Name of Faculty	:	Faculty of Science
Name of Program	:	Bachelor of Science
Course Code	:	1BSM02
Course Title	:	Laboratory techniques in Microbiology
Type of Course	:	Skill Enhancement
Year of Introduction	:	2023-24

Prerequisite	:	Basic concepts of microbiology
Course Objective	:	Students will gain hands-on experience in various microbiological procedures and develop the skills necessary for research, diagnosis, and quality control in microbiology-related fields.
Course Outcomes	:	At the end of this course, students will be able to:
	CO1	Understand and follow safety protocols and laboratory etiquette.
	CO2	Remember the principles of microbial growth and reproduction.
	CO3	Apply serial dilution and spread plate techniques for accurate colony enumeration.
	CO4	Interpret microscopic observations, including Gram staining results.

Teaching and Examination Scheme

Teaching Scheme (Contact Hours)			Credits	Examination Marks				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	SEE	CIA	SEE	CIA	
2	0	0	2	50	25	00	00	75

Legends: ***L****-Lecture;* ***T****–Tutorial/Teacher Guided Theory Practice;* ***P****– Practical,* ***C*** *– Credit,* ***SEE*** *– Semester End Examination,* ***CIA*** *- Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)*

Course Content

Unit No.	Topics	Teaching Hours	Weightage	Mapping WithCOs
1	**Introduction to Microbiology Laboratory:** Safety procedures and laboratory etiquette Use of laboratory equipment and tools Aseptic techniques and microbial contamination prevention	08	26.66%	CO1
2	**Microbial Culturing:** Principles of microbial growth Preparation and sterilization of culture media Inoculation techniques Maintenance and care of microbial cultures	08	26.66%	CO2

3	**Isolation and Enumeration Techniques:** Streak plate method for isolation Serial dilution and spread plate method for colony counting Enumeration of bacteria and fungi	07	23.33%	CO3
4	**Microscopy:** Light microscopy and compound microscope operation Microscopic examination of bacterial and fungal cells Preparation of bacterial smears and staining techniques (Gram staining)	07	23.33%	CO4

Suggested Distribution of Theory Marks Using Bloom's Taxonomy						
Level	Remembrance	Understanding	Application	Analyze	Evaluate	Create
Weightage	**25**	**25**	**25**	**-**	**25**	**-**

NOTE: This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Suggested Learning Websites

Sr. No.	Name of Website
1	https://nptel.ac.in/courses/102103015

Reference Books

Sr. No.	Name of Reference Books
1	Microbiology: Principles and Explorations by Jacquelyn G. Black and Laura J. Black
2	Microbiology: A Laboratory Manual by James G. Cappuccino and Chad T. Welsh
3	Benson's Microbiological Applications: Laboratory Manual in General Microbiology by Alfred E. Brown and Heidi Smith
4	Prescott's Microbiology by Joanne Willey, Linda Sherwood, Christopher J. Woolverton