

Department of Biotechnology

B.Tech. Biotechnology & Bioinformatics Curriculum

Course No	SEM - I	Type	Credits
CY1018	Environmental Chemistry	BS	2
EP1108	Modern Physics	BS	2
ID1063	Introduction to Programming	BE	3
MA1110	Calculus-I	BS	1
MA1220	Calculus-II	BS	1
BT1023	Basic Bioinformatics	DC	2
LA1760	English Communication	SS	2
LA1770	Personality Development	SS	1
BT10110	Introduction to bio-nanotechnology	DC	1
BT10010	Introduction to Life Sciences	BS	1
	TOTAL		16

Course No	SEM - 2	Type	Credits
MA1140	Elementary Linear Algebra	BS	1
MA1150	Differential Equations	BS	1
ID1050	Intro to AI & ML	BE	1
CH1140	Thermodynamics	BE	3
EP1031	Physics lab	BS	2
EM3020	Introduction to Entrepreneurship	SS	1
AI1110	Probability & Random variables	BE	3
CY1031	Chemistry Lab	BS	2
ID1054	Digital Fabrication	BE	2
	TOTAL		16

Course No	SEM - 3	Type	Credits
BT20030	Biochemistry	DC	3
BT20040	Microbiology	DC	2
BT20011	Basic Biotechnology lab	DC	3
BT20053	Big Data biology & Biological databases	DC	3
Laxxxxx	LA Elective	LA	2
BT30123	R and Python for Biologists	DC	3
	TOTAL		16

Course No	SEM - 4	Type	Credits
BT20063	Molecular and Cellular Biology	DC	3
BT20070	Biochemical Engineering	DC	3
BT20090	Protein structure, function and disease	DC	3
BTxxxxx	Elective (BT)	DE	3
BT20083	Next Generation Sequencing	DC	2
BT20023	Biostatistics	DC	3
	TOTAL		17

Course No	SEM - 5	Type	Credits
BT40130	Neuroscience & Technology	DC	3
Fxxxxx	Free Elective	FE	2
BT30030	Sequence alignment algorithms	DC	2
BT30023	Machine Learning for Bioinformatics	DC	2
BT30043	Genetic Engineering	DC	3
BT30050	Genomics, Transcriptomics & Proteomics	DC	3
LAxxxxx	LA Electives	LA	2
	TOTAL		17

Course No	SEM – 6	Type	Credits
Fxxxxx	Free Electives	FE	6
Laxxxxx	LA Electives	LA	3
BT30015	Option 1: Internship (CGPA > 7.0)		6
BT30015	Option 2: Departmental Project*	DE	6
	TOTAL		15

Course No	SEM - 7	Type	Credits
BT40030	Industrial Biotechnology	DC	3
BT40040	Immunology and Immunotechnology	DC	2
BTxxxxx	Elective	DE	2
BT40026	Seminar in BT and BI	DC	1
BT40010	Computer Aided Drug Designing	DC	3
BT40223	Algorithms for Molecular Dynamics simulation	DC	2
Fxxxxx	Free Elective	FE	2
	TOTAL		15

Course No	SEM - 8	Type	Credits
Fxxxx	Free Electives	FE	2
Laxxxx	LA Elective	LA	2
BTxxxxx	Elective	DE	3
BTxxxxx	Elective	DE	2
BT50010	Systems Biology	DC	2
ID4006	Ethics and values	SS	1
BT40143	Biological Data Analysis	DC	3
	TOTAL		15

Total Number of Credits: 127**

Core/Elective: 77 (60%)

Basic science: 13 (10%)

Basic engineering: 12 (9%)

LA/Creative arts: 14 (11%)

Free electives: 12 (9%)

Departmental elective courses

S. No.	Semester	Code	Course Name	Credits
1	4	BT20253	Molecular Biophysics and Macromolecular Structural Biology	3
2	4	BT20150	Nucleic acids and RNA biomedicine	3
3	7	BT40150	Genomics stability and Human Disease	2
4	8	BT50020	BioSignalling	3
5	8	BT40110	Microbial Genomics, Health Care and Big Data	2
6	8	BT40133	Nucleic Acid Nanotechnology and Computational Virology	2
7	8	BT40120	Bioinformatics and Precision Medicine	2
8	8	BT40050	Principles of Pharmacology	2
9	8	BT40160	Fermentation Technology	2