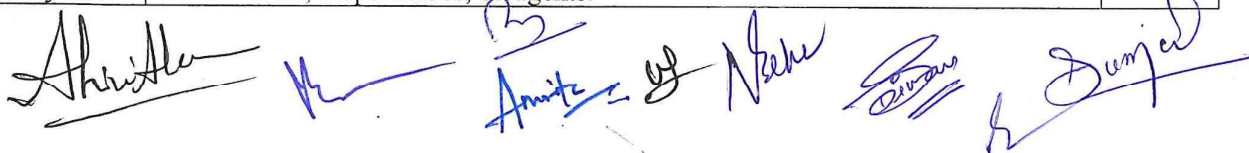


**Four Year Undergraduate Program (2024-28)**  
**Department of Biotechnology**  
**Course Curriculum**

<b>Part A: Introduction</b>		
Program: Bachelor in Life Sciences (Certificate/Diploma/Degree/Honors)		Semester: <b>II Sem</b> Session: 2024-2025
1	Course Code	<b>BTSEC-01</b>
2	Course Title	<b>Biopesticides and Biofertilizer</b>
3	Course Type	Skill Enhancement Course (SEC)
4	Pre-requisite (if any)	As per requirement.
5	Course Learning Outcomes (CLO)	After completing this course, the students will be able to - <ul style="list-style-type: none"> <li>• Understand the basic concept of biofertilizers and biopesticides.</li> <li>• Understand the significance and applications of biofertilizers and biopesticides.</li> <li>• Develop skills for the production and application of biofertilizers.</li> <li>• Develop skills for the production and application of biopesticides.</li> </ul>
6	Credit Value	02 credits (1C + 1C)      Credit=15 hours- Theoretical learning and = 30 hours laboratory or field learning/ training.
7	Total Marks	Max. Marks: 50      Min Passing Marks: 20
<b>Part B: Content of Course (Theory)</b>		
Total No. of Teaching-learning Periods		
Theory- 15 Periods (15 Hrs) and Lab or Field learning/Training 30 periods (30 Hours)		
Module	Topic (Course content)	No. of Period
Theory Contents	<b>Concept of biofertilizers and biopesticides</b> <ol style="list-style-type: none"> <li>1. Biofertilizers: classification and applications.</li> <li>2. Symbiotic and asymbiotic process for nitrogen fixation.</li> <li>3. Methods for production of biofertilizers.</li> <li>4. Study of VA-mycorrhiza and its application.</li> <li>5. Biopesticides: classification and applications.</li> <li>6. Process of production of biopesticides.</li> <li>7. Importance of <i>Trichoderma</i>, <i>Pseudomonas</i>, and <i>Bacillus</i> species as biocontrol agents.</li> <li>8. Factors responsible for the effectiveness of bioagents against seed-borne and soil-borne pathogens.</li> </ol>	15
Lab/Field Training Contents	<ol style="list-style-type: none"> <li>1. Media preparation to culture microorganisms.</li> <li>2. Collection and isolation of agriculturally important microorganisms.</li> <li>3. Identification and characterization of microorganisms.</li> <li>4. Screening of superior strains using in vitro techniques.</li> <li>5. Inoculum development.</li> <li>6. Preparation of carrier.</li> <li>7. Mixing of inoculum and carrier.</li> <li>8. Efficiency check of developed inoculant by using pot experiments.</li> </ol>	30
Keywords	Biofertilisers, biopesticides, bioagents.	



• Part C - Learning Resource	
<b>Text Books, Reference Books, Other Resources -</b>	
<b>Text Book- Biofertilisers and biopesticides – K Acharya, S Sen, M Rai</b>	
<ul style="list-style-type: none"> <li>S. Kannaiyan- Biofertiliser Technology-Scientific Publishers.</li> <li>Environmental Biotechnology- Himalaya Publishing House.</li> </ul>	
Reference Book-	
<ul style="list-style-type: none"> <li>Dr. Himadri Panda- The Complete Technology Book on Biofertilizer and Organic Farming- NPCS.</li> </ul>	
Online resources- <a href="https://archive.nptel.ac.in/courses/126/105/126105024/">https://archive.nptel.ac.in/courses/126/105/126105024/</a> <a href="https://archive.nptel.ac.in/courses/102/105/102105058/">https://archive.nptel.ac.in/courses/102/105/102105058/</a>	

Part D: Assessment and Evaluation		
<b>Suggested Continuous Evaluation Methods:</b>		
<b>Maximum Marks: 50 Marks</b>		
<b>Continuous Internal Assessment (CIA): 15 Marks</b>		
<b>End Semester Exam (ESE): 35 Marks</b>		
<b>Continuous Internal Assessment (CIA) (By course teacher):</b>	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
<b>End Semester Exam (ESE):</b>	<b>Laboratory/Field Skill Performance: On spot Assessment</b> A. Performed the task based on learned skill - 20 Marks B. Spotting based on tools (written) - 10 Marks C. Viva-voce (based on principle/technology) - 05 Marks	Managed by Coordinator as per skilling

Name and Signature of Convener and Members of CBoS:

