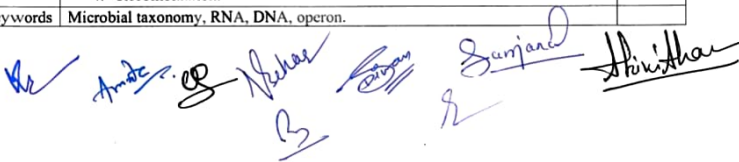


**Four Year Undergraduate Program (2024-28)**  
**Department of Biotechnology**  
**Course Curriculum – 2024-28**

Part A: Introduction		
Program: Bachelor in Life Sciences (Certificate/Diploma/Degree/Honors)		Semester: II Sem
		Session:2024-2025
1	Course Code	BTSC-02-T
2	Course Title	Microbiology and Molecular Biology
3	Course Type	Discipline Specific Course (DSC)
4	Pre-requisite (if any)	As per program.
5	Course Learning Outcomes (CLO)	After completing this course, the students will be able to - <ul style="list-style-type: none"> <li>• Understand various categories of microbes in the living world.</li> <li>• Develop the capability to culture and maintenance of microbes.</li> <li>• Understand the regulatory mechanism for the precursor of life-DNA</li> <li>• Understand the mechanism of genetic expression for the regulation of life.</li> </ul>
6	Credit Value	03 Credits (Credit = 15 Hours - learning & observation)
7	Total Marks	Max. Marks: 100   Min Passing Marks: 40
Part B: Content of Course (Theory)		
Total No. of Teaching-learning Periods (01 Hr. per period)- 45 Periods (45 Hours)		
Unit	Topic (Course content)	No. of Period
I	<b>Maintenance of microbes</b> <ol style="list-style-type: none"> <li>1. Classification of microorganisms and taxonomy.</li> <li>2. Molecular basis of microbial taxonomy.</li> <li>3. Growth media for culture of bacterial, viral, and fungal microbes; sterilization.</li> <li>4. Isolation, purification, and culture methods of microbes (bacteria, virus, and fungi).</li> </ol>	12 (12 Hrs)
II	<b>Microbial life</b> <ol style="list-style-type: none"> <li>1. Bacterial reproduction- Conjugation, transduction, and transformation.</li> <li>2. Mycoplasma- Classification, structure, and pathogenesis.</li> <li>3. Virus- Structure, classification, multiplication, pathogenesis and bacteriophages.</li> <li>4. Food and water microbes.</li> </ol>	11 (11 Hrs)
III	<b>Nuclear maintenance and expression</b> <ol style="list-style-type: none"> <li>1. DNA replication.</li> <li>2. DNA damage and repair.</li> <li>3. Transcription in prokaryotes and eukaryotes.</li> <li>4. Processing of RNA- Capping, polyadenylation, and splicing.</li> </ol>	11 (11 Hrs)
IV	<b>Genetic expression</b> <ol style="list-style-type: none"> <li>1. Genetic code.</li> <li>2. Translation in prokaryotes and eukaryotes.</li> <li>3. Operon concept.</li> <li>4. Recombination.</li> </ol>	11 (11 Hrs)
Keywords		Microbial taxonomy, RNA, DNA, operon.



• Part C - Learning Resource
<b>Text Books, Reference Books, Other Resources -</b>
<b>Text Books-</b>
<ul style="list-style-type: none"> <li>➤ Textbook of Microbiology- A K Kushwaha.</li> <li>➤ Microbiology – Dr. Preeti Sharma.</li> <li>➤ Introduction To Medical Microbiology- Ananthnarayana's</li> <li>➤ Cell and Molecular Biology- P K Gupta</li> </ul>
<b>Reference Book-</b>
<ul style="list-style-type: none"> <li>• Molecular Biology; Watson.</li> <li>• Gene VIII; Benjamin Lewin.</li> <li>• The Cell, A molecular Approach; Geoffrey M. Cooper.</li> <li>• Molecular Biology of the Cell; Alberts</li> <li>• Cell and Molecular Biology; Lodish.</li> <li>• Microbiology – Prescott</li> <li>• Microbiology – Pelczar&amp;Pelczar</li> <li>• General Microbiology I and II – Powar and Dagainawala</li> <li>• Microbiology – Tortora.</li> </ul>
Online resources- <a href="https://archive.nptel.ac.in/courses/102/103/102103015/">https://archive.nptel.ac.in/courses/102/103/102103015/</a> <a href="https://onlinecourses.nptel.ac.in/noc24_bt07/preview">https://onlinecourses.nptel.ac.in/noc24_bt07/preview</a>

Part D: Assessment and Evaluation		
<b>Suggested Continuous Evaluation Methods:</b>		
<b>Maximum Marks:</b>	<b>100 Marks</b>	
<b>Continuous Internal Assessment (CIA):</b>	<b>30 Marks</b>	
<b>End Semester Exam (ESE):</b>	<b>70 Marks</b>	
<b>Continuous Internal Assessment (CIA) (By course teacher):</b>	Internal Test / Quiz-(2): <b>20 +20</b> Assignment / Seminar - <b>10</b> Total Marks - <b>30</b>	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against <b>30 Marks</b>
<b>End Semester Exam (ESE):</b>	Two section – A & B Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks Section B: Descriptive answer type qts., 1out of 2 from each unit-4x10=40 Marks	