

Course Syllabus

1	Course title	Pharmaceutical Microbiology- Practical	
2	Course number	1202442	
3	Credit hours	1	
	Contact hours (theory, practical)	3 (practical)	
	Course Level/Hours according to Jordan National Qualifications Framework (JNQF) Standards	7 th / 60 hr	
4	Prerequisites/corequisites	1202441 (Pharmaceutical Microbiology II)	
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)	First semester of the 4 th year	
12	Other department (s) involved in teaching the course	N/A	
13	Main teaching language	English	
14	Delivery method	☒ Face to face learning ☒ Blended ☐ Fully online	
15	Online platforms(s)	☒ Moodle ☐ Microsoft Teams ☐ Skype ☐ Zoom ☐ Others.....	
16	Issuing/Revision Date	10/09/2023	

17 Course Coordinator:

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18 Other instructors:

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19 Course Description:

Develop the skills of working aseptically in the laboratory, mitigating biorisks, identifying microorganisms and measuring the efficacy and potency of different antimicrobial agents. Apply techniques and procedures to evaluate and monitor microbial quality of environment, sterile

pharmaceutical products and non-sterile pharmaceutical products. Recognize different sterilization procedures and their limitation.

20 Course aims and outcomes:



A- Aims:

1. To develop the skills to work safely in the laboratory to protect him/herself, the others and the environment
2. To develop the skills to work aseptically and under aseptic conditions
3. To develop the skills to identify microorganisms and their risk group classification
4. To develop the skills to measure and determine the efficacy and potency of different antimicrobial agents
5. To develop the skills to monitor microbiological quality of the environment, and of both sterile and non-sterile dosage forms.
6. To recognize different sterilization methods and the parameters related to them
7. To develop the skills of reporting experimental findings in a scientific way
8. To develop the skills to make verbal presentation to the experimental findings

B- Students Learning Outcomes (SLOs):

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

Disriptors	CLO No.	SLOs of the program (PLOs)	Learn er	Manufa cturer	Communi cator	Professi onal
		SLOs of the course (CLOs)				
Knowledge	K1	Recognize different microbiology techniques to identify and culture microorganisms, microorganism risk groups and antimicrobial activity assessment				
	K2	Recognize different microbiology tests used to evaluate antibiotics and biocides				
Skills	S1	Perform general safety procedures, aseptic techniques, and microbiology techniques used in pharmaceutical industry and medical laboratories				
	S2	Perform the appropriate microbial quality control tests for the environment and pharmaceutical products (sterile and non-sterile)				
	S3	State the results of experiments verbally and written in a professional way giving explanation for these results				
Competenci es	C1	Show integrity, responsibility and commitment by not cheating or committing plagiarism and by complying with tutor's instructions and relevant university regulations				

21. Topic Outline and Schedule:

Week	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
1	* Instructions for working safely in the laboratory * Aseptic techniques and subculturing of bacterial cultures	S1, K1 S1, K1	Online videos and experimental work in the lab	Moodle	Synchronous	Pre-Lab Quiz, Experimental Work/Report/ Exams	Lab manual+ moodle
2	* Quality assurance – microbial monitoring of environment * Streaking on MacConkey agar plate * Gram staining	K1, S1, S2, S3, C1	Online videos and experimental work in the lab	Moodle	Synchronous	Pre-Lab Quiz, Experimental Work/Report/ Exams	Lab manual+ moodle
3	* Qualitative methods used for the evaluation of bacteriostatic activity of different antimicrobial agents (Disc and strip method).	K2, S1, S3, C1	Online videos and experimental work in the lab	Moodle	Synchronous	Pre-Lab Quiz, Experimental Work/Report/ Exams	Lab manual+ moodle
4	* Determination of the minimal inhibitor concentration (MIC) of a bacteriostatic substance by agar diffusion and broth dilution method	K2, S1, S3, C1	Online videos and experimental work in the lab	Moodle	Synchronous	Pre-Lab Quiz, Experimental Work/Report/ Exams	Lab manual+ moodle
5	* Determination of the potency of an antibiotic	K2, S1, S3, C1	experimental work in the lab		Synchronous	Midterm exam	

