



**PERIYAR
MANIAMMAI**
INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University)
Established Under Sec.-3 of UGC Act, 1956 • NAAC Accredited
think • innovate • transform

Criterion 1 – Curricular Aspects

Key Indicator	1.2	Academic Flexibility
Metric	1.2.2	Percentage of Programmes in which Choice Based Credit System (CBCS)/elective course system has been implemented (Data for the latest completed academic year)

DEPARTMENT OF BIOTECHNOLOGY

STRUCTURE OF THE PROGRAM CLEARLY INDICATING COURSES, CREDITS/ELECTIVES

PROGRAMMES

B.Tech Biotechnology

1. B.Tech Biotechnology

REGULATION 2021 - B.Tech Biotechnology

REGULATIONS – 2021 (Applicable to the students admitted from the Academic year 2022-23)

Semester I

S.No.	Course Code	Courses	Credits				Hours			
			L	T	P	C	L	T	P	Total
1.	XMA101	Calculus and Linear Algebra	3	1	0	4	3	1	0	4
2.	XCP102	Programming for Problem Solving	3	0	0	3	3	0	0	3
3.	XAP103	Applied Physics for Engineers	3	1	0	4	3	1	0	4
4.	XBT104	Biology for Engineers	3	0	0	3	3	0	0	3
5	XGS105	Speech Communication	0	0	3	3	0	0	3	3
6	XUM106	Constitution of India	0	0	0	0	2	0	0	2
7	XCP107	Programming for Problem Solving Laboratory	0	0	1	1	0	0	3	3
8	XAP108	Applied Physics for Engineers Laboratory	0	0	2	2	0	0	3	3
		Total	12	2	6	20	14	2	9	25

Semester II

S.No.	Course Code	Courses	Credits				Hours			
			L	T	P	C	L	T	P	Total
1.	XMA201	Calculus, Ordinary Differential Equations and Complex Variable	3	1	0	4	3	1	0	4
2.	XBE202	Electrical and Electronic Engineering Systems	3	1	0	4	3	1	0	4
3.	XAC203	Applied Chemistry for Engineers	3	1	0	4	3	1	0	4
4	XGS204	Technical Communication	2	0	0	2	2	0	0	2
5	XWP205	Workshop/Manufacturing Practices	1	0	2	3	1	0	3	4
6	XBT206	Chemical Engineering Thermodynamics	2	1	0	3	2	1	0	3
7	XBE207	Electrical and Electronic Engineering Systems Laboratory	0	0	1	1	0	0	3	3
8	XAC208	Applied Chemistry for Engineers Laboratory	0	0	1	1	0	0	3	3
		Total	14	4	4	22	14	4	9	27

Semester III

S.No.	Course Code	Courses	Credits				Hour			
			L	T	P	C	L	T	P	Total
1.	XPS301	Probability and statistics	3	0	0	3	3	0	0	3
2.	XBT302	Biochemistry	2	1	0	3	3	1	0	4
3.	XBT303	Microbiology	3	0	0	3	3	0	0	3
4.	XBT304	Material and Energy Balances	2	1	0	3	2	1	0	3
5.	XBT305	Genetics and Evolutionary Biology	3	0	0	3	3	0	0	3
6.	XUM306	Entrepreneurship Development	2	0	0	2	2	0	0	2
7	XUM307	Universal Human Values 2: Understanding Harmony	2	1	0	3	2	1	0	3
8	XBT308	Biochemistry Laboratory	0	0	2	2	0	0	6	6
9	XBT309	Microbiology Laboratory	0	0	2	2	0	0	6	6
10	XBT310	In-plant Training - I	-	-	-	1	-	-	-	-
		Total	17	3	4	25	18	3	12	33

