

Course Code	Course Name	L-T-P-Credits	Year of Introduction
BT231	Microbiology Laboratory	0-0-3-1	2016
<b>Prerequisite :</b> BT207 Microbiology			
<b>Course Objectives</b> <ul style="list-style-type: none"> <li>To introduce the students to the basic Microbiology lab.</li> <li>To acquire basic skills on techniques for microbial isolation, quantitation and characterization..</li> <li>To perform tests to identify bacteria and fungi, and studying microbial growth control methods.</li> </ul>			
<b>Syllabus (Minimum of 11 experiments are mandatory)</b> <ol style="list-style-type: none"> <li>1. Introduction to principles of sterile technique and cell propagation.</li> <li>2. Preparation of media and media components.</li> <li>3. Identification of plant, animal and bacterial cells and their components.</li> <li>4. Measurement of growth - Wet weight and dry weight measurements, extinction method of monitoring cell growth.</li> <li>5. Selection and isolation of bacteria e.g.: Isolation of bacteria capable of degrading PAH from oil contaminated earth.</li> <li>6. Isolation and characterization of bacteria from leaf tissues, leaf rot etc.</li> <li>7. Differential and selective media</li> <li>8. Testing of microbial capacity to produce biologically active substances</li> <li>9. Taxonomic classification of isolated microbes</li> <li>10. Long and short term storage of microbes (bacteria and fungi)</li> <li>11. Isolation of fungal and plant protoplasts</li> <li>12. Principles of microscopy, phase contrast and fluorescent microscopy</li> <li>13. Haemocytometer</li> <li>14. Staining: Gram, Giemsa , Trypan blue</li> <li>15. Microbiological examination of water.</li> <li>16. Biochemical tests: IMVIC test, Catalase test, Coagulase test, Gelatinase test, Oxidase test and other related tests.</li> </ol>			
<b>Expected outcome</b> <p>Upon successful completion of this course, students should be able to</p> <ul style="list-style-type: none"> <li>Carry out routine and specialized microbiological tests applicable to biotechnology.</li> <li>Identify plant, animal and bacterial cells and their components.</li> <li>Prepare suitable medium for growth of bacteria.</li> <li>Isolate and characterize bacteria.</li> <li>Measure growth of bacteria.</li> <li>Carry out biochemical tests to identify microorganism.</li> <li>Demonstrate competency in microbiological laboratory safety.</li> </ul>			
<b>Reference Books</b> <ol style="list-style-type: none"> <li>1. Alfred Brown, <i>Benson's Microbiological Applications: Laboratory Manual in General Microbiology</i>, McGraw Hill Publications, 2004.</li> <li>2. Gunasekharan P, <i>Laboratory manual in Microbiology</i>, New Age International Publishers, 2007.</li> <li>3. Cappuccino J. G. and N. Sherman, <i>A Laboratory Manual</i>, 4/e, Addison and Wesley, 1999.</li> </ol>			