Detailed Course Description - Course Plan Development and Updating Procedures/ Pharmacy Department	QF02/0408-3.0E

Faculty	Pharmacy	Department	Pharmacy
Course number	**0201236**	Course title	**Pharmaceutical Microbiology 1**
Number of credit hours	2	Pre-requisite/co-requisite	Physiology 1

Brief course description
This course covers the basic information of microorganisms, their basic structure and mode of growth. Medical, pharmaceutical and environmental importance of some microorganisms. Anti-microbial chemotherapy: mode of action and prudent use.

	Course goals and learning outcomes
Goal 1	Provide the students with the basic information about microorganisms, their basic structure and mode of growth
Learning outcomes	**Upon successful completion of this course students will be able to:** 1.1. Know the general characteristics of prokaryotic and eukaryotic cells and how prokaryotic cells differ in size, shape and arrangements. 1.2. Know the structure and function of different components of the bacteria, fungi and virus. 1.3. Know the definition of bacterial growth, the different phases of bacterial growth and how it is measured and also the different physical factors that affect of bacterial culture growth.
Goal 2	Introduce some microorganisms that have medical, pharmaceutical and environmental importance.
Learning outcomes	2.1. Identify the different types of microorganisms 2.2. Know how viruses cause latent infection, teratogenic effect and cancer 2.3. Know what are fungi and their importance, also what is a parasite and what are the principles of parasitology.
Goal 3	Provide the students with the basic information about the different types of antimicrobial therapy, their prudent use and their mode of action
Learning outcomes	3.1. Know the meaning of chemotherapy, antibiotics, selective toxicity and spectrum of activity in the context of antimicrobial agents. 3.2. Know the properties, uses, side effects, and mode of action of antibacterial, antifungal, antiviral and antiprotozoal agents. 3.3. Know the meaning, causes and the proper way to control microbial resistance towards antimicrobial agents.
Textbook	1.- Hugo, W.B and Russell, A.D.(2011); Pharmaceutical Microbiology, 8th ed. Blackwell Science, UK
Supplementary references	1.- Prescott, L.M., Harley, J.P., and Klein, D.A.(2008); Microbiology, 7th ed. McGraw Hill, USA 2. - Black, J.G. (2015); Microbiology, Principles and explorations. 9th ed. John Wiley Publication, USA. (Latest edition).

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Course timeline				
Week	**Number of hours**	**Course topics**	**Pages (textbook)**	**Notes**
1	**1** **1**	Introduction to pharmaceutical microbiology Fundamental features of microbiology	**3-8** **9-23**	
2	**1** **1**	Bacteria, structure and forms of bacterial cell. Bacterial reproduction.	**24-32**	
3	**1** **1**	Bacterial growth. Environmental factors that influence growth and survival. Properties of pathogenic bacterial species.	**32-43**	
4	**1** **1**	Properties of fungi, structure of fungal cell. Antifungal therapy and fungal resistance. Medically important fungal pathogens of humans' like: *C. albicans*, *Cryptococcus neoformans* and *Aspergillus fumigatus*.	**44-58**	
5	**1** **1**	Protozoa: parasitism, Habitat. Blood and Tissue parasites.	**84-90**	
6	**1** **1**	Intestinal parasites. Control of protozoan parasites and their drug resistance	**92-105**	
7	**1** **1**	General structures of viruses. Multiplication of human viruses.	**59-65** **68-70**	
8	**1** **1**	Virus-host cell interaction; HIV, tumor viruses. Control of viruses: antiviral chemotherapy, vaccination	**66-67** **72-78**	
9	**1** **1**	Principles of microbial pathogenicity. The human microbiome, portals of entry. Consolidation. Manifestation of disease.	**109-113** **113-117**	
10	**1** **1**	Damage to tissues. Recovery from infection: exit of microorganisms. Microbial Biofilms. Tolerance of biofilms to antimicrobials	**117-120** **121-124**	
11	**1** **1**	Mechanisms of biofilm tolerance. Treatment of chronic biofilm infection. Mechanisms of action of antibiotics and synthetic anti-infective agents. The microbial cell wall.	**124-129** **201-206**	
12	**1** **1**	Protein synthesis. Chromosome function and replication. Folate antagonists. The cytoplasmic membrane	**206-212** **213-216**	
13	**1** **1**	Bacterial resistance to antibiotics: origin of resistance. Mechanisms of resistance	**217-218** **218**	

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14	**1** **1**	Resistance to β-lactam antibiotics, aminoglycosides, tetracycline and chloramphenicol. Multiple drug resistance	**218-225** **226-227**	
15	**1** **1**	Clinical uses of antimicrobial drugs: principles of use of antimicrobial drugs Clinical uses: respiratory tract infections	**230-237** **237-239**	
16	**1** **1**	Urinary tract infections. Gastrointestinal infections. Antibiotic policies	**239-245** **245-247**	

Theoretical course evaluation methods and weight	First exam 25% Second exam 25% Final exam 50%	**Practical (clinical) course evaluation methods**	Semester students' work = 50% (Reports, research, quizzes, etc.) Final exam = 50%

Approved by head of department		**Date of approval**	

Extra information (to be updated every semester by corresponding faculty member)

Name of teacher	Dr. Mohammad K. Abu Sini	Office Number	406
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Office hours			