



Course Outline

Course Code: PHR 107

Course Title: Pharmaceutical Microbiology

Assigned Faculty with their class schedule:

Assigned Faculty	Email Address	Day	Time
Professor Dr. Abu Shara Shamsur Rouf (ASSR)	rouf321@yahoo.com	Tuesday	08:55-09:45 a.m.
Md. Shahadat Hossain (MSH)	mshadat006@gmail.com	Wednesday	12:40-01:30 p.m.
Md. Samiul Islam (SMI)	sami.du.phr@gmail.com	Sunday	08:55-09:45 a.m.
B. K. Sajeed (BKS)	sajeedbroy21@yahoo.com	Thursday	08:00-08:50 a.m.

Course Aims:

To make the students familiar with the theoretical and practical knowledge of Pharmaceutical Microbiology so that future Pharmacists can exploit the beneficial uses and prevent the detrimental effects of microorganisms.

Outcomes:

- Knowledge on invisible living things
- Characterization, growth and cultivation of microorganisms
- Impact of microorganisms on human health and disease management
- Application of microorganisms in Biotechnology

Format and Procedures:

- Lectures will be delivered on all the topics of the course with comprehensive explanation of all the contents of the topics using Power Point presentation as well as by writing on the white board. Relevant videos will be showed which will aid to the complete understanding of any topic.
- At the end of each class there will be an interactive session to find out whether the students were able to grasp the key points of each lecture.
- Students will be divided into groups (number depending on the number of students in class) to analyze and find answer to a critical question or two-three case study will be given that will require brainstorming of students.
- A briefing on the relevant lab pertaining to the course will also be done during the class so that the students can relate the theory to the practical work done in the laboratory.
- Assignments and oral presentation will be given to all the students and each student will have different topics to assess their level of understanding.
- Invited guests and experts will take classes to share their knowlege on Microbiology

Incourse:

Total mark allocated for incourse is 20. Two incourses will be taken and average of these 2 incourses will be counted. There will be no makeup incourse.

Final Examination:

Final examination will be of 80 marks. The length of the final examination will be 4 hours. MCQ will be taken of 20 marks for first 20 minutes and rest of time will be allocated for written exam which is of 60 marks.

Oral Presentation:

Oral presentation will be given to enhance the student's ability to familiarize with the course.

Final Grading:

Marks earned by the students in incourse, final examination will be cumulated and the total is to be graded as per University of Dhaka regulation.

Reference Books:

1. **Hugo and Russell's** Pharmaceutical Microbiology. Stephen P Denyer, Norman A Hodges and Sean P Gorman. 7th edition. Blackwell Science.
2. **Lippincott's** Illustrated Reviews: Microbiology. Cynthia Nau Cornelissen, Bruce D. Fisher and Richard A. Harvey. 3rd edition. Lippincott Williams & Wilkins.
3. Microbiology - an Introduction. Gerard J. **Tortora**, Berdell R. Funke and Christine L. Case. 10th edition. Benjamin Cummings.
4. **Prescott**, Harley, and Klein's Microbiology. Joanne M. Willey, Linda M. Sherwood and Christopher J. Woolverton. 10th edition. McGraw-Hill.
5. Microbiology. Michael J. **Pelczar**, Eddie Chin Sun Chan and Noel R. Krieg. Tata McGraw-Hill Education

Tentative Course Schedule

Chapters	Topics to be discussed	Number of classes required	Assigned Faculty
Chapter 1 Introduction to microbiology	Microbiology as a field of biology, place of microbiology in the living field, prokaryotic and eukaryotic protests, group of microorganisms, areas of microbiology, applications of microbiology.	3	SMI
Chapter 2 History and evolution of microbiology	Spontaneous generation and biogenesis, germs theory of diseases, pure culture concept, immunization, widening horizons.	4	SMI
Chapter 3 Microscopic observations of microorganisms	Bright field, dark field, fluorescence and phase contrast microscopy, electronic microscopy, preparations for microscopic examinations, wet mount and hanging drop techniques, fixed and stained smears, microbiological stains- simple and differential staining methods.	8	BKS
Chapter 4 Bacteria	Nomenclature of bacteria, morphology and fine structures, nutritional requirements, bacteriological media, growth and reproduction, quantitative measurements of bacterial growth, maintenance and preservation of pure culture of bacteria.	15	MSH
Chapter 5 Microorganisms other than bacteria	Yeasts –Types, morphology, reproduction and physiology, pathogenic yeasts.	4	ASSR
	Rickettsiae – Introduction, characteristics of rickettsiae, pathogenic rickettsiae, laboratory diagnosis of rickettsial diseases.	3	BKS
	Viruses – History of viruses, classification of viruses, characteristics of viruses, reproduction and cultivation of viruses, virus inhibition, control of viral infections, bacterial virus or bacteriophages, morphology and composition, cultivation of bacterial viruses, reproduction of bacterial viruses.	8	MSH
Chapter 6 Basic concepts of immunology	Introduction, types of immune systems, non specific and specific components of the immune system, immune-regulation and diversity, types of immunity, Infections, pathogenicity and virulence immunity, hypersensitivity, Inflammation, autoimmunity, cancer immunotherapy, immunodiagnostics and immunological products (vaccines, toxoids, sera).	5	SMI
Oral Presentation	Selected Topics	10 (extra classes)	ASSR, MSH, SMI, BKS

Topics of Oral Presentation

1. Living kingdom and their survival
2. Global warming and genesis of deadly organisms
3. Antibiotic resistance
4. Occupational hazards occurred by microorganisms
5. Exploiting beneficial effects of microorganisms

Pharmaceutical Microbiology Lab (PHR 107L)

Assigned Faculty with their class schedule:

Assigned Faculty	Email Address
Md. Shahadat Hossain (MSH)	mshadat006@gmail.com
B. K. Sajeeb (BKS)	sajeebroy21@yahoo.com

Laboratory Class Schedule:

No. of Expt	Name of the experiment	Date:
1.	Study of a compound microscope	
2.	Identification of bacteria by Gram staining	
3.	Preparation of Culture media	
4.	Preparation of pure culture of bacteria	
5.	Assay of antibiotics using zone of inhibition	

Format:

Lab Manual:

Total marks allocated for this section is 5. The students have to complete their lab manual before final examination and have to submit their signed copies during final examination.

Viva:

Total mark allocated for viva is 5. It will be taken during final examination.

Final Examination:

Final examination will be of 25 marks. The duration of the final examination will be 4 hours.

Final Grading:

Marks earned by the students in quizzes, midterm, final examination assignment and attendance will be cumulated and the total is to be graded as per University of Dhaka regulation.