

# School of Biotechnology

Integrated B.Tech. + M.Tech./MBA (Biotechnology) Programme  
[10 Semesters], Updated for Batches 2023 onwards

S.No.	Code	Course Title	Credits
<b>SEMESTER 1</b>			
1	CY101	Engineering Chemistry	4
2	MA103/ BT101	Mathematics /Life Science* (*MA103 is for students having Biology in 10+2 and BT101 for students having Math in 10+2)	4
3	CS101	Fundamentals of Computer Programming	4
4	BT103	Introduction to Biotechnology	3
5	EN101	English Proficiency	2
6	BS101	Human Values and Buddhist Ethics	2
7	BT105	Laboratory I: Basic Biotechnology	2
8	CY103	Laboratory II: Chemistry	1
9	CS181	Laboratory III: Computer Programming	1
10	--	General Proficiency	0
<b>TOTAL</b>			<b>23</b>
<b>SEMESTER 2</b>			
1	PH101	Applied Physics	4
2	MA104	Mathematics II	4
3	BT102	Biomolecules	4
4	EN102	Professional Communication	2
5	ES101	Environmental Studies	4
6	--	Open Elective 1. BT104 Biotechnology and Human Welfare   2. Courses offered by other schools of studies	2
7	PH104	Laboratory I: Physics	1
8	BT106	Laboratory II: Biomolecules	2
9	--	General Proficiency	0
<b>TOTAL</b>			<b>23</b>
<b>SEMESTER 3</b>			
1	BT201	Cell Biology	3
2	BT203	Biochemistry	3
3	BT205	Fundamentals of Microbiology	3
4	BT207	Introductory Bioinformatics	3
5	MA203	Quantitative Technique in Biotechnology	4
6	--	Open Elective ( <u>Choose any One</u> ) 1. BT209 Biodiversity, Bioprospecting & Organic farming   2. BT211 Ecology and Environment   3. Course offered by other school of studies	3
7	BT213	Laboratory I: Cell Biology, Microbiology and Biochemistry	3
8	BT215	Laboratory II: Basic Bioinformatics	2
<b>TOTAL</b>			<b>24</b>

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<b>SEMESTER 4</b>			
1	BT202	Molecular Dynamics & Bioenergetics	3
2	BT204	Enzymology	3
3	BT206	Bioanalytical Techniques	3
4	BT208	Immunobiology	3
5	BT220	Genetics	3
	.....	Generic Elective ( <u>Choose any One</u> )	4
6	--	1. BT210 Bimolecular Fluid Mechanics & Biotrafficking   2. BT212 Cell Physiology	
		Skill Enhancement Course ( <u>Choose any One Theory/Lab combination</u> )	2
		1. EE202 Measurement and Instrumentation   2. EE216 Measurement and Instrumentation Lab   3. BT214 Medical Lab Technology   4. BT216 Medical Lab Technology Lab	
7	BT218		2
8	--	Laboratory I: Enzymology	1
9	--	Laboratory II: Skill Enhancement Course	0
		General Proficiency	
<b>TOTAL</b>			<b>24</b>
<b>SEMESTER 5</b>			
1	BT301	Molecular Biology	3
2	BT303	Biophysical Chemistry	3
3	BT305	Developmental Biotechnology	3
4	BT307	Food Biotechnology	3
5	BT309	Environmental Biotechnology	3
6	--	Generic Elective ( <u>Choose any One</u> )	3
		1. BT311 Developments in Therapeutics   2. BT313 Microbiology Quality Control in Pharma and Food Industry	
7	BT315	Laboratory I: Molecular Biology	2
8	BT317	Laboratory II: Environmental Biotechnology	2
9	--	General Proficiency	0
<b>TOTAL</b>			<b>22</b>
<b>SEMESTER 6</b>			
1	BT302	Genomics and Proteomics	4
2	BT304	Plant & Animal Biotechnology	4
3	BT306	Vaccine Biotechnology	3
4	BT308	Virology	3
5	--	Generic Elective ( <u>Choose any One</u> )	
		1. BT310 Material Science & Biomaterials   2. BT312 Pharmaceutical Biotechnology   3. BT314 Biofuel and Alcohol Technology	3
6	BT316	Training Seminar	2
7	--	Educational Tour	0
8	BT318	Laboratory I: Genomics and Proteomics	3
9	BT320	Laboratory II: Plant & Animal Biotechnology	3
10	--	General Proficiency	0
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SEMESTER 7			
1	BT507	Microbiology	3
2	BT509	Plant and Animal Cell Culture Technology	2
3	BT517	Principles of Bioreaction Engineering	3
4	MA415	Biostatistics	3
5	--	Discipline Specific Elective 1 (Students opting MBA will choose a course offered by the School of Management) 1. BT519 Nanobiotechnology   2. BT521 Molecular Medicine   3. Course offered by the School of Management	3
6	--	Discipline Specific Elective 2 (Students opting MBA will choose a course offered by the School of Management) 1. BT523 Molecular Modeling & Drug Design   2. BT525 Molecular Toxicology   3. Course offered by the School of Management	3
7	BT527	Laboratory I: Cell Culture Technology	4
8	BT529	Laboratory II: Microbiology Technology	2
	BT531	Laboratory III: Bioprocess Technology	2
9	--	General Proficiency	0
TOTAL			25
SEMESTER 8			
1	BT502	Genetic Engineering	3
2	BT504	Immunology	3
3	BT506	Bioprocess Engineering and Technology	3
4	BT508	Downstream Processing in Biotechnology	3
5	BT510	Bioreactor Operations	3
6	BT512	Computational Biology	3
7	BT514	Laboratory I: Molecular Biology & Genetic Engineering	4
8	BT516	Laboratory II: Immunology	3
9	BT518	Laboratory III: Computational Biology	2
10	--	General Proficiency	0
TOTAL			27
SEMESTER 9			
1	BT601	Bioprocess Equipment Design and Economics	3
2	BT603	Bioentrepreneurship	3
3	BT605	Instrumentation and Control	2
4	BT607	Research Methodology and Scientific Communication Skills	2
5	BT609	Intellectual Property Rights, Biosafety and Bioethics	2
6	BT611	Project Proposal Preparation and Presentation	2
7	BT613	Laboratory I: Downstream Processing in Biotechnology	2
8	BT615	Dissertation I	6
9	--	Discipline Specific Elective ( <u>Choose any One</u> ) 1. BT617 Metabolic and Systems Biology   2. BT619 Medical Devices and Automation   3. BT621 Pharmacogenomics   4. BT623 OMICS Technologies   5. BT625 Protein Engineering   6. BT627 Systems & Synthetic Biology   7. BT629 Product Development & Drug Delivery	2
10	--	General Proficiency	0
TOTAL			24

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SEMESTER 10			
1	BT602	Dissertation II	22
2	--	General Proficiency	0
TOTAL			22

**Total Credits= 239**