



Jerash University
Faculty of Pharmacy

Pharmaceutical Sciences and Pharmaceutics

(Course Syllabus)

<i>Subject Name</i>	<i>Credit Hours</i>	<i>Course No.</i>	<i>Prerequisite</i>	<i>Concurrent course</i>
Pharmaceutical Microbiology Lab	1	1101334	1101333	Lab

<i>Coordinator Name</i>	<i>Lecturer/s</i>	<i>Room No.</i>	<i>E-mail</i>	<i>Office Hours</i>	<i>Lecture time</i>
Dr. Haitham Tumah	Dr. Haitham Tumah	403	haithamtumah@yahoo.com	Check the schedule	M+W 08:00-09:30

Course Objectives:

1. Provide the students with the basic laboratory technique and safety precautions
2. Provide the students with the basic informations , types and parts of microscopes
3. Provide the students with the basic information about microorganisms, their basic structure and mode of growth by using different staining techniques.
4. Introduce some microorganisms that have medical, pharmaceutical and environmental importance.
- 5- Provide the students with classes of antibiotics and their mechanism and site of action.
6. Provide the students with quality control and sterility assurance in pharmaceutical industries.

Course Description:

The student is introduced to the diversity of microorganisms identified and classified by using different staining techniques. Observing the bacterial motility through hanging drop technique and agar motility. Obtaining pure culture by applying different techniques. Students will examine different physical and chemical agents used to control the microbial growth.

Intended Learning Outcomes :

Successful completion of this course should lead to the following learning outcomes:

- 1- Define the types , parts and the uses of microscopes.
- 2- Prepare microbiological smears and perform different staining procedures
- 3- Differentiate between gram positive and gram negative bacteria.

- 4- Familiar with the most physical and chemical methods used to control the microbial growth
- 5- Evaluation the effectiveness of different antimicrobial agents against different microorganisms.
- 6- Assure the sterility test for pharmaceutical drug preservatives and diluents

Course Content: (SW: student work)

Week	Topics	Topic Details	Reference (chapter)	Assessment
<u>1</u>	Introduction,& Microscopy	<ul style="list-style-type: none"> ➤ Safety precautions ➤ Basic lab technique , instruments tools and culture media ➤ Parts , use and care of microscopes (SW) 		
<u>2</u>	Staining (1)	<ul style="list-style-type: none"> ➤ Simple stain, (SW) 		(Quiz 1)
<u>3</u>	Staining (2)	<ul style="list-style-type: none"> ➤ Differential stain (Gram stain) (SW) 		(Quiz 2)
<u>4</u>	1. Staining (3) 2. Culturing Bacteria	<ul style="list-style-type: none"> ➤ Structural stain; endospore (SW) ➤ Streak plate (SW) ➤ pour plate (Dem) ➤ Broth culture (SW) 		
<u>5</u>	Growth factors: physical and chemical agents	<ul style="list-style-type: none"> ➤ Physical agents (TEMP, PH, SALTS) (SW) ➤ Chemical agent (copper, zinc, aluminum, lead, and silver) (SW) 		
<u>6</u>	Qualitative analysis of Water	<ul style="list-style-type: none"> ➤ Microbiology of water (coli form bacteria, Most probable numbers) (SW) ➤ Disinfecting of drinking water (Dem) 		(Quiz 3)
<u>7</u>	Test for germicidal efficiency: MIC	<ul style="list-style-type: none"> ➤ Phenol Coefficient ➤ Agar wells method ➤ The use of dilution test 		
<u>8</u>	Test for germicidal efficiency: MBC	<ul style="list-style-type: none"> ➤ Determination of minimal concentration that inhibit bacterial growth (MIC), ➤ Determination of minimal concentration that kill bacteria (MIC), 		(Quiz 4)
<u>9</u>	Chemotherapeutic agents:	<ul style="list-style-type: none"> ➤ The Kirby Bauer test/ Disc diffusion method (Antibiotic) 		
<u>10</u>	Sterilization control and sterility assurance	<ul style="list-style-type: none"> ➤ Sterility test of ampoules ➤ Sterility test of oily preparation 		
<u>11</u>	Virtual Pharmacy	Visit the Virtual Pharmacy		
<u>12</u>	Final Exam	Part A: Theoretical Part B: Practical		

Assessment	Grade	Date
Technique evaluation	10%	
Attendance /Results	10%	
Assignment (Reports, Quizzes, Homework)	30 %	
Final exam	50%	One week before Theoretical final exams

Text Book	Manual of Microbiology
Other - References	An introduction of Microbiology ,Tortora 12th edition

Grade Distribution:

Last update on 26/9/ 2016 by Dr. Mahmoud Al-Shawabkah