

**13. Courses of Study and Scheme of Assessment
M. Tech. Biotechnology**

(2021 REGULATIONS)

(Minimum No. of credits to be earned: 70*)

Course Code	Course Title	Hours / Week			Credits	Maximum Marks			CAT
		Lecture	Tutorial	Practical		CA	FE	Total	
I SEMESTER									
21BT01	Statistical Methods for Biological Research	3	1	0	4	50	50	100	PC
21BT02	Protein Chemistry and Engineering	3	0	0	3	50	50	100	PC
21BT03	Transgenic Technologies	2	2	0	4	50	50	100	PC
21BT04	Advanced Bioprocess Engineering	3	1	0	4	50	50	100	PC
21BT05	Research Methodology and IPR	2	0	0	2	50	50	100	RMC
21BT72	Audit Course – I	2	0	0	Grade	100	0	100	MC
21BT51	rDNA Laboratory	0	0	4	2	50	50	100	PC
21BT52	Data Mining & Analysis Laboratory	0	0	4	2	50	50	100	PC
Total 28 hrs		16	4	8	21	450	350	800	
II SEMESTER									
21BT06	Bioseparation Technology	3	1	0	4	50	50	100	PC
21BT07	Technologies and Strategies in OMICs Research	2	1	0	3	50	50	100	PC
21BT08	Quality Assurance and Bio-Safety	3	0	0	3	50	50	100	PC
21BT__	Professional Elective – I	3	0	0	3	50	50	100	PE
21BT__	Professional Elective – II	3	0	0	3	50	50	100	PE
21BT82	Audit Course – II	2	0	0	Grade	100	0	100	MC
21BT53	Instrumental Methods of Analysis Laboratory	0	0	4	2	50	50	100	PC
21BT54	Bioprocess Development Laboratory	0	0	4	2	50	50	100	PC
21BT65	Industrial visit and Technical Seminar	0	0	4	2	50	50	100	EEC
Total 30 hrs		16	2	12	22	500	400	900	
III SEMESTER									
21BT__	Professional Elective – III	3	0	0	3	50	50	100	PE
21BT__	Professional Elective Laboratory	0	0	6	3	50	50	100	PE
21BT__	Open Elective	3	0	0	3	50	50	100	OE
21BT71	Project Work I	0	0	12	6	50	50	100	EEC
Total 24 hrs		6	0	18	15	200	200	400	
IV SEMESTER									
21BT81	Project Work II	0	0	24	12	50	50	100	EEC
Total 24 hrs		0	0	24	12	50	50	100	
PROFESSIONAL ELECTIVE THEORY COURSES (Four to be opted)									
21BT21	Molecular Principles of Cellular Properties	3	0	0	3	50	50	100	PE

21BT22	Vaccines and Therapeutic Proteins	3	0	0	3	50	50	100	PE
21BT23	Metabolic Engineering	3	0	0	3	50	50	100	PE
21BT24	Advanced Topics in Plant Molecular Biology	3	0	0	3	50	50	100	PE
21BT25	Techniques In Molecular Subtyping of Pathogens	3	0	0	3	50	50	100	PE
21BT26	Biomaterials and Tissue Engineering	3	0	0	3	50	50	100	PE
21BT27	Membrane Separation	3	0	0	3	50	50	100	PE
21BT28	Biofuels	3	0	0	3	50	50	100	PE
21BT29	Biological Treatment of Industrial waste	3	0	0	3	50	50	100	PE
21BT30	Bioreactor Designs	3	0	0	3	50	50	100	PE
21BT31	Fundamentals of Cellular Mechanics	3	0	0	3	50	50	100	PE
21BT32	Techniques in Epidemiological Data Analyses	3	0	0	3	50	50	100	PE
21BT33	Pharmacogenomics	3	0	0	3	50	50	100	PE
21BT34	Metagenomics and Epigenomics	3	0	0	3	50	50	100	PE
21BT35	Systems Biology: Theory and Applications	3	0	0	3	50	50	100	PE
21BT36	Analytical Instrumentation Techniques	3	0	0	3	50	50	100	PE
21BT37	Algorithms in Bioinformatics	3	0	0	3	50	50	100	PE
21BT38	Cancer Genomics	3	0	0	3	50	50	100	PE
21BT39	Transport Phenomena in Biological Systems	3	0	0	3	50	50	100	PE
ELECTIVE LABORATORY COURSES (One to be opted)									
21BT55	Biological Big Data Analysis Laboratory	0	0	6	3	100	0	100	PE
21BT56	Animal Cell Culture Laboratory	0	0	6	3	100	0	100	PE
21BT57	Plant Tissue Culture Laboratory	0	0	6	3	100	0	100	PE
21BT58	Protein Purification and Analysis Laboratory	0	0	6	3	100	0	100	PE
21BT59	Biofuel Laboratory	0	0	6	3	100	0	100	PE
21BT60	Environmental Biotechnology Laboratory	0	0	6	3	100	0	100	PE
21BT61	Molecular Cloning and Expression Laboratory	0	0	6	3	100	0	100	PE
OPEN ELECTIVE COURSES (One to be opted)									
21BT91	Astrobiology	3	0	0	3	50	50	100	OE

* Indicated is the minimum number of credits to be earned by a student.

CAT – Category; PC – Professional Core; PE - Professional Elective; RMC - Research Methodology and IPR; EEC – Employability Enhancement Course; MC - Mandatory Course; OE – Open Elective; Grade – Completed / Not Completed