Philadelphia University	PHILADELPHIA UNIVERSITY THE WAY TO THE FUTURE	**Approved Date: 17/10/2021**
Faculty: Pharmacy		**Issue:1**
Department:		**Credit Hours:2**
Academic Year:2021/2022	**Course Syllabus**	**Bachler: Pharmacy**

Course Information

Course No.	Course Title	Prerequisite
0520325	Pharmaceutical Microbiology	Microbiology & Immunology 0520301

Course Type	Class Time	Room No.
☐ Univirsity Requirement ☐ Fuclty Requirement ☐ Major Requirement ☐ Elective ■Compulsory	Sund, Tues 9:45-10:35 12:45-13:35 Mon., Wed 9:45-10:35	 5614 5508 5613

Instructure Information

Name	Office No.	Phone No.	Office Hours	E-mail
Dr. Nabil Nimer	5325	+9622637444 Ext.240	Mon, Wed: 10:40-12:40 Sund, Tues 13:40-14:40	n_nimer@philadelphia.edu.jo

Course Delivery Method

☐ Blended	☐ Online	■Physical
Learning Model		
Percentage	**Synchronous**	**Asynchronous**	**Physical**
		100%

Course Description

The course covers the anatomy and physiology of some microorganisms likely to be of importance to the applied field of pharmacy, the principles of microbial Pathogenicity and epidemiology, nosocomial infection, emerging infections, factors affecting growth, control of microbial growth, recombinant DNA technology is also considered. There is a special emphasis on the microbial aspects of pharmaceutical processing, sterilization control and sterility assurance, sterile pharmaceutical products. In addition a full details concentrating on antimicrobial agents (types and mode of action of antibiotics and synthetic antimicrobial agents), clinical uses of antimicrobial drugs, bacterial resistance to antibiotics, chemical disinfectants, antiseptics and preservatives.

Course Learning Outcomes

Number	Outcome	Corresponding Program Outcomes	Corresponding Competencies
Knowledge			
K1	Acquaint students with Microbiology which has a special bearing on pharmacy in all its aspects	K_p1, K_p3	C1
K2	Understand of microbiological aspects of Good Manufacturing Practices.	K_p1, K_p3	C1,C6
K3	Grasp the pathogenicity aspects of Microorganisms	K_p1, K_p3	C1,C2
K4	Understand the principles of important epidemiological principles	K_p1, K_p3	C1,C2
K5	Understand the mechanism of antibiotic action and the development of Antibiotic Resistance Bacterial Strains	K_p1, K_p3	C1, C6
Skills			
S1	Be able to grasp the necessity of developing newer chemotherapeutics and limiting the development of antibiotic resistance	S_p2, S_p4	C6
S2	**D**emonstrate ability to practice good manufacturing practices regarding microbiological aspects of pharmaceutical industry	S_p2, S_p3	C6
S3	Demonstrate ability to represent data and prepare reports in a clear systematic way	S_p2	C12

Learning Resources

Course Textbook	Pharmaceutical Microbiology, W.B. Hugo & A.D. Russell, Publisher: Blackwell Science; 8th edition 2011
Supporting References	1.Microbiology an introduction 0-321-39602-2Tortora, G.J, Fumke, B.R. Case, C.L.Pearson Benjamin Cummings, 2007 2.Prescott, Harley and Kleins microbiology 978-007-126727-4 Joanne M. Wiley, Linda M. Sherwood, Christopher J. Woolverton McGrow Hill, 2008 3.Microbiology an introduction 0-321-39602-2 Tortora, G.J, Fumke, B.R. Case, C.L. 4.Microbiology an introduction 0-321-39602-2 Tortora, G.J, Fumke, B.R. Case, C.L. Pearson Benjamin Cummings, 2007
Supporting Websites	Med Line
Teaching Environment	■**Classroom** ☐ **laboratory** ☐ **Learning Platform** ☐ **Other**

Meetings and Subjects Time Table

Week	Topic	Learning Method*	Task	Learning Material
1	**Introduction to Pharmaceutical Microbiology**	Lecture		**Vision & Mission of Faculty of Pharmacy Course Syllabus**
2	**Biology of microorganisms review (bacteria, viruses, yeast & molds)**	**Lecture**		**Text Book Part 1 (1-6)**
3	**Recombinant DNA technology**	**Lecture**		**Text book Part 5 (25), Microbiology an introduction (Chapter 9)**
4	**Epidemiology**	**Lecture**		**Text book Part 2**
5	**Principles of pathogenecity**	**Lecture**		**Text book Part 2**
6	**Control of microbial growth**	**Lecture**		**Text book Part 4 (18-20)**
7	**Antimicrobial agents, chemotherapy & chemotherapeutic, types of antibiotics & synthetic antimicrobial agents and their mechanisms of actions**	**Lecture**		**Text book Part 3 (11, 12, 14)**
8	**Factors which affect choice of antimicrobial agents**	**Lecture**		**Text book Part 3 (15, 16)**
9	**Chemical disinfectants, antiseptics and preservatives**	**Lecture**		**Text book Part 4 (19,20)**
10	**Dynamics of disinfection**	**Lecture**		**Text book Part 4 (17-21)**
11	**Preservatives**	**Lecture**		**Text book Part 4 (19)**
12	**Microbial spoilage and preservation of pharmaceutical products**	**Lecture**		**Text book Part4 (19) + Part 5 (22-24)**
13	**Sterilization control and sterility testing**	**Lecture**		**Text book Part 5 (22-24)**
14	**Clinical uses of antimicrobial drugs**	**Lecture**		**Text book Part3 (14-16)**
15	**Bacterial resistance to antibiotics**	**Lecture**		**Text book Part 3 (13)**
16	**Final Exam**			

*Includes: lecture, flipped Class, project based learning, problem solving based learning, collaboration learning.