	solution by the cup plate method						
6	* Capacity use dilution test (Kelsey-Sykes test)	K2, S1, S3, C1	Online videos and experimental work in the lab	Moodle	Synchronous	Pre-Lab Quiz, Experimental Work/Report/Exams	Lab manual+moodle
7	* Sterilization methods. (most online) *WHO pathogen risk groups * Biosafety cabinets *Laboratory biosafety levels	K1, S1, S2	Online videos and experimental work in the lab	Moodle	Synchronous	Pre-Lab Quiz, Experimental Work/Report/Exams	Lab manual+moodle
8	* Quality control tests: a) Sterility test b) LAL test c) Microbial count of nonsterile products.	S1, S2, S3, C1	Online videos and experimental work in the lab	Moodle	Synchronous	Pre-Lab Quiz, Experimental Work/Report/Exams	Lab manual+moodle
9	Data handling and interpretation associated with heat sterilization processes	S1, S2, C1	Online videos and experimental work in the lab	Moodle	Synchronous	Pre-Lab Quiz, Experimental Work/Report/Exams	Lab manual+moodle
10 and 11	Gram staining, Sterility test, MIC by broth dilution	K1, K2, S1, S2, C1	Final exam			Final exam	

22 Evaluation Methods:

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

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
Pre-lab quiz/Quiz	5	Each session	K1-K2	Starting 2 nd week till 9 th week	Moodle
Quiz	5	Lab 7	K1, C1	Week 7- 8	
Practical work evaluation	15	Each session	K1, K2, S1-S3	Each week	On campus
Reports	15	Each session	S3, C1	Each week	On campus
Presentation	5	presenting data of one session	S3	To be determined	On campus
Midterm exam	15	Determination of the potency of an antibiotic solution by the cup plate method	K1, K2, S1-S3	Week 5	On campus
Final exam	40	All topics	K1, K2, S1-S3, C1	Week 16	On campus

23 Course Requirements

Students should have a computer, internet connection, account on Moodle

24 Course Policies:

A- Attendance policies: As per the applicable University regulations

B- Absences from exams and submitting assignments on time: As per the applicable University regulations

C- Health and safety procedures: NA

D- Honesty policy regarding cheating, plagiarism, misbehavior: As per the applicable University regulations



E- Grading policy: As per the applicable school bylaw

F- Available university services that support achievement in the course: Microsoft Teams, Moodle

25 References:

A- Required book(s), assigned reading and audio-visuals:

- Pharmaceutical Microbiology Laboratory Manual, School of Pharmacy, The University of Jordan
- Assigned videos displayed on Moodle should be watched before each laboratory session.

B- Recommended books, materials, and media:

- Denyer, S. P., N. A. Hodges, S. P. Gorman, and B. F. Gilmore. Hugo and Russell's Pharmaceutical Microbiology. Wiley-Blackwell, UK; 8th Edition. (2011).

- Adam Fraise, Jean-Yves Maillard & Syed Sattar. Principles and Practice of Disinfection, Preservation & Sterilization. Wiley-Blackwell, UK; 5th Edition (2013)

- Michael J. Akers. Sterile Drug Products: Formulation, Packaging, Manufacturing and Quality. CRC Press; 1st Edition (2010)

- Richard Schwalbe, Lynn Steele-Moore & Avery C. Goodwin. Antimicrobial Susceptibility Testing Protocols. CRC Press; 1st edition (2007)

26 Additional information:

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Name of Course Coordinator: Randa Haddadin ----	Signature: -----	Date: 13/09/2023
Head of Curriculum Committee/Department: -----	Signature: -----	
Head of Department: -----	Signature: -----	
Head of Curriculum Committee/Faculty: -----	Signature: -----	
Dean: -----	Signature: -----	