

## Course Syllabus

1	Course title	Selected Topics in Pharmaceutical Microbiology	
2	Course number	1202541	
3	Credit hours	2	
	Contact hours (theory, practical)	2 (theory)	
	Course Level/Hours according to Jordan National Qualifications Framework (JNQF) Standards	7 <sup>th</sup> / 80 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)	2022/2023 – Summer Semester	
12	Other department (s) involved in teaching the course	N/A	
13	Main teaching language	English	
14	Delivery method	<input type="checkbox"/> Face to face learning <input checked="" 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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### 18 Other instructors:

Name: Dr. Mahmoud Alkawareek	Phone number: +962-6-5355000 (Ext. 23342)
Office number: 237	Email: <a href="mailto:m.alkawareek@ju.edu.jo">m.alkawareek@ju.edu.jo</a>

### 19 Course Description:

In this course students will learn, in more details, the mechanisms of resistance to antimicrobials, whether inherent or acquired & how to limit it. In addition, the students will study specific form of microbial resistance, the microbial biofilms. On the other hand, students will learn the use of microorganisms in pharmaceutical industry for the production of antibiotics, vaccines, immunological products & many other products. Also the students will be introduced to diagnostic

tests & assays in which microorganisms or their products are major constituent in them.

## 20 Course aims and outcomes:

### A- Aims:

1. Explore the mechanisms, prevalence, and control strategies for antimicrobial resistance.
2. Examine the role of microbial biofilms in health, disease, and their resistance to antimicrobials.
3. Familiarize students with manufacturing and quality of antibiotics and immunological products.
4. Introduce students to recombinant DNA technology and its pharmaceutical applications.
5. Investigate the contributions of microorganisms and their products to diagnosis, treatment, and prevention of human diseases.
6. Explore alternative non-antibiotic antimicrobial strategies for combating microbial infections.

### B- Learning Outcomes (LOs):

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

Descriptors	CLO No.	CLOs	Program Competencies			
			Learner	Communicator	Self-Aware	Professional
Knowledge	K1	Recognize the global issue of antimicrobial resistance and its implications for healthcare and society, and explain the mechanisms underlying antimicrobial resistance.	✓			
	K2	Recognize the clinical significance of biofilm mode of growth and its impact on infectious diseases.	✓			
	K3	Identify novel antimicrobial strategies that can serve as alternatives to conventional antibiotics.	✓			
	K4	Investigate the applications of microorganisms and their products in the manufacturing of various pharmaceutical products.	✓			
	K5	Differentiate between various types of immunological products and recognize their key characteristics and applications.	✓			
	K6	Explain the principles of recombinant DNA technology and recognize its pharmaceutical applications.	✓			
	K7	Recognize and assess the advanced diagnostic techniques used for the detection and diagnosis of infectious diseases.	✓			
Skills	S1	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	Show 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	Antimicrobial Therapy - Revision	1	Face-to-Face	Classroom
	1.3	Antimicrobial Therapy - Revision	1	Face-to-Face	Classroom
	1.4	Antimicrobial Resistance - Introduction	1,2	Face-to-Face	Classroom
2	2.1	Antimicrobial Resistance - Introduction	1,2	Face-to-Face	Classroom
	2.2	Resistance to Beta Lactams	2,3	Face-to-Face	Classroom
	2.3	Resistance to Beta Lactams	2,3	Asynchronous	Moodle
	2.4	Holiday	-	-	-
3	3.1	Resistance to Aminoglycosides and Tetracyclines	2,3	Face-to-Face	Classroom
	3.2	Resistance to Aminoglycosides and Tetracyclines	2,3	Face-to-Face	Classroom
	3.3	Resistance to Fluoroquinolones and MLS Antibiotics	2,3	Asynchronous	Moodle
	3.4	Resistance to Fluoroquinolones and MLS Antibiotics	2,3	Asynchronous	Moodle
4	4.1	Biofilms	4	Face-to-Face	Classroom
	4.2	Alternative Antimicrobial Strategies	5	Face-to-Face	Classroom
	4.3	Alternative Antimicrobial Strategies	5	Asynchronous	Moodle
	4.4	Mid Exam	1-5,12	Face-to-Face	Classroom
5	5.1	Immunological Products	6,7	Face-to-Face	Classroom
	5.2	Immunological Products	6,7	Face-to-Face	Classroom
	5.3	Research Project - Literature Search	10	Asynchronous	Moodle
	5.4	Research Project - Literature Search	10	Asynchronous	Moodle
6	6.1	Recombinant DNA Technology	8	Face-to-Face	Classroom
	6.2	Recombinant DNA Technology	8	Face-to-Face	Classroom
	6.3	Research Project - Report Writing	11,12	Asynchronous	Moodle
	6.4	Research Project - Report Writing	11,12	Asynchronous	Moodle
7	7.1	Advanced Diagnostic Techniques	9	Face-to-Face	Classroom
	7.2	Advanced Diagnostic Techniques	9	Face-to-Face	Classroom
	7.3	Research Project - Presentation	11,12	Asynchronous	Moodle
	7.4	Research Project - Presentation	11,12	Asynchronous	Moodle
8	8.1	Final Exam	1-9, 12	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	10	1-2	1,2	2	Moodle
Mid Exam	30	1-5	1-5,12	4	Classroom
Research Project	20	-	10-12	5-7	Moodle
Final Exam	40	All topics	1-9, 12	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, 9<sup>th</sup> 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: -----	