

Course Code	Course Title	L	T	P	C
1151BT301	MICROBIOLOGY LABORATORY	0	0	2	1

Course Category : Program Core

a. Preamble : To understand and practice the different techniques used in Microbiology.

bCourse Outcomes : Upon the successful completion of the course, students will be able to:

CO Nos.	Course Outcomes	Knowledge Level (Based on revised Bloom's Taxonomy)
CO1	Understand basic lab safety and sterilization methods	K2
CO2	Prepare growth media for microbial cultures	K2
CO3	Understand various culture techniques	K3
CO4	Understand and use Microscope	K3
CO5	Prepare different staining methods	K2
CO6	Differentiate between gram positive and gram negative bacteria	K3
CO7	Understand effect of Disinfectants using Phenol coefficient method	K2
CO8	Conduct an antibiotic sensitivity assay	K3
CO9	Understand growth curve of Bacteria and Yeast	K2
CO10	Understand effect of physical and chemical factors on microbial growth	K2

COs		PROGRAMME OUTCOMES											
		1	2	3	4	5	6	7	8	9	10	11	12
CO1	Understand basic lab safety and sterilization methods	L	H	H	H	H	L	L	L	L	L	L	L
CO2	Prepare growth media for microbial cultures	L	H	H	H	H	L	L	L	L	L	L	L
CO3	Understand various culture techniques	L	H	H	H	H	L	L	L	L	L	L	L
CO4	Understand and use Microscope	L	H	H	H	H	L	L	L	L	L	L	L
CO5	Prepare different staining	L	H	H	H	H	L	L	L	L	L	L	L

	methods												
CO6	Differentiate between gram positive and gram negative bacteria	L	H	H	H	H	L	L	L	L	L	L	L
CO7	Understand effect of Disinfectants using Phenol coefficient method	L	H	H	H	H	L	L	L	L	L	L	L
CO8	Conduct an antibiotic sensitivity assay	L	H	H	H	H	L	L	L	L	L	L	L
CO9	Understand growth curve of Bacteria and Yeast	L	H	H	H	H	L	L	L	L	L	L	L
CO10	Understand effect of physical and chemical factors on microbial growth	L	H	H	H	H	L	L	L	L	L	L	L

EXPERIMENTS

1. Introduction, Laboratory Safety, Use of Equipment; Sterilization Techniques;
2. Culture Media-Types and Use; Preparation of Nutrient broth and agar
3. Culture Techniques, Isolation and Preservation of Cultures- Broth: flask, test tubes;Solid: Pour plates, streak plates, slants, stabs
4. Microscopy – Operation and Maintenance of Microscope
5. Microscopic Methods in the Study of Microorganisms; Staining Techniques- Simple, Differential- Gram's staining
6. Quantification of Microbes: Sampling and Serial Dilution; Bacterial count in Soil – TVC
7. Effect of Disinfectants- Phenol Coefficient
8. Antibiotic Sensitivity Assay
9. Growth Curve in Bacteria and Yeast
10. Effect of pH, Temperature, UV radiation on Growth Bacteria

REFERENCE BOOKS

1. Cappuccino, J.G. and N. Sherman "Microbiology : A Laboratory Manual", 4th Edition, Addison-Wesley, 1999.
2. Collee, J.G. et al., "Mackie & McCartney Practical Medical Microbiology" 4th Edition, Churchill Livingstone, 1996.