



**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 BIO TECHNOLOGY

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 2021-22)

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	Bioanalytical Tools	3	0	0	3	3	0	0	3
2	XBT502	Molecular Biology	3	0	0	3	3	0	0	3
3	XBT503	Bio reaction Engineering	2	1	0	3	3	1	0	4
4	XBT504	Plant Biotechnology	3	0	0	3	3	0	0	3
5	XBT505A	Food Biotechnology	3	0	0	3	3	0	0	3
	XBT505B	Agricultural Biotechnology	3	0	0	3	3	0	0	3
	XBT505C	Pharmaceutical Biotechnology	3	0	0	3	3	0	0	3
6	XBTOE1	Open Elective Courses	3	0	0	3	3	0	0	3
7	XBT507	Bioanalytical Tools Laboratory	0	0	1	1	0	0	6	6
8	XBT508	Bio reaction Engineering Laboratory	0	0	2	2	0	0	8	8
9	XBT509	In-plant Training - II	-	-	1	1	-	-	-	-
10	XBTMO1	Minor Course I ^{*#}	0	0	0	0	0	0	2	2
		Total	17	1	4	22	18	1	6	35

Semester VI

S.No.	Course Code	Courses	Credits				Hours			
			L	T	P	C	L	T	P	Total
1	XBT601	Animal Biotechnology	3	0	0	3	3	0	0	3
2	XBT602	Process Biotechnology –	3	1	0	4	3	2	0	5
4	XBT603A	Mass Transfer Fundamentals	3	0	0	3	3	0	0	3
	XBT603B	Fermentation Technology	3	0	0	3	3	0	0	3
	XBT603C	Nanobiotechnology	3	0	0	3	3	0	0	3
5	XBTOE2	Open Elective Courses	3	0	0	3	3	0	0	3
6	XGS605	Professional Skills	1	0	2	3	1	0	3	4
7	XUM606	Cyber Security ^{*#}	0	0	0	0	3	0	0	3
8	XBT607	Process Biotechnology Laboratory	0	0	4	4	0	0	8	8
9	XBTMO2	Minor Course II ^{*#}	0	0	0	0	0	0	2	2
		Total	13	1	6	20	16	2	13	31

Semester VII

S.No.	Course Code	Courses	Credits				Hours			
			L	T	P	C	L	T	P	Total
1	XBT701	Microbial Biotechnology	3	0	0	3	3	0	0	3
2	XBT702	Recombinant DNA Technology	3	0	0	3	3	0	0	3
3	XBT703A	Stem Cell Biotechnology	2	1	0	3	2	1	0	3
	XBT703B	Cancer Biology	2	1	0	3	2	1	0	3
	XBT703C	Design of Bioprocess Equipments	2	1	0	3	2	1	0	3
4	XBTOE3	Open Elective Courses	3	0	0	3	3	0	0	3
5	XES705	Environmental studies ^{*#}	0	0	0	0	3	0	0	3
6	XRT706	Recombinant DNA Technology Laboratory	0	0	2	2	0	0	6	6

7	XBT707	Bioinformatics	1	0	1	2	1	0	5	6
8	XBT708	Project Work (Phase-I)	0	0	2	2	0	0	6	6
9	XBT709	In-plant Training – III	-	-	2	2	-	-	-	-
10	XBTMO3	Minor Course III ^{*#}	0	0	0	0	0	0	2	2
		Total	12	1	7	20	15	1	17	35

Semester VIII

S.No.	Course Code	Courses	Credits				Hours			
			L	T	P	C	L	T	P	Total
1	XBT801A	Introduction to Quantum Biology, AI and Data Science	2	1	0	3	2	1	0	3
	XBT801B	Enzyme Engineering	2	1	0	3	2	1	0	3
	XBT801C	Bio waste and Bio products Utilization	2	1	0	3	2	1	0	3
2	XBTOE4	Open Elective Courses	3	0	0	3	3	0	0	3
3	XBTOE5	Open Elective Courses	3	0	0	3	3	0	0	3
4	XBT804	Project Work (Phase-II)	0	0	9	9	0	0	18	18
5	XBTMO 4	Minor Course IV ^{*#}	0	0	0	0	0	0	2	2
		Total	8	1	9	18	8	1	20	29