Course Contributing to Learner Skill Development

Using Technology
Using power point and relevant softwares for preparing presentations. Using websites regarding epidemiological studies ans animations

Communication Skills
Writing reports regarding assignmnets Oral presentations
Application of Concept Learnt
Knowledge of latest terms and findings in dealing with epidemiological cases in practice and hospitals

Assessment Methods and Grade Distribution

Assessment Methods	Grade	Assessment Time (Week No.)	Course Outcomes to be Assessed
Mid Term Exam	**% 30**	**11th week**	**K1, K2, K3 S1, S2**
Term Works*	**% 30**	**Continious**	**S1, S2, S3**
Final Exam	**% 40**	**16th week**	**K1-K5 S1-S3**
Total	**%100**		

* Include: quizzes, in-class and out of class assignment, presentations, reports, videotaped assignment, group or individual project.

Alignment of Course Outcomes with Learning and Assessment Methods

Number	Learning Outcomes	Learning Method*	Assessment Method**
Knowledge			
K1	Acquaint students with Microbiology which has a special bearing on pharmacy in all its aspects	Lecture	**Subjective Quiz Exam Objective questions**
K2	Understand of microbiological aspects of Good Manufacturing Practices.	Lecture	**Exam Objective questions**
K3	Grasp the pathogenicity aspects of Microorganisms	Lecture	**Exam Objective questions**
K4	Understand the principles of important epidemiological principles	Lecture Assignment	**Exam Objective questions**
K5	Understand the mechanism of antibiotic action and the development of Antibiotic Resistance Bacterial Strains	Lecture	**Subjective Quiz Exam Objective questions**

Skills			
S1	Be able to grasp the necessity of developing newer chemotherapeutics and limiting the development of antibiotic resistance	Lecture	**Exam Objective questions**
S2	**D**emonstrate ability to practice good manufacturing practices regarding microbiological aspects of pharmaceutical industry	Lecture	**Subjective Quiz Exam Objective questions**
S3	Demonstrate ability to represent data and prepare reports in a clear systematic way	Lecture	**Exam Objective questions**

*Include: lecture, flipped class, project based learning, problem solving based learning, collaboration learning.
** Include: quizzes, in-class and out of class assignments, presentations, reports, videotaped assignments, group or individual projects.

Course Polices

Policy	Policy Requirements
Passing Grade	The minimum pass for the course is (50%) and the minimum final mark is (35%).
Missing Exams	• Anyone absent from a declared semester exam without a sick or compulsive excuse accepted by the dean of the college that proposes the course, a zero mark shall be placed on that exam and calculated in his final mark. • Anyone absent from a declared semester exam with a sick or compulsive excuse accepted by the dean of the college that proposes the course must submit proof of his excuse within a week from the date of the excuse's disappearance, and in this case, the subject teacher must hold a compensation exam for the student. • Anyone absent from a final exam with a sick excuse or a compulsive excuse accepted by the dean of the college that proposes the material must submit proof of his excuse within three days from the date of holding that exam.
Attendance	The student is not allowed to be absent more than (15%) of the total hours prescribed for the course, which equates to six lecture days (n t) and seven lectures (days). If the student misses more than (15%) of the total hours prescribed for the course without a satisfactory or compulsive excuse accepted by the dean of the faculty, he is prohibited from taking the final exam and his result in that subject is considered (zero), but if the absence is due to illness or a compulsive excuse accepted by the dean of the college that The article is introduced, it is considered withdrawn from that article, and the provisions of withdrawal shall apply to it.
Academic Integrity	Philadelphia University pays special attention to the issue of academic integrity, and the penalties stipulated in the university's instructions are applied to those who are proven to have committed an act that violates academic integrity, such as cheating, plagiarism (academic theft), collusion, intellectual property rights.

Program Learning Outcomes to be Assessed in this Course

Number	Learning Outcome	Course Title	Assessment Method	Targeted Performance level
K_p3	Design prevention, intervention, and educational strategies for individuals and communities to manage chronic (and infectious) disease and improve health and wellness	Pharmaceutical microbiology	Objective Exam	80% of students have a minimum score 8 out of 10

Description of Program learning Outcomes Assessment Method

Number	Detailed Description of Assessment
K_p3	10 multiple choice questions in the final exam

Assessment Rubric of the Program Learning Outcomes

Each multiple choice question will be allocated one point totaling 10 points