

School of Biotechnology

Integrated B.Tech. + M.Tech./MBA (Biotechnology) Programme

[10 Semesters]

Semester 1

Code	Course	L	T	P	Credits
THEORY					
CY101	Engineering Chemistry	3	1	0	4
MA103/ BT101	Mathematics /Life Science*	3	1	0	4
CS101	Computer Programming-I	2	0	0	2
BT103	Biomolecules	3	0	0	3
EN101	English Proficiency	2	0	0	2
SS101	Human values and Buddhist Ethics	2	0	0	2
PRACTICALS					
BT105	Biomolecules Lab	0	0	3	2
CY103	Chemistry Lab	0	0	2	1
CS181	Computer Programming Lab-I	0	0	2	1
	Total credits	15	2	7	21

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*MA103 is for students having Biology in 10+2 and BT101 for students having Math in 10+2

Skill Enhancement Course (SEC):

1. CS101 Computer Programming-I
2. CS181 Computer Programming Lab-I

Ability Enhancement Compulsory Course (AECC):

1. EN101 English Proficiency
2. SS102 Human values and Buddhist Ethics

Semester 2

Code	Course	L	T	P	Credits
THEORY					
PH101	Applied Physics	3	1	0	4
MA104	Mathematics II	3	1	0	4
BT102	Basic Microbiology	3	0	0	3
CS102	Computer Programming-II	2	0	0	2
EN102	Professional Communication	2	0	0	2
ES101	Environmental Studies	3	0	0	3

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--	Open Elective	2	0	0	2
PRACTICALS					
PH104	Physics Lab	0	0	2	1
BT104	Basic Microbiology Lab.	0	0	3	2
CS182	Computer Lab-II	0	0	2	1
	Total credits	18	2	7	24

Skill Enhancement Course (SEC):

1. CS102 Computer Programming-II
2. CS182 Computer Programming Lab-II

Ability Enhancement Compulsory Course (AECC) :

1. EN102 Professional Communication
2. ES101 Environmental Studies

Open Elective (OE):

Courses offered by other schools

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Semester 3

Code	Course	L	T	P	Credits
THEORY					
BT201	Cell Biology and Genetics	3	1	0	4
BT203	Introductory Bioinformatics	3	0	0	3
MA203	Quantitative Technique in Biotechnology	3	1	0	4
--	Generic Elective 1	3	0	0	3
--	Generic Elective 2	3	0	0	3
--	Open Elective	3	0	0	3
PRACTICALS					
BT215	Cell Biology and Genetics lab	0	0	3	2
BT217	Bioinformatics Lab	0	0	3	2
Total credits		18	2	6	24

Generic Elective 1:

1. BT205 Organic Chemistry
2. CH509 Medicinal Chemistry

Generic Elective 2:

1. BT207 Physical and Inorganic Chemistry
2. BT209 Microbiology quality control in Pharma and food industry
3. ES409 Environmental Biophysics

Open Elective :

1. BT211 Basic Bioinformatics
2. BT213 Ecology and Environment

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3. Course from other school

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Semester 4

Code	Course	L	T	P	Credits
THEORY					
BT202	Biochemistry & Bioenergetics	3	1	0	4
BT204	Enzymology	3	0	0	3
BT206	Microbiology	3	0	0	3
BT208	Bioanalytical Techniques	3	0	0	3
BT210	Plant Growth and Development	3	0	0	3
	Skill Enhancement Course	2	0	0	2
PRACTICALS					
BT216	Biochemistry lab	0	0	3	2
BT218	Microbiology Lab	0	0	3	2
	Skill Enhancement Course	0	0	2	1
	Total credits	17	1	8	23

Skill Enhancement Course: (Select one theory with corresponding lab)

1. EE202 Measurement and Instrumentation
2. EE216 Measurement and Instrumentation Lab
3. BT212 Medical LabTechnology
4. BT214 Medical LabTechnology Lab

