



Faculty of Science
Bachelor of Science
(W. E. F.: 2023-24)
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Name of Faculty	:	Faculty of Science
Name of Program	:	Bachelor of Science
Course Code	:	1BSB03
Course Title	:	Introduction to Microbiology
Type of Course	:	Professional Core
Year of Introduction	:	2023-24

Prerequisite	:	Recall the history of microbiology and the learn the basics.
Course Objective	:	To impart knowledge of the basic principles of bacteriology, mycology and the techniques used to study the structures. To study the diverse group of organisms. Understanding the developments in Microbiology and the contributions of various scientists in this field.
Course Outcomes	:	At the end of this course students will be able to:
	CO1	Recall various prokaryotes and eukaryotes
	CO2	Understanding the taxonomy and the classification of microorganism
	CO3	Analyzing the three kingdom and five kingdom classification
	CO4	Recall and understand the Biomolecules

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	
3	0	2	4	50	25	50	25	150

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 with COs
1	<p>Diverse Types of Microbes</p> <p>A. Members of the Microbial world: General Characters, Cell Structure, Distribution/Habitats, Significance. Introduction of Bacteria Introduction of Archeae</p> <p>B. Eucaryotes</p> <p>a) Introduction of Fungi b) Introduction of Algae c) Introduction of Protozoa</p> <p>C. Acellular Microbes</p> <p>a) Introduction of Virus b) Introduction of Subviral Particles.</p>	10	22%	CO1
2	<p>History and scope of Microbiology</p> <p>The Discovery of Microorganisms The Conflict Over Spontaneous Generation Developments in The Area of Medical Microbiology:</p> <p>a) Diseases and Koch's Molecular Postulates b) Pure Culture c) Antibiotics d) Aseptic Surgery e) Immunology and Prophylaxis.</p> <p>The Development of Industrial Microbiology The Developments in Microbial Ecology The Developments in Genetics and Biotechnology Developments in Bioinformatics and Nano biotechnology.</p>	10	22%	CO2
3	<p>Classification of Microbes</p> <p>Aims and Principles of Classification Conventional methods of Taxonomy Binomial nomenclature Five kingdom and Three kingdom classification Differences between Eubacteria and Archaeobacteria</p>	10	22%	CO3
4	<p>Biomolecules</p> <p>A) Atoms, Molecules and chemical bonds B) Structural aspects, classification and significance of</p> <ol style="list-style-type: none"> 1. Carbohydrates 2. Lipids 3. Nucleic acids 4. Aminoacids and Proteins 	15	34 %	CO4

Suggested Distribution of Theory Marks Using Bloom's Taxonomy						
Level	Remembrance	Understanding	Application	Analyse	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 List of Experiments

Sr. No.	Name of Experiment	Teaching Hours
1	Microbiology Good Laboratory Practices	02
2	Biosafety cabinets	02
3	Introduction to Various Instruments Used in Microbiology Laboratory: Design and Application of: Balances	02
4	Light Microscope - Simple and Compound Microscope	02
5	Sterilizers, Bacteriological Filters, Refrigerator for Preservation	02
6	Hot Air Oven, Autoclave, Water Bath, UV Chamber, LAF	02
7	Bacteriological Filters, Refrigerator for Preservation, Incubator.	02
8	Preparation of Stains.	02
9	Simple Staining: Positive Monochrome	02
10	Negative staining	02
11	Gram staining	02
12	Acid fast staining	02
13	Spirochete staining	02
14	Mount Method: Hanging Drop Technique for Motility Studies.	02
15	Permanent slide of Staphylococcus, Yeast, Rhizopus, Paramecium, Tapeworm, Euglena, Spirogyra, Bacillus	02

Major Equipment /Instruments

Sr. No.	Name of Major Equipment/ Instruments and Software
1	Analytical Balance
2	Autoclave
3	Micropipettes
4	Stains
5	Light Microscope

6	Anaerobic jar
7	UV Chamber
8	Hot Air Oven
9	Centrifuge

Suggested Learning Websites

Sr. No.	Name of Website
1	https://bio.libretexts.org/Bookshelves/Microbiology/Microbiology_(Boundless)/01%3A_Introduction_to_Microbiology/1.01%3A_Introduction_to_Microbiology

Reference Books

Sr. No.	Name of Reference Books
1	Ananthanarayan and Paniker's Textbook of Microbiology, 2013 By Ananthanarayan and Paniker.
2	Microbiology Marjorie Kelly Cowan
3	Microbiology Gerard J. Tortora
4	Microbe Hunters: The Classic Book on The Major Discoveries Of The Microscopic World Paul De Kruif
5	Michael J. Pelczar Jr. Chan Ecs and Krieg Nr (2004) Microbiology, 5th Edition. Tata Mcgraw Hill.
6	Cappuccino J And Sherman N (2010) Microbiology: A Laboratory Manual, 9th Edition. Pearson Education Limited
7	Black Jg (2008), Microbiology: Principles and Explorations 7th Edition, Prentice Hall. DhanpatRai&Sons1998Prescott's Microbiology, Eighth Edition Reviewed by Joanne J. Dobbins Joanne M. Willey, Linda M. Sherwood, And Christopher J. Woolverton. 2011. Mcgraw-Hill Higher Education, New York, Ny.
8	Prescott's Microbiology, Eighth Edition Reviewed by Joanne J. Dobbins Joanne M. Willey, Linda M. Sherwood, And Christopher J. Woolverton. 2011. Mcgraw-Hill Higher Education, New York, Ny.
9	Medigan Mt And MartinkoJm (2014), Brock Biology of Microorganisms, 14th Edition. Parker J. Prentice Hall International Inc