



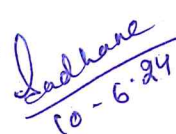

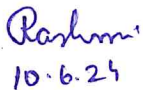

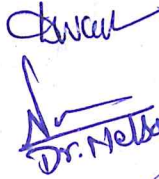
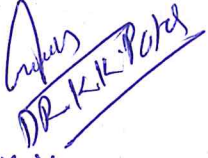
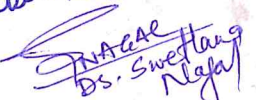
FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

DEPARTMENT OF MICROBIOLOGY

COURSE CURRICULUM

PART – A: Introduction			
Program: Bachelor in Life Science (Certificate/Diploma/Degree/Honors)		Semester - I	Session: 2024-25
1	Course Code	MBGE- 01 T	
2	Course Title	Introductory Microbiology and Microbial techniques	
3	Course Type	Generic Elective (GE)	
4	Prerequisite (If Any)	As per Program	
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to – <ul style="list-style-type: none"> ➤ relate the development and scope of Microbiology ➤ illustrate the contributions made by prominent scientists including Indian Vedic Knowledge on microbiology ➤ demonstrate the nomenclature and characteristics of different types of microorganisms ➤ identify the basic techniques in microbiology ➤ explain the methods of microbial control 	
6	Credit Value	03 Credits	Credit = 15 Hours - Learning & Observation
7	Total Marks	Max. Marks: 100	Minimum Passing marks: 40
PART – B: Content of the Course			
Total No. of Teaching-Learning Periods (01 Hr. per period) - 45 Periods (45 Hours)			
Unit	Topics (Course contents)		No. of Period
I	History and scope of microbiology – History, development and Scope of Microbiology, Contributions of Anton von Leeuwenhoek, Louis Pasteur, Robert Koch, Alexander Fleming and Edward Jenner, The Forgotten Past of Microbiology in Indian Vedic Knowledge.		12
II	Nomenclature and General features of microorganisms – Binomial nomenclature, principles of microbial classification, Major groups of microorganisms; General features and structure of bacteria, virus, fungi, algae and protozoa.		11
III	Microbial culture and staining techniques – Pure culture techniques: streaking, serial dilution and plating; types of culture media, cultivation of fungi and algae. Principle, procedure and applications of Simple staining, negative staining; Differential staining- Gram's staining, acid fast staining.		11
IV	Microbial control – Sterilization: Physical Agents - Heat: Boiling, Tyndallization, Steam under pressure (Autoclave), incineration, hot air Oven. Radiations: Ionizing and non-ionizing radiations. Filtration, Chemical agents - types, Disinfection, Antiseptic, Germicide, Sanitizer, Principle and application of Laminar airflow.		11
Key Words		History and scope, Nomenclature, Pure culture technique, Microbial control	

Name and Signature of Convener and Members of CBoS

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Part – C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended:

1. Microbiology: P. D. Sharma, Rastogi Publications.
2. A textbook of Microbiology: R. C. Dubey and Maheshwari, S Chand publications.
3. General Microbiology, Vol. II, C. B. Powar and Dagainawala
4. Fundamentals of Microbiology and Immunology, Ajit Kr. Banerjee and Nirmalya Banerji, Central publication.

Reference Books:

1. Microbiology: Pelczar, MJ Chan ECS and Krieg NR, McGraw-Hill.
2. Microbiology: 5th Edition Prescott, M.J., Harley, J.P. and Klein, D.A. WCB Mc Graw Hill, New York.
3. Microbiology: An Introduction: Pearson Education Tortora, G.J., Funke, B.R. and Case, C.L., Singapore.
4. Fundamentals of Microbiology: VI Edition Alcomo, I.E., Jones and Bartlett Publishers. Sudbury. Massachusetts, (2001).

