

Name of Faculty	:	Faculty of Science
Name of Program	:	Master of Science
Course Code	:	1MSB03
Course	:	Diversity of Prokaryotes and Eukaryotes
Type of Course	:	Professional Core
Year of Introduction	:	2023-24

Prerequisite	:	The current prokaryote and eukaryote species classification is based on a combination of genomic and phenotypic properties
Course Objective	:	To impart knowledge of the basic principles of bacteriology, mycology. Understanding the concepts of microbial diversity. To study the diverse group of organisms. Understanding the Bergey's manual of classification
Course Outcomes	:	At the end of this course, students will be able to:
	CO1	Know and understand the concepts of diversity of microbes
	CO2	Able to study the structure of microbes and able to apply the knowledge in classification of microbes as per Bergey's manual.
	CO3	Understand the classification of fungi
	CO4	Application of knowledge of diversity of organisms helps in conveying the hierarchical nature of biological organisms.

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	
4	0	0	4	70	30	0	0	100

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	Principles of microbial diversity Principles and concepts of microbial diversity Culturable and non-culturable diversity Methods of studying diversity Principles and concepts of metagenomics Conservation of microbial diversity Metabolic diversity in bacteria	10	22%	CO1
2	Bacterial systematics Bergey's classification of prokaryotes-Gram negative bacteria of medical and commercial importance and Gram-positive bacteria of medical importance. Diversity of actinomycetes- Coryneform bacteria, propionic acid bacteria, mycobacterium, Filamentous actinomycetes. Diversity of cyanobacteria Unit-structure and classification, ecology and evolution.	13	29%	CO2
3	Diversity of yeast and molds Systematics, Classification of fungi- Ainsworth and Alexopoulos classification. Properties, structure and reproduction of zygomycetes, ascomycetes, deuteromycetes, basidiomycetes. Mycorrhizal fungi. Biology of yeast and its role in industry. Ecological importance and significance of fungi.	12	27%	CO2 CO3
4	Diversity of Archaea Extremely halophilic Archaea Methane-producing Archaea: Methanogens Hyperthermophilic Archaea. Thermoplasmas: A cell-Wall-less Archaeon Limits of Microbial Existence: Temperature Archaea: Earliest life forms	10	22%	CO4

Suggested Distribution of Theory Marks Using Bloom's Taxonomy						
Level	Remembrance	Understanding	Application	Analyse	Evaluate	Create
Weightage	25	50	25	0	0	0

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.

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
10	Electrophoresis
11	SDS PAGE
12	PCR
13	Deep Freezer
14	Autoradiography

Suggested Learning Websites

Sr. No.	Name of Website
1	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1693353/

Reference Books

Sr. No.	Name of Reference Books
1	Bergey's manual of systematic bacteriology vol.: I-V Krieg & Holt
2	Biodiversity of microbial life Ed. J. T. Staley & A.L. Reysenbach
3	Biology of the conidial fungi Cole & Kendrick
4	A guide to identifying and classifying yeast Burnet et.al
5	Brock's biology of the microorganisms 8th edition M.T.Madigan,T.M.
6	Extremophiles Johri B.N
7	Moulds and filamentous fungi in technical O. Fassatiova microbiology
8	Fundamentals of the fungi E. Moore & Lendecker