Semester IV

S.No.	Code	Courses	Credits				Hours			
			L	T	P	C	L	T	P	Total
1.	XBT401	Basic Transport Processes	2	1	0	3	2	1	0	3
2.	XBT402	Bioenergetics and Metabolism	2	1	0	3	2	1	0	3
3.	XBT403	Cell Biology	3	0	0	3	3	0	0	3
4.	XBT404	Immunology	3	0	0	3	3	0	0	3
5.	XUM405	Economics for Engineers	3	0	0	3	3	0	0	3
6	XUM406	Disaster Management	0	0	0	0	2	0	0	2
7	XBT407	Basic Transport Processes Laboratory	0	0	1	1	0	0	4	4
8	XBT408	Cell Biology Laboratory	0	0	2	2	0	0	8	8
9	XBT409	Immunology Laboratory	0	0	1	1	0	0	4	4
		Total	13	2	4	19	15	2	16	33

Semester V

S.No.	Code	Courses	Credits				Hours			
			L	T	P	C	L	T	P	Total
1	XBT501	Bioinstrumentation	3	0	1	4	3	0	2	5
2	XBT502	Molecular Biology	2	1	0	3	2	1	0	3
3	XBT503	Bioprocess Engineering	3	1	1	5	3	1	2	6
4	XBT504 A	Plant biotechnology	3	0	0	3	3	0	0	3
5	XBT504 B	Food Technology	3	0	0	3	3	0	0	3
6	XBT504 C	Chemical Reaction Engineering	3	0	0	3	3	0	0	3
7	XBTOE1	Open Elective courses	3	0	0	3	3	0	0	3
8	XUM506	Employability Skills and report writing	3	0	0	3	3	0	0	3
9	XUM507	Essence of Indian Traditional Knowledge	3*	0	0	0	3	0	0	3
10	XBT508	In-Plant training-II	-	-	1	1	3	0	0	3
11	XBTM01	Minor Course - I	0	0	0	0	0	0	2	2
		Total	26	2	3	28	29	2	6	37

Semester VI

S.No.	Course Code	Courses	Credits				Hours			
			L	T	P	C	L	T	P	Total
1	XUM601	Economics for Engineers	3	0	0	3	3	0	0	3
2	XBT602	Bioreactor Design	3	1	1	5	3	1	2	6
3	XBT603	Recombinant DNA Technology	3	1	1	5	3	1	2	6
4	XBT604	Immunology	3	0	0	3	3	0	0	3
5	XBT605 A	Animal biotechnology	3	0	0	3	3	0	0	3
6	XBT605 B	Nanobiotechnology	3	0	0	3	3	0	0	3
7	XBT605 C	Heat Transfer	3	0	0	3	3	0	0	3
8	XBTOE2	Open Elective courses	3	0	0	3	3	0	0	3
9	XBTM02	Minor Course – II (1 Credit)	0	0	2	0	0	0	2	2
		Total	24	2	4	28	24	2	6	32

Semester VII

S.No.	Course Code	Courses	Credits				Hours			
			L	T	P	C	L	T	P	Total
1	XBT701A	Protein Engineering	3	0	0	3	3	0	0	3
2	XBT701B	Pharmaceutical Biotechnology	3	0	0	3	3	0	0	3
3	XBT701C	Mass Transfer Fundamentals	3	0	0	3	3	0	0	3
4	XBT702	Bioinformatics and Computational Biology	1	0	2	3	2	0	2	4
5	XBT703	Downstream processing	3	1	1	5	4	1	2	6
6	XBT704A	Cancer Biology	3	0	0	3	3	0	0	3
7	XBT704B	Stem cell biotechnology	3	0	0	3	3	0	0	3
8	XBT704C	Metabolic Engineering	3	0	0	3	3	0	0	3
9	XBTOE3	Open Elective- III	3	0	0	3	3	0	0	3
10	XUM706	Cyber security	3	0	0	0	3	0	0	3
11	XBT707	In-Plant training-III	0	0	1	1	0	0	2	2
12	XBTM03	Minor Course – III (1 Credit)	0	0	2	0	0	0	2	2
		Total	28	1	6	30	30	1	8	38

Semester VIII

S.No.	Course Code	Courses	Credits				Hours			
			L	T	P	C	L	T	P	Total
1	XBT801	Project work	0	0	12	12	0	0	24	24
2	XBTOE4	Open Elective- IV	3	0	0	3	3	0	0	3
3	XBTM04	Minor Course - IV	0	0	2	0	0	0	2	2
		Total	3	0	14	15	3	0	26	29