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Semester 5

Code	Course	L	T	P	Credits
THEORY					
BT301	Animal and Plant Tissue Culture	3	1	0	4
BT303	Developmental Biology	3	0	0	3
BT305	Industrial Microbiology	3	1	0	4
BT307	Biophysical Chemistry	3	0	0	3
--	Generic Elective	3	0	0	3
PRACTICALS					
BT313	Animal Tissue Culture lab	0	0	3	2
BT315	Plant Tissue Culture lab	0	0	3	2
BT317	Industrial Microbiology lab	0	0	3	2
Total credits		15	2	9	23

Generic Elective (GE):

1. BT309 Entrepreneurship Development

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2. BT311 Introductory Medical Microbiology

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Semester 6

Code	Course	L	T	P	Credits
THEORY					
BT302	Molecular Biology	3	0	0	3
BT304	Food Biotechnology	3	0	0	3
BT306	Virology	3	1	0	4
BT308	Environmental Biotechnology	3	1	0	4
BT310	Developments in Therapeutics	3	0	0	3
PRACTICAL					
BT312	Molecular Biology Lab	0	0	3	2
BT314	Food Biotechnology Lab	0	0	3	2
BT316	Environmental Biotechnology Lab.	0	0	3	2
	Total credits	15	2	9	23

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Semester 7

Code	Course	L	T	P	Credits
THEORY					
BT501	Recombinant DNA technology	3	1	0	4
BT503	Principles of Immunology & Immunotechnology	3	1	0	4
BT505	Nano biotechnology	3	0	0	3
--	Discipline Specific Elective 1*	3	0	0	3
--	Discipline Specific Elective 2*	3	0	0	3
PRACTICAL					
BT511	Recombinant DNA technology lab	0	0	3	2
BT513	Immunology & Immunotechnology lab	0	0	3	2
Total credits		15	2	6	21

*Students opting for MBA will have to choose courses offered by the School of Management

Discipline Specific Elective (DSE) 1:

1. FP301 Food Analysis and Quality Control
2. One Course offered by the School of Management

Discipline Specific Elective (DSE) 2:

1. BT507 Stem Cell Biology
2. BT509 Molecular Toxicology
3. One Course offered by the School of Management

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Semester 8

Code	Course	L	T	P	Credits
THEORY					
BT502	Genomics and Proteomics	4	0	0	4
BT504	Computational biology	3	0	0	3
BT506	Bioprocess Engineering & Technology	3	1	0	4
BT508	Vaccine Design & Development	3	1	0	4
--	Generic Elective	3	0	0	3
PRACTICAL					
BT514	Genomics and Proteomics lab	0	0	3	2
BT516	Computational Biology lab	0	0	3	2
BT518	Bioprocess Engineering & Technology lab	0	0	3	2
Total credits		16	2	9	24

Generic Elective (GE):

1. BT510 Regulation Ethics and Patenting in Biotechnology
2. FP507 Food Quality & Standards
3. ES504 Environmental Economics, Policies, Conservation & Legislations
4. BT512 Molecular Medicine

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After 8th semester:

Code	Course	L	T	P	Credits
BT550	Summer Project	0	0	0	5
	Total credits	0	0	0	5

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Semester 9

Code	Course	L	T	P	Credits
BT601	Research Methodology & Data Validation	3	0	0	3
(Select any three papers)					
BT603	Advanced Animal Biotechnology	3	0	0	3
BT605	Advanced Plant Biotechnology	3	0	0	3
BT607	Advanced Microbial Biotechnology	3	0	0	3
BT609	Industrial Environmental Biotechnology	3	0	0	3
LABS (select any Three labs corresponding to the Theory course)					
BT611	Animal Biotechnology lab	0	0	3	2
BT613	Plant Biotechnology lab	0	0	3	2
BT615	Microbial Biotechnology lab	0	0	3	2
BT617	Environmental Biotechnology lab	0	0	3	2
PROJECTS					
BT619	Dissertation I	0	0	0	5
Total credits		12	0	9	23

Semester 10

Code	Course	L	T	P	Credits
BT602	Dissertation-II	0	0	0	25
Total credits					25