

Course handout (Part-II)

In addition to part I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course Number : PHA F213

Course Title : Microbiology

Instructor-in-Charge : D. Sriram

1. Course description: Introduction and classification of microbes; structure and physiology of microbial cell; infection & immunity; host parasite relationship; physical chemical methods of controlling microbes; experiments for isolation, cultivation, microbial diseases, asepsis antimicrobial chemotherapy and pharmaceutical application, sterilization and disinfection techniques.

2. Scope & Objective of the course: This course deals with the structure, physiology and growth of microorganisms, with the emphasis on the study of selected microbial disease and role of microbes in pharmaceutical industry.

2a. Course learning outcomes: At the end of the course student can learn the relationship between microbes and our lives; not only for the familiar harmful effect of certain microorganisms, such as disease but also their beneficial effects.

3. Text book :

TB. Microbiology: An Introduction [Eighth edition] by Tortora, Funke and Case, 2004, Publishers: PEARSON Benjamin Cummings.

4. Reference books:

R1. Pharmaceutical Microbiology, Hugo & Russel, Blackwell Publishing, 6th or 7th edition, 2005.

R2. Tutorial Pharmacy, Cooper & Gunn's 6th Edition, CBS Publisheres, 2000.

R3. Microbiology a Laboratory Manual: J.G. Cappuccino & N.Sherman, 1983, Addison-Wesley Publishing Company, Reading Massachuttes.

5. Course plan :

a) Theory component

Lect#	Learning objectives	Topics to be covered	Chapter in the Text Book
1	The science of microbiology	Introduction, importance, classification, observing microorganism etc.	3 (TB);
2-12	Prokaryotic and eukaryotic cells	Structure and function in general	4 TB,
13-14	The growth of micro organisms	Media requirements, growth curve, preserving bacterial culture, obtaining pure culture etc.	7 (TB)
15-16	The viruses	The ultimate parasites, classification of viruses, bacteriophages, animal viruses	13 (TB)
17-19	Medicinally important microorganisms	Various bacteria, fungi, protozoa and virus	3-6 (RB 1)
20	Sterilization techniques	The way microorganisms die, physical controls on microorganisms	7 (TB)
21	Antiseptics , disinfectants and preservatives	Chemical controls on Microorganisms, examples of chemicals, mechanism of action and their evaluation	7 (TB) 31(RB 2)

22-23	Microorganisms and human disease	Microbial mechanism of human pathogenicity	15 (TB)
24-25	Defending the body's interior	Nonspecific defenses, specific defenses, preventing disease	16, 17, 18 (TB)
26	Disorders associated with various systems	Microbial diseases of skin, CNS, RT, GIT, immune system etc.	19,21-26(TB)
27	Antimicrobial drugs	Targets of antimicrobial drugs, classification with structures, mechanism of action etc.	20 (TB)
28-29	Applied microbiology	Production of antibiotics, vaccines, dextran, in drug synthesis etc.	33 (RB 2)
30-31	Miscellaneous	Sterility testing, pyrogen testing, evaluation of antimicrobial drugs	Various sources

b) Lab Components: [LIST OF EXPERIMENTS]

- 1 Preparation, sterilization of culture media
- 2 Isolation of pure cultures from mixed culture
- 3 Microscopic examination of stained bacteria- Gram's staining
- 4 Effect of Environmental factors upon microorganisms-Temperature, Osmotic pressure, pH, and UV light
- 5 *In-vitro* antibacterial screening (a) Zone of inhibition and (b) Minimum inhibitory concentration (MIC)
- 6 Evaluation of disinfectants (Phenol coefficient value)
- 7 Test for sterility
- 8 Bacterial enzyme inhibition studies

Evaluation scheme:

EC No.	Evaluation component	Duration	Weightage (%)	Date & Time	Nature of Component
1.	Mid sem test	90 min	25	5/10, 9.00 -- 10.30 AM	CB
2.	Quizzes [pre & post mid term]	30 min each	10	Tutorial hours	CB
3.	Surprise quiz [2-4]	15 min each	15	Class hours	OB
4.	Lab components	-	10*		
5	Seminar	-	5		OB
5.	Compre. exam.	180 min	35	13/12 FN	CB

***WEIGHTAGE OF LAB COMPONENTS**

- 1 Day to day, and viva – 5%
- 2 Lab quiz – 5%

7. Chamber consultation hour: To be announced in the class.

6. Notices: Notices concerning the course will be displayed on the notice board of the Pharmacy group.

8. Make-up policy: Generally, make-up will be considered for regular students only (80% attendance IN LECTURE CLASSES).

Academic honesty and integrity policy: Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

**Instructor-in-charge,
PHA F213**