

## Scheme B.Tech Biotechnology (Third Semester)

### 2<sup>nd</sup> Year III-SEMESTER

S. No.	Subject Code	Subject Name	L-T-P	ESE Marks	Sessional		Total	Credit
					CT	TA		
1.	ROE030 to 039/ RAS303	Science Based Open Elective/ Elementary Mathematics-III	3-1-0	70	20	10	100	4
2.	RVE301/ RAS302	Universal Human Values & Professional Ethics/ Environment & Ecology	3-0-0	70	20	10	100	3
3.	RCE309	Fluid Mechanics for Biotechnology	3-0-0	70	20	10	100	3
4.	RBT301	Analytical Techniques in Biotechnology	3-0-0	70	20	10	100	3
5.	RBT302	Microbiology	3-0-0	70	20	10	100	3
6.	RBT303	Biochemistry	3-1-0	70	20	10	100	4
7.	RCE359	Fluid Mechanics for Biotechnology Lab	0-0-2	50	30	20	100	1
8.	RBT351	Analytical Techniques in Biotechnology Lab	0-0-2	50	30	20	100	1
9.	RBT352	Microbiology Lab	0-0-2	50	30	20	100	1
10.	RBT353	Biochemistry Lab	0-0-2	50	30	20	100	1
11.	RME101*	Elements of Mechanical Engineering*	3-1-0	70	20	10	100*	--
12.	RCE151*	Computer Aided Engineering Graphics*	0-0-3	50	30	20	100*	--
Total							1000	24

CT: Class Test

TA: Teacher Assessment

L/T/P: Lecture/ Tutorial/ Practical

**\*B.Tech. II<sup>nd</sup> year lateral entry students belonging to B.Sc. Stream, shall clear the subjects RCE151/RCE251 and RME101/201 of the first year Engineering Programme along with the second year subjects.**

#### Science Based Open Electives:

- a. ROE030/ROE040 Manufacturing Process
- b. ROE031/ROE041 Introduction to soft computing
- c. ROE032/ROE042 Nano Science
- d. ROE033/ROE043 Laser System and Application
- e. ROE034/ROE044 Space Science
- f. ROE035/ROE045 Polymer Science & Technology
- g. ROE036/ROE046 Nuclear Science
- h. ROE037/ROE047 Material Science
- i. ROE038/ROE048 Discrete Mathematics
- j. ROE039/ROE049 Applied Linear Algebra

## **RBT352: MICROBIOLOGY LAB**

1. Preparation of nutrient agar slants, plates and nutrient broth and their sterilization. (Microwave Oven, Heating mantles, Fridge, Heating Oven, Tube racks)
2. Inoculation of agar slants, agar plate and nutrient broth (Incubators, Water bath, Laminar hood, dry heat sterilizer i.e. bead sterilizer)
3. Culture of microorganisms using various techniques. (Shakers i.e. Cooling and Open shaker).
4. Simple and differential staining procedures, endospore staining, flageller staining, cell wallstaining, capsular staining, negative staining. (Moist chambers, spirit lamps, slides, loops & microscopes, haemocytometer)
5. Bacterial colony counting. (Moist chambers, spirit lamps, slides, loops & microscopes, haemocytometer)
6. Observation of different vegetative, capsular and spore forms of bacteria & fungus under various microscopes.
7. Isolation of microbes from soil samples and determination of the number of colony forming units. (U.V. spectrophotometer, Colony counter etc.)
8. Study of growth curve of *E. coli*
9. Microscopy
10. Identification and staining of different types of cells.
11. Measurement of various Cell Organelles.
12. Detection of Mitosis with the help of microscope.

### **Practical Books and References**

1. Lab Manual in microbiology by P Gunasekaran (New Age Int. Pub.).