

Course Syllabus

1	Course title	Pharmaceutical Microbiology 2
2	Course number	1202441
3	Credit hours	2
	Contact hours (theory, practical)	2 (theory)
	Course Level/Hours according to Jordan National Qualifications Framework (JNQF) Standards	7 th / 80 hr
4	Prerequisites/corequisites	1202341 (Pharmaceutical Microbiology I)
5	Program title	BSc in Pharmacy and PharmD
6	Program code	N/A
7	Awarding institution	The University of Jordan
8	School	School of Pharmacy
9	Department	Pharmaceutics and Pharmaceutical Technology
10	Course level	Undergraduate
11	Year of study and semester (s)	2022/2023 – Summer Semester
12	Other department (s) involved in teaching the course	N/A
13	Main teaching language	English
14	Delivery method	<input checked="" type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online
15	Online platforms(s)	<input checked="" type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input type="checkbox"/> Zoom <input type="checkbox"/> Others.....
16	Issuing/Revision Date	9/7/2023

17 Course Coordinator:

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19 Course Description:

Identify the different levels of disinfection and types of biocides and their mode of action. Categorize the biocides based on their physiochemical characteristics, level of activity and applications. Know the advantages, disadvantages, mode of action of the biocides and the factors affecting their activity. Understand different methods used for the evaluation of antimicrobial efficacy and factors affecting it. Recognize the different sources of product contamination, risks associated with product



contamination, and methods to control the contamination. Introduce the most common sterilization methods, their advantages, disadvantages, applications and the commercially available sterile products. Design a sterilization method for a pharmaceutical product. Describe a sterile manufacturing plant and Good Manufacturing practice governing the manufacturing processes.

20 Course aims and outcomes:

A- Aims:

1. Provide the students with the basic information about disinfection, antisepsis and preservation processes and the chemical agents utilized in these processes.
2. Provide the students with the basic information about methods used to evaluate the activity of antimicrobial agents.
3. Provide the students with the basic information about the negative consequences of microbial contamination of pharmaceutical products and how to control it.
4. Provide the students with the basic information about the different sterilization methods and their utilization in the manufacturing of sterile pharmaceutical products.
5. Provide the students with the basic information about quality assurance, quality control, good manufacturing practice and controlled environment in the pharmaceutical industry with special focus on microbial quality.

B- Learning Outcomes (LOs):

Upon successful completion of this course, students will be able to:

Descriptors	CLO No.	CLOs	Program Competencies				
			Learner	Manufacturer	Communicator	Self-Aware	Professional
Knowledge	K1	Differentiate between disinfection, antisepsis, preservation and sterilization processes and recognize their importance in controlling microbial contamination and infection control.	✓				
	K2	Recognize the different classes of chemical biocides and identify their main characteristics, applications and mode of action.	✓				
	K3	Explain the different methods used to evaluate the activity of antimicrobial agents and analyze their results.	✓				
	K4	Recognize the negative consequences of microbial contamination of pharmaceutical products and demonstrate how to prevent them.	✓				
	K5	Explain the different sterilization methods and recommend the suitable method required in the manufacturing of each type of sterile products.	✓	✓			
Skills	S1	Perform the principles of quality assurance, quality control and good manufacturing practice to maintain high microbial quality of pharmaceutical products.	✓	✓			
	S2	Demonstrate effective presentation and communication skills to effectively convey scientific concepts and findings.			✓		
Competencies	C1	Establish a proactive approach to seek new knowledge and stay updated with the latest advancements in the field of pharmaceutical microbiology.				✓	
	C2	Demonstrate integrity, responsibility, and accountability by adhering to relevant regulations and ethical considerations.					✓



