Course Plan for Bachelor Program - Study Plan Development and Updating Procedures/ Pharmacy Department	QF02/0408-4.0E

Study Plan No.	**2021/2022**		**University Specialization**		**Bachelor of Pharmacy**	
Course No.	**0201434**		**Course Name**		**Toxicology**	
Credit Hours	**2**		**Prerequisite *Co-requisite**		**Pharmacology (1)**	
Course Type	☐ Mandatory University Requirement	☐ University Elective Requirement	☐ Faculty Mandatory Requirement	☐ Support course family requirements	☑ Mandatory Requirement	☐ Elective Requirement
Teaching Style	☐ Full Online Learning		☑ Blended Learning		☐ Traditional Learning	
Teaching Model	☐ 1 Synchronous: 1 Asynchronous		☑ 1 Face to Face: 1 Asynchronous		☐ 2 Traditional	

Faculty Member and Study Divisions Information *(to be filled in each semester by the subject instructor)*

Name	Academic rank	Office No.	Phone No.	E-mail	
Office Hours (Days/Time)	**Sunday, Tuesday, Thursday ()**		**Monday, Wednesday ()**		
Division number	**Time**	**Place**	**Number of Students**	**Teaching Style**	**Approved Model**
				Blended Learning	**1 Face to Face: 1 Asynchronous**

Brief Description

This course will cover the basic principles in toxicology, which include sources and classification of poisons, Dose-response relationship, and mechanisms of toxic action. Also discuss the toxic effects of different toxicants (environmental, household, industrial, and medical) on human health, the detoxification methods, and principles of medical treatment.

Learning Resources

Course Book Information (Title, author, date of issue, publisher ... etc)	1.- Casarett and Doull's Essentials of Toxicology, 4th edition, 2021, Curtis D. Klaassen and John B. Watkins III 2.- Casarett and Doull's Essentials of Toxicology, 3rd edition, 2015, Curtis D. Klaassen and John B. Watkins III			
Supportive Learning Resources (Books, databases, periodicals, software, applications, others)	1.- Goldfranks Toxicologic Emergencies. 10th edition, 2015 2.- Modern Medical Toxicology, 4th edition, 2013 3.-LU'S Basic Toxicology, 6th edition, 2012 4.-Poisoning & Drug Overdose, 6th edition, 2012			
Supporting Websites	https://elearning.zuj.edu.jo/login/index.php			
The Physical Environment for	☑ Class room	☐ Labs	☑ Virtual Educational	☐ Others

Teaching			Platform	
Necessary Equipment and Software	- PC/laptop with headphones - Microsoft Office. - Zoom - Moodle.			
Supporting People with Special Needs				
For Technical Support	E-Learning & Open Educational Resources Center. Email: elearning@zuj.edu.jo; Phone: +962 6 429 1511 ext. 425/362.			

Course learning outcomes *(K= Knowledge, S= Skills, C= Competencies)*

No.	Course Learning Outcomes	The Associated Program Learning Output Code
Knowledge **The student should be able to:**		
K1	Clarify the relation between human health and toxicology and classify the different areas in toxicology	**MK3**
K2	Recognize the most common routes of exposure to toxicants and identify the most commonly encountered toxidromes	**MK3**
K3	Describe the different types of toxicants (environmental, household/industrial, and medical) and explain their mechanism of toxicity	**MK3**
K4	Explain the general principles in managing poisoned patients	**MK3**
Skills **The student should be able to:**		
S1	Demonstrate an understanding of general toxicology principles and clinical management basis	**MS2**
S2	Apply the knowledge obtained from this course to evaluate exposure and solve problems associated with toxicants.	**MS2**
Competencies		
C1	Develop his/her professional and personal performance by continuously following-up lectures, submitting tasks on time, and staying up to date with the latest toxicants information.	**MC3**

Mechanisms for Direct Evaluation of Learning Outcomes

Type of Assessment / Learning Style	Fully Electronic Learning	Blended Learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
Midterm Exam	30%	**30%**	30%	0%
Participation / Practical Applications	0%	**0%**	20%	50%
Asynchronous Interactive	20%	**20%**	0%	0%

Activities				
Final Exam	50%	**50%**	50%	50%

Note 1: *Asynchronous interactive activities are activities, tasks, projects, assignments, research, studies, projects, and work within student groups ... etc, which the student carries out on his own, through the virtual platform without a direct encounter with the subject teacher.*

