

- SEMESTER:- I
- COURSE NO.:- FIM-111
- COURSE TITLE:- FUNDAMENTALS OF MICROBIOLOGY
- CREDITS:- 3(2+1)

➤ THEORY

NO. OF UNITS	TOPICS	NO. OF LECTURES
1	<i>Evolution and scope of Microbiology</i>	2
2	<i>General morphological, cultural characteristics and reproduction of bacteria, yeasts, molds, actinomycetes, algae, protozoa, and rickettsia</i>	5
3	<i>Nutrient transport phenomenon and physiology of microorganisms</i>	4
4	<i>Genetic recombination, transduction, transformation and bacterial conjugation, mutation and mutagenesis</i>	4
5	<i>Growth curve: Physical and chemical factors influencing growth and destruction of microorganisms (including thermal death time, Z, F and D values)</i>	4
6	<i>Viruses: Structure and replication with particular reference to food borne viruses.</i>	4
7	<i>Control of Microorganisms by physical and chemical agents, antibiotics and other chemotherapeutic agents</i>	4
8	<i>Preservation of microbial cultures</i>	3
	<b>TOTAL</b>	<b>30</b>

➤ PRACTICALS

NO. OF UNITS	TOPICS	NO. OF EXPT.
1	<i>Microscopy</i>	1
2	<i>Micrometry</i>	1
3	<i>Cleaning and sterilization of glassware</i>	1
4	<i>Preparation of nutrient agar media and techniques of inoculation</i>	1

5	<i>Staining methods (monochrome staining, negative staining, capsule-staining, flagella staining and endo spore staining)</i>	2
6	<i>Pure culture techniques (streak plate/pour plate)</i>	2
7	<i>Introduction to identification procedures (morphology and cultural characteristics)</i>	2
8	<i>Growth characteristics of bacteria: Determination of microbial numbers, direct plate count, generation time</i>	2
9	<i>Factors influencing growth: PH, temperature, growth curves for bacteria</i>	1
10	<i>Methods of microbial culture preservation for bacteria and yeasts.</i>	1
11	<i>Anaerobic culture methods</i>	1
	<b>TOTAL</b>	<b>15</b>

➤ *Reference Books:*

- *Fundamentals of Microbiology*                      *Martin Frobisher, Sc.D.*
- *Text Book of Microbiology*                      *Bob A. Freeman*
- *Microbiology, a Text Book*                      *Prof. Kamal, A.K. Shrivastava and G.P. Rao*
- *Microbiology*                                      *M.J. Pelczar Jr., E.C.S. Chan and N.R. Krieg.*
- *Biology of Microorganisms*                      *T. D. Brock*
- *General Microbiology*                      *Singh B. D., Nallari P., Kavikishore P. B and Singh R. P.*
- *microbiology Fundamentals and Applications*                      *Purohit S. S.*
- *Microbiology*                                      *Prescott, Harley and Klein*
- *Practical Microbiology*                      *G. Sirockin and S. Callimore*
- *Microbes in Action. A laboratory manual of microbiology*                      *H.E. Salley , Jr & A.T. Van Denma*