



**Integrated Bachelor and Master Programmes in Biomedical Science
IBMP (Biomedical Science) Semester (I)**

Paper Code	IS01CBMC55	Periods per week	04
Title of the paper	Microbiology I	Exam Duration	3 Hrs
Total Credit of the Paper	04	Total Marks	100

Course Objectives:	<ol style="list-style-type: none">1. To provide knowledge about history and developments in Microbiology2. To allow students to learn in detail about the Ultra structure of bacterial cell3. To familiarize students with Stains and staining techniques4. To make them capable of cultivation and isolation of bacteria in laboratory as well as maintain and preserve them for further use .
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Course Description		
Unit	Description	Weightage*
1.	Discovery of Microorganisms, Spontaneous generation versus Biogenesis. Fermentation, Germ theory of disease, Laboratory techniques and pure cultures, Immunological perspectives of Medical microbiology, Agricultural and Industrial microbiology, Molecular biology.	25%
2.	Structure external to the Bacterial cell: Flagella (Structure and function), Pili, Capsules, and Sheaths. Prosthecae and stalks. Cell wall structure and chemical composition. Structure internal to the Bacterial cell wall: Cytoplasmic membrane, Protoplasts and spheroplasts, Membranous intrusions and Intracellular membrane systems. The cytoplasm. Cytoplasmic inclusions and vacuoles. Nuclear material Spores and Cysts - structure.	25%
3.	Introduction to Stains and Dyes - Principles of staining. - Steps in staining process. - Role of intensifier, mordant & decolorizer - Types of staining: Simple staining Negative staining Differential staining (Gram staining and Acid fast staining)	25%
4.	Isolation of bacteria, Pure cultures, Methods of isolating pure cultures, Maintenance & Preservation of Pure cultures Cultivation of Bacteria: Nutritional requirements. Nutritional types of bacteria Common ingredients of media, Types of media	25%

* Units will have the same weightage in the evaluation as suggested in the course outline

Teaching-Learning	Regular class room teaching will be done with following tools: <ul style="list-style-type: none">• Conventional black board and chalk.
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Methodology	<ul style="list-style-type: none">ICT tools such as projectors, smart boards, etc will also be used for better explanation of scientific components. Appropriate reference materials will also provide to the students as and when required from departmental library resources.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, student will be able to	
1.	Gain detailed understanding of the past and growths in the field of microbiology
2.	Learn techniques to stain bacterial cells.
3.	Acquire knowledge on the Structure and function of various cell organelles of bacteria
4.	Isolate and cultivate microbes in laboratory

Suggested References: Include reference material from where a student is expected to study the said content in APA style. Reference websites can also be included.	
Sr. No.	Reference
1.	Microbiology - Pelczar, Chan, &Krieg, 5th edition 2.
2.	Elementary Microbiology - H. A. Modi
3.	General Microbiology - Vol – II - Powar&Daginawala
On-line resources available that can be used as reference material (As per Guidelines –V)	
Sr. No.	On-line Resources
	https://nptel.ac.in/courses/102/103/102103015/ https://microbiologyinfo.com/category/basic-microbiology/

