the specific assessment will be awarded and an alternative assessment or extension can be arranged.

Missed Assessments

In all cases of assessment, students who fails to attend an exam on the scheduled date without prior permission, and/or are unable to provide a medical note, will automatically receive a failure .grade for this part of the assessment

• In cases where a student misses an assessment on account of a medical reason or with prior permission; in line with university regulations an incomplete grade for the specific assessment will be awarded and an alternative assessment or extension can be arranged.

Cheating

Cheating, academic disconduct, fabrication and plagiarism will not be tolerated, and the university policy will be applied. Cheating policy: The participation, the commitment of cheating will lead to applying all following penalties together:

- Failing the subject, he/she cheated at
- Failing the other subjects taken in the same course

- Not allowed to register for the next semester
- The summer semester is not considered as a semester

Student Complaints Policy

Students at Hashemite University have the right to pursue complaints related to faculty, staff, and other students. The nature of the complaints may be either academic or non-academic. For more information about the policy and processes related to this policy, you may refer to the students' handbook.

COURSE ASSESSMENT

Students will be graded through the following means of assessment and their final grade will be calculated from the forms of evaluation as listed below with their grade weighting taken into account. The criteria for grading are listed at the end of the syllabus

Students will be graded through the following means of assessment:

Course Assessment Plan						
Assessment	**Grade Weighting**	**Deadline Assessment**	**CILOs**			
			A	**B**	**C**	**D**
First Exam	30%	3rd-14th Nov.2024	A			
Second Exam	30%	15-26th Dec. 2024	A	B	C	
Final Exam	40%	12-23th Jan.2025	A	B	C	D

Description of Exams

Test questions will predominately come from material presented in the lectures. Semester exams will be conducted during the regularly scheduled lecture period. Exam will consist of a combination of multiple choice, short answer, match, true and false and/or descriptive questions.
Homework: Will be given for each chapter, while the chapter in progress you are supposed to work on them continuously and submit in next lecture when I finish the chapter.
You are also expected to work on in-chapter examples, self-tests and representative number of end of chapter problems. The answers of self-tests and end of chapter exercises are given at the end of the book.

Quizzes: Unannounced quizzes will be given during or/and at the end of each chapter based upon the previous lectures. It will enforce that you come prepared to the class.

No make-up exams, homework or quizzes will be given. Only documented absences will be considered as per HU guidelines.

Description of Exams

Test questions will predominately come from material presented in the lectures and the lectures themselves. Semester exams may be conducted during the regularly scheduled lecture period. Exam may consist of a combination of multiple choice, short answer, match, true and false, and/or descriptive questions.

No make-up exams will be given. Only documented absences will be considered as per HU guidelines. Make-up exams may be different from regular exams in content and format. Grades are not negotiable and are awarded according to the following criteria:

Letter Grade	Description	Grade Points
A+	Excellent	4.00
A		3.75
A-		3.50
B+	Very Good	3.25
B		3.00
B-		2.75
C+	Good	2.50
C		2.25
C-		2.00
D+	Pass	1.75
D	Pass	1.50
F	Fail	0.00
I	Incomplete	-

WEEKLY LECTURE SCHEDULE AND CONTENT DISTRIBUTION

"Lecture hours and weeks are approximate and may change as needed"

Note: For Chem 101 sections with 2 lecture periods per week (S/T, M/W or T/R), one lecture period covers 1. lecture hours (60 minutes). The course content specifies the sections in chapters 1-10 of the textbook that will be included in quizzes, homework and exams.

"Lecture hours and weeks are approximate and may change as needed"

Note: For the 2 lecture periods per week (S/T, M/W), one lecture period covers 1 lecture hours (60 minutes). The course content specifies chapters of the textbook that will be included in exams.

Week Number	No. of Hours	CILOs	Subject	Delivery Methods	Assessment Methods
1-2	**4**	A	**ADME of toxicants**	PowerPoint Lectures Active Classroom-Based Discussions	Exams
3	**2**	A	**Mechanisms toxicity**	PowerPoint Lectures Active Classroom-Based Discussions	Exams
4	**1**	A, B, C	**Toxidromes**	PowerPoint Lectures Active Classroom-Based Discussions	Exams
4-5	6	A, B, C, D	**Heavy metal poisoning Iron**	PowerPoint Lecture Active Classroom-Based Discussions	Exams
5-6	**4**	A, B, C,D	**Heavy metal poisoning Lead**	PowerPoint Lecture	Exams
6	**1**	A, B, C, D	**Pesticides**	PowerPoint Lectures Relevant Videos	Exams
7	**1**	A, B, C, D	**Hypervitaminosis**	PowerPoint Lectures	Exams
7-8	**2**	A, B, C, D	**Carbon monoxide poisoning**	Active Classroom-Based Discussions Relevant Videos	Exams
8-9	**2-**	A, B, C, D	**Cyanide poisoning**	Active Classroom-Based Discussions Relevant Videos	Exams
9-10	**2**	A, B, C, D	**NSAIDs, salisalyate**	Active Classroom-	Exams

			poisoning	Based Discussions Relevant Videos	
10-11	**2**	A, B, C, D	**Paracetamol poisoning**	Active Classroom-Based Discussions Relevant Videos	Exams
11	**1**	A, B, C, D	**Opioids toxicity**	Active Classroom-Based Discussions Relevant Videos	Exams
11-12	**2**	A, B, C, D	**Alcohol poisoning**	Active Classroom-Based Discussions	Exams
12	**1**	A, B, C, D	**CNS stimulants toxicity**	Active Classroom-Based Discussions Relevant Videos	Exams
13	**2**	A, B, C, D	**Nicotine poisoning**	Active Classroom-Based Discussions Relevant Videos	Exams
14	**1**	A, B, C, D	**Nitrates poisoning**	Active Classroom-Based Discussions Relevant Videos	Exams
15			**University Final Exam**		