



كلية الصيدلة جامعة الزيتونة الأردنية  
Faculty of Pharmacy  
Al-Zaytoonah University of Jordan

" نحو تعليم صيدلاني متميز "  
Toward Excellence in Pharmaceutical  
Education

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"Tradition and Quality"

Detailed Course Description - Course Plan Development and Updating Procedures/ Pharmacy Department	QF02/0408-3.0E
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Faculty	Pharmacy	Department	Pharmacy
Course number	0201332	Course title	Pharmaceutical Microbiology Lab
Number of credit hours	1	Pre-requisite/co-requisite	Pharmaceutical microbiology 1 (0201236)

### Brief course description

Pharmaceutical microbiology laboratory provides the basic knowledge and practice about sources of microbial contamination, aseptic techniques, isolation of bacteria, identification of bacteria, and antimicrobial susceptibility testing.

Course goals and learning outcomes	
<b>Goal 1</b>	Provide the students with the basic information about laboratory safety rules.
Learning outcomes	1.1. Know principles of antiseptic techniques 1.2. Introduce students to into principles of methods of sterilization. 1.3. Identify the different sources of microbial contamination.
<b>Goal 2</b>	Provide the students with the basic principles of microscopy, staining and culturing of bacteria and fungi.
Learning outcomes	2.1. Isolate and identify microorganisms using microscopy. 2.2. Grow bacterial culture on solid and liquid media, and know the commonly used media and the different nutritional requirements supplied by them, and the differences between selective, enrichment and differential media and their uses. 2.3. To get introduced to the common types of microbial stains, and the functions and results of each steps in the Gram staining procedure.
<b>Goal 3</b>	Introduce the students for the methods used for the evaluation of antimicrobial efficacy.
Learning outcomes	3.1. Know the different in vitro tests used to evaluate the efficacy, the potency and the capacity of different biocides. 3.2. Interpret the results of the different tests used to evaluate the antimicrobial efficacy.
<b>Textbook</b>	1. Cappuccino, J.G. and Sherman, N. (2005) "Microbiology- A Laboratory Manual" 7 <sup>th</sup> ed. Pearson Education, Inc., Publishing as Benjamin Cumming, San Francisco, CA 94111, USA.
<b>Supplementary references</b>	1. Primrose S.B. and Wardlaw A.C. (2004) Sourcebook of Experiments for the Teaching of Microbiology 5th ed., Academic Press, London.

### Course timeline

Week	Number of hours	Course topics	Pages (textbook)	Notes
1	1	) Laboratory safety and laboratory protocol ) Aseptic techniques and subculturing of bacterial cultures	1-3	
	1			
	1			
2	1	) Sources of microbial contamination (air, water, respiratory tract, hair, throat, hands,	4-5	
	1			



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	1	dust)		
3	1	) Techniques for isolation of pure cultures	6-10	
	1	) Cultural characteristics of microorganisms		
	1			
4	1	) Microscopy	11-16	
	1	) Preparation of bacterial smears		
	1	) Simple staining		
5	1	) Differential staining of bacterial cell structure	17-23	
	1	) Gram stain		
	1	) Acid-fast staining		
	1	) Spore and capsule stain		
6	1	) Media for routine cultivation of bacteria	43-46	
	1	) Differential and selective media (MacConkey agar, Mannitol-salt agar, EMB Agar)		
	1	) Enrichment media (Blood agar, types of hemolysis, alpha, beta, and gamma)		
7	1	) Disinfectants and antiseptics	30-31	
	1	) Agar plate-sensitivity method		
8	1	) Chemotherapeutic agents	24-26	
	1	) The Kirby-Bauer antibiotic susceptibility test procedure		
	1			
9	1	) Determination of minimal inhibitory concentration (MIC) by broth dilution method	27-29	
	1			
	1			
10	1	) Determination of minimal bactericidal concentration (MBC) by agar method	30-31	
	1			
	1			
11	1	) Phenol coefficient	32-33	
	1	) Evaluation of antiseptic and disinfectant activity		
	1			
12	1	) The fungi	34-38	
	1	) Cultural characteristics of yeasts and molds		
	1	) Slide preparation by Scotch tape method		
	1	) Lactophenol cotton blue staining procedure ) <i>Penicillium</i> , <i>Aspergillus</i> , and <i>Candida</i>		
13	1	) Parasitic protozoa	39-42	
	1	) Intestinal , luminal, blood and tissue protozoa		
14	1	) The efficiency of methods of sterilization	47-50	
	1			



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1	1	) Effect of moist heat (autoclaving)		
		) Effect of ultraviolet light		

<b>Theoretical course evaluation methods and weight</b>	First exam 25% Second exam 25% Final exam 50%	<b>Practical (clinical) course evaluation methods</b>	Semester students' work = 50% (Reports, research, quizzes, etc.) Final exam = 50%
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<b>Approved by head of department</b>		<b>Date of approval</b>	
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Extra information (to be updated every semester by corresponding faculty member)

<b>Name of teacher</b>	Dr. Mohammad Abu Sini	<b>Office Number</b>	406
<b>Phone number (extension)</b>	454	<b>Email</b>	<a href="mailto:mohammad.abusini@zuj.edu.jo">mohammad.abusini@zuj.edu.jo</a>