21. Topic Outline and Schedule:

Week	Lecture	Topic	CLO	Learning Method	Platform
1	1.1	Introduction	1	Face-to-Face	Classroom
	1.2	Chemical Disinfectants, Antiseptics and Preservatives	1,2	Face-to-Face	Classroom
	1.3	Chemical Disinfectants, Antiseptics and Preservatives	1,2	Face-to-Face	Classroom
	1.4	Chemical Disinfectants, Antiseptics and Preservatives	1,2	Face-to-Face	Classroom
2	2.1	Chemical Disinfectants, Antiseptics and Preservatives	1,2	Face-to-Face	Classroom
	2.2	Chemical Disinfectants, Antiseptics and Preservatives	1,2	Face-to-Face	Classroom
	2.3	Biocides' Mode of Action	1,2	Face-to-Face	Classroom
	2.4	Holiday	-	-	Classroom
3	3.1	Laboratory Evaluation of Antimicrobial Agents	3	Face-to-Face	Classroom
	3.2	Laboratory Evaluation of Antimicrobial Agents	3	Face-to-Face	Classroom
	3.3	Laboratory Evaluation of Antimicrobial Agents	3	Face-to-Face	Classroom
	3.4	Laboratory Evaluation of Antimicrobial Agents	3	Face-to-Face	Classroom
4	4.1	Laboratory Evaluation of Antimicrobial Agents	3	Face-to-Face	Classroom
	4.2	Microbial Spoilage, Infection Risk and Contamination Control	4,5	Face-to-Face	Classroom
	4.3	Microbial Spoilage, Infection Risk and Contamination Control	4,5	Face-to-Face	Classroom
	4.4	Mid Exam	1-3, 10	Face-to-Face	Classroom
5	5.1	Microbial Spoilage, Infection Risk and Contamination Control	4,5	Face-to-Face	Classroom
	5.2	Microbial Spoilage, Infection Risk and Contamination Control	4,5	Face-to-Face	Classroom
	5.3	Microbial Spoilage, Infection Risk and Contamination Control	4,5	Face-to-Face	Classroom
	5.4	Sterilization Procedures and Sterility Assurance	6	Face-to-Face	Classroom
6	6.1	Sterilization Procedures and Sterility Assurance	6	Face-to-Face	Classroom
	6.2	Sterilization Procedures and Sterility Assurance	6	Face-to-Face	Classroom
	6.3	Sterilization Procedures and Sterility Assurance	6	Face-to-Face	Classroom
	6.4	Sterilization Procedures and Sterility Assurance	6	Face-to-Face	Classroom
7	7.1	Sterile Pharmaceutical Products	7,9	Face-to-Face	Classroom
	7.2	Sterile Pharmaceutical Products	7,9	Face-to-Face	Classroom
	7.3	Principles of Good Manufacturing Practice	5,8	Face-to-Face	Classroom
	7.4	Principles of Good Manufacturing Practice	5,8	Face-to-Face	Classroom
8	8.1	Final Exam	1-7, 10	Face-to-Face	Classroom



22 Evaluation Methods:

Opportunities to demonstrate achievement of the CLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	CLOs	Period (Week)	Platform
Quiz 1	10	1	1,2	2	Moodle
Mid Exam	30	1-3	1-3, 10	4	Classroom
Quiz 2	10	4	4,5	6	Moodle
Final Exam	50	All topics	1-7, 10	8	Classroom

23 Course Requirements

Students should have access to a computer, internet connection and a webcam. Students should also have active accounts on Moodle (eLearning website) and MS Teams.

24 Course Policies:

- A- Attendance policies: as per university regulations.
- B- Absences from exams and submitting assignments on time: as per university regulations.
- C- Health and safety procedures: as per university regulations.
- D- Honesty policy regarding cheating, plagiarism, misbehavior: as per university regulations.
- E- Grading policy: as per relevant school bylaw
- F- Available university services that support achievement in the course: Moodle (eLearning website), MS Teams and library services.

25 References:

- A- Required book (textbook):
B.F. Gilmore and S.P. Denyer. *Hugo and Russell's Pharmaceutical Microbiology*. Wiley, 9th edition, 2023.

26 Additional information:

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Course Coordinator: Dr. Mahmoud Alkawareek	Signature: -----	Date: 9/7/2023
Head of Curriculum Committee/Department: -----	Signature: -----	
Head of Department: -----	Signature: -----	
Head of Curriculum Committee/Faculty: -----	Signature: -----	
Dean: -----	Signature: -----	