

**Integrated B.Tech. + M.Tech./MBA (Biotechnology) Programme****Semester 1**

	S.No.	Course	L	T	P	Credits
<b>THEORY</b>						
C1 (F)	CY101	Engineering Chemistry	3	1	0	4
C2 (F)	MA103/BT101	Mathematics- I / <i>LIFