

Course Detailed Description – Procedures of the Course Plan Committee /Faculty of Pharmacy	QF02/0408–2.1E
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Department	Pharmacy
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<b>Course Name</b>	<b>Pharmaceutical Microbiology</b>	<b>Course No.</b>	<b>201331</b>
Prerequisite	Biology	Credit Hours	3
Number & date of course plan approval	2016/2017	Brief Description	See form QF02/0409

<b>Course Objective</b>	The students should learn the basic information about all types of microorganisms, their basic structure and mode of growth, medical and pharmaceutical importance.
<b>Intended Learning Outcomes</b>	<p>The course is intended to provide the student with:</p> <ol style="list-style-type: none"> <li>1. The basic information about microorganisms, their basic structure and mode of growth</li> <li>2. Some microorganisms that have medical, pharmaceutical and environmental importance.</li> <li>3. The basic information about the different types of antimicrobial therapy, their prudent use and their mode of action</li> <li>4. The concept of sterilization, disinfection, antisepsis and preservation.</li> <li>5. The different chemical and physical methods used to control microbial contamination.</li> <li>6. The methods used for the evaluation of antimicrobial efficacy and factors affecting it.</li> <li>7. Different applications of microorganisms in pharmaceutical sciences.</li> </ol>
<b>Course Topics</b>	<ol style="list-style-type: none"> <li>1. Fundamentals of microorganisms that include bacteria, fungi, protozoa and viruses and the principles of microbial pathogenicity</li> <li>2. Antimicrobial agents and microbial resistance.</li> <li>3. Microbiological aspects of pharmaceutical processing.</li> </ol>
<b>Text Books</b>	Hugo, W.B and Russell, A.D.(2011); Pharmaceutical Microbiology, 7th ed. Blackwell Science, UK

<b>References</b>	1. Winfield, A.J. and Richards, R.M.E. ed. (2007) Pharmaceutical practice 3rd. ed. Churchill Livingstone, U.K. 2. Black, J.G.(2002); Microbiology, Principles and explorations. 5th ed. John Wiley Publication, USA 4. Prescott, L.M., Harley, J.P., and Klein, D.A.(2002); Microbiology, 5th ed. McGraw Hill, USA			
<b>Grade Determination</b>	1 <sup>st</sup> Exam = 25% 2 <sup>nd</sup> Exam = 25% Final Exam = 50%	Practical Course Grade Determination	Course Work = 50% (Reports, Term Papers, Quizes) Final Exam = 50%	
<b>Course Outline</b>				
<b>Week</b>	<b>Hours</b>	<b>Subjects</b>	<b>Chapters in Textbook</b>	<b>Notes</b>
1	1 1 1	Bacteria, structure and forms of bacterial cell. Bacterial reproduction, bacterial growth. Properties of pathogenic bacterial species.	Chapter 3	
2	1 1 1	Properties of fungi, detection methods. Pathogenic fungi <i>C. albicans</i> , <i>Cryptococcus neoformans</i> and <i>Aspergillus fumigatus</i> . Antifungal agents and fungal resistance.	Chapter 4	
3	1 1 1	Viruses: general properties, structure, Multiplication of human viruses. Problems of viral chemotherapy, tumor viruses and HIV	Chapter 5	
4	1 1 1	Protozoa: Blood and tissue parasites Intestinal parasites. Control of protozoan parasites and their drug resistance.	Chapter 6	
5	1 1 1	Principles of microbial pathogenicity. Portals of entry, manifestation of disease. Damage to tissues, exit of microorganisms	Chapter 7	
6	1 1 1	Antibiotics and agents and their mechanism of action. synthetic antimicrobial agents and their mechanism of action Bacterial resistance to antibiotics	Chapter 10,12  Chapter 13	
7	1 1 1	Clinical uses of antimicrobial drugs: Principles of use, Clinical uses and antibiotic policies	Chapter 14	
8	1 1 1	Chemical disinfectants, antiseptics and preservatives. Factors affecting choice of antimicrobial agent, Types of compounds and disinfection policies	Chapter 17	

9	1 1 1	Microbial spoilage of pharmaceutical products Preservation of medicines using antimicrobial agents. Quality assurance and the control of microbial risk in medicines	Chapter 16	
10	1 1 1	Contamination of non-sterile pharmaceuticals in hospital and community environments: significance of microbial contamination, source of contamination, factors determining the Outcome of a medicament-borne infection, prevention of contamination	Chapter 21	
11	1 1 1	Principles and practice of sterilization: Sensitivity of microorganisms, sterilization methods, heat, gaseous, Radiation and filtration sterilization	Chapter 12 Ref. No. 1	Notes
12	1 1 1	Sterile pharmaceutical products: injections, non-injectable sterile fluids, Ophthalmic preparations, dressings, Implants and absorbable haematostats	Chapter 19	
13	1 1 1	Sterilization control and sterility assurance: Bioburden determinations, Environmental monitoring, sterility testing	Chapter 20	
14	1 1 1	Sterility testing: Sterility test conditions, growth promotion test, Validation test,	Chapter 14 Ref. No.1	
15	1 1 1	Sterility testing: Methods for testing the sterility of the products Pyrogens: nature of endotoxins, depyrogenation	Chapter 14 Ref. No.1	
16	1	Manufacture of antibiotics: production of benzypenicillin, Production of cephalosporin	Chapter 22	

Approved by Dept. Chair		Date of Approval	
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**Extra Information:** (Updated every semester and filled by course instructor)

Course Instructor	Dr. Muhannad I. Massadeh
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