Online Resources – e-Resources/ e-Books and e-learning portals

- <https://www.jsscacs.edu.in/sites/default/files/Department%20Files/History%20of%20Microbiology.pdf>
- <https://www.britannica.com/science/microbiology>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7810802/>
- <https://www.slideshare.net/HarinathaReddyA/methods-for-isolation-of-pure-culture>
- <https://microbenotes-com.webpkgcache.com/doc/-s/microbenotes.com/sterilization-physical-and-chemical-methods/>

Part – D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz – (2): 20+20	Better marks out of the two Test/ Quiz + obtained marks in Assignment shall be considered against 30 Marks
	Assignment/ Seminar – 10	
	Total Marks – 30	
End Semester Exam (ESE):	Two Section – A & B Section A: Q1. Objective 10 X 1 = 10 Mark; Q2. Short answer type – 5X4= 20 Marks Section B: Descriptive answer type qts., 1 out of 2 from each unit – 4X10 = 40 Marks	

Name and Signature of Convener and Members of CBoS

Sadhana
10.6.24

Sumi
10.6.24

Rashmi
10.6.24

Dr. K. K. Bhat
10.6.24

Dr. K. K. Bhat
10.6.24

Plab
10/6/24

Dr. V. Shanthi
10/6/24

Dr. Nagaraj
10/6/24

Dr. Nelson Kess

FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF MICROBIOLOGY
COURSE CURRICULUM

PART – A: Introduction				
Program: Bachelor in Life Science (Certificate/Diploma/Degree/Honors)		Semester I		Session: 2024-25
1	Course Code	MBGE- 01 P		
2	Course Title	Lab. Course - MBGE- 01		
3	Course Type	Laboratory Course		
4	Prerequisite (If Any)	As per Program		
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to – ➤ define the basic laboratory practices and safety measures in microbiology laboratory ➤ explain the principle, working and applications of laboratory Instruments ➤ select the proper culture media for microbial growth ➤ identify different microorganisms in the laboratory		
6	Credit Value	1 Credit	Credit = 30 Hours. Laboratory or Field learning/ Training	
7	Total Marks	Max. Marks: 50		Min. Passing marks: 20
PART – B: Content of the Course				
Total No. of learning-Training/ Performance Periods: 30 Periods (30 Hours)				
Module		Topics (Course contents)		No. of Period
Lab./ Field Training/ Experiment contents of Course		1. Good Laboratory Practices and Bio-safety in Microbiology. 2. To study the principle and applications of autoclave, incubator, BOD incubator, hot air oven, laminar air flow, light microscope. 3. Preparation of culture media (liquid & solid), sterilization and assessment of sterility 4. Isolation of microorganisms from environment by pour plate, streak plate and spread plate technique. 5. Observation of microorganisms-fungi, yeasts and algae from natural habitats. 6. Observation of bacteria by Gram staining technique.		30
PART – C: Learning Resources				
Text Books, Reference Books and Others				
Text Books Recommended: 1. Experiments in microbiology, plant pathology and biotechnology: K R Aneja 2. Practical microbiology: R C Dubey and D K Maheshwari.				
Online Resources: • https://www.youtube.com/watch?v=IIndcMyuEXs • https://www.youtube.com/watch?v=CbMGr9wFV2w				
PART – D: Assessment and Evaluation				
Suggested Continuous Evaluation Methods: Maximum Marks: 50 Marks Continuous Internal Assessment (CIA): 15 Marks End Semester Exam (ESE): 35 Marks				
Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test/ Quiz – (2): 10 & 10 Assignment/ Seminar + Attendance: 05 Total Marks: 15	Better Marks out of the two Test/ Quiz + obtained marks in Assignment shall be considered against 15 Marks		
End Semester Exam (ESE):	Laboratory/ Field Skill Performance: On spot Assessment A. Performed the Task based on lab. work – 20 Marks B. Spotting based on tools & technology (written) - 10 Marks C. Viva-voce (based on principle/ technology) – 05 Marks		Managed by course teacher as per lab. status	

Name and Signature of Convener and Members of CBoS

Convener
10/6/24

Member
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Member
10-6-24

Member
10-6-24

Member
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