Note 2: *According to the Regulations of granting Master's degree at Al-Zaytoonah University of Jordan, 40% of final evaluation goes for the final exam, and 60% for the semester work (examinations, reports, research or any scientific activity assigned to the student).*

Schedule of Simultaneous / Face-to-Face Encounters and their Topics

Week	Subject	Learning Style*	Reference **
1	**Principles of Toxicology:** - Definitions: Toxicology, Poison, Toxic effects, Therapeutic dose, toxic dose, Threshold dose. - Fields of Toxicology - Characteristics of exposure. - Classification of toxic agents	Lecture	5-21 content on the e-learning platform
2	- Types of toxic effects. - Interaction of chemicals - Selective toxicity. **Mechanisms of toxicity:** - delivery of toxicants, - reaction with target organ - types of ultimate toxicants	Lecture.	5-21 21-49 content on the e-learning platform
3	- Toxication versus detoxication - mechanism of Cellular dysfunction -examples of different mechanisms of toxicity	Lecture	21-49 content on the e-learning platform
4	**Therapy:** - Clinical strategy for treatment of the poisoned Patient: Stabilization of the patient**,** Clinical evaluation (history, physical, laboratory, toxidrome) **-**Prevention of further toxin absorption	Lecture	461-475 content on the e-learning platform
5	-Enhancement of toxin elimination - extracorporeal procedures -Administration of antidote, Supportive care and clinical follow-up	Lecture	461-475 content on the e-learning platform
6	**Blood & cellular toxins:** -Toxicity of Cyanide: sources and	Lecture	163-177 content on the e-

	mechanism of toxic action		learning platform
7	-Toxicity of Cyanide: symptoms and treatment -Toxicity of Carbon Monoxide: sources and mechanism of toxic action, symptoms and treatment	Lecture	163-177 content on the e-learning platform
8	-Toxicity of hydrogen sulfide -Toxic Methemoglobinemia **Toxicity of Pesticides:** -Toxicity of Organochlorine insecticides	Lecture	163-177 333-347 content on the e-learning platform
9	-Toxicity of Organophosphates insecticides **Midterm Exam**	Lecture **Midterm Exam**	333-347 content on the e-learning platform
10	- Toxicity of pyrethrin insecticides - Toxicity of rodenticides, fungicides, and herbicides **Toxicity of Solvents:** - Ethanol toxicity	Lecture	333-347 361-373 content on the e-learning platform
11	- Methanol toxicity - Isopropanol toxicity - Ethylene Glycol toxicity	Lecture	361-373 content on the e-learning platform
12	**Salicylate toxicity:** - sources, mechanism of toxic action, symptoms, treatment	Lecture	475-485 content on the e-learning platform
13	**Acetaminophen toxicity:** sources, mechanism of toxic action, symptoms, treatment	Lecture	475-485 content on the e-learning platform
14	**Toxicity of metals:** Principles of metal chelation, chelating agents clinically used -Toxicity of Iron	Lecture	347-361 content on the e-learning platform
15	- Toxicity of Lead - Toxicity of Mercury	Lecture	347-361 content on the e-learning platform
16	**Final Exam**	**Final Exam**	

** Learning styles: Lecture, flipped learning, learning through projects, learning through problem solving, participatory learning ... etc.*

*** Reference: Pages in a book, database, recorded lecture, content on the e-learning platform, video, website ... etc.*

Schedule of Asynchronous Interactive Activities *(in the case of e-learning and blended learning)*

Week	Task / Activity	Reference	Expected Results
1	-----	-----	-----
2	Fields of Toxicology Types of toxic effects. Interaction of chemicals	5-21	Online quiz
3	Mechanism of toxicity	21-49	Online quiz
4	Toxidromes	461-475	Online Case study
5	General management procedures	461-475	Online quiz
6	Antidotes and diagnostic clues	461-475	Online quiz
7	Cyanide	163-177	Online quiz
8	Carbon monoxide & MetHb	163-177	Online quiz
9	Mid-term Exam	------	------
10	Mid-term Exam	-------	------
11	Pesticides	333-347	Online quiz
12	Solvents	361-373	Online quiz
13	Acetaminophen	475-485	Online Case study
14	Salicylates	475-485	Online Case study
15	Metals	347-361	Online Case study
16	Final Exam	------	--------