Master of Science (Botany)
M.Sc. (Botany) Semester (I)

Course Code	PS01EBOT52	Title of the Course	Fundamentals of microbiology
Total Credits of the Course	04	Hours per Week	04

Course Objectives:	1.To introduce students to the world of microbes, their evolution and classification 2. Understanding of the bacterial cell structure and various organelles 3. Introducing students to various methods of studying and cultivating microorganisms 4. Learning the handling and control of microorganisms

Course Content		
Unit	Description	Weightage* (%)
1.	**(a) Evolution of microorganisms and microbiology** ● Members of the microbial world ● Microbial evolution ● Microbiology and its organisms ● Microbiology today **(b) Introduction to microbial taxonomy and the concept of microbial species.** • Introduction to microbial taxonomy • Taxonomic ranks • Exploring microbial taxonomy • Evolutionary processes and the concept of a microbial species • Bergey's manual of systematic bacteriology	25
2.	**Understanding a bacterial cell and its characteristics** ● The "prokaryote" controversy ● A typical bacterial cell ● Bacterial plasma membranes ● Bacterial cell walls ● Cell envelope ● Bacterial cytoplasm ● External structures of a bacterial cell ● Bacterial motility and chemotaxis ● Bacterial endospores	25
3.	**Methods for studying microbes**	25

	(a) Microscopy • Introduction to principles of microscopy • Various types of Microscopes • Preparation and staining of specimens • Differential and special staining methods **(b) Cultivation of microbes** ● Microbial growth and reproductive strategies ● Bacterial cell cycle ● Influence of environmental factors on growth ● Microbial growth in natural environments ● Laboratory culture of cellular microbes ● Growth curve ● Measurement of microbial population size ● Continuous culture of microorganisms	
4.	**Control of microorganisms** ● Principles of microbial control ● The pattern of microbial death ● Mechanical removal methods ● Physical control methods ● Chemical control agents ● Evaluation of antimicrobial agent effectiveness ● Biological control of microorganisms.	25
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Teaching-Learning Methodology	

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learnerwill be able to	
1.	Recognize the importance of microorganisms and their various forms
2.	Understand and appreciate the details of bacterial cell structure.
3.	Learn various methods of observation and cultivation of microorganisms
4.	Use various methods and control agents for control of microorganisms
5.	Appreciate and be capable of handling, using and controlling microorganism

Suggested References:	
Sr. No.	References
1.	Prescott's Microbiology, Ninth Edition.
2.	Fundamentals of Microbiology, Pelczar and Chain
3.	Microbiology an introduction: G Totatora, Funke and Case
4.	Brock Biology of Microorganisms, Madigan, Martinko, Brock

On-line resources to be used if available as reference material
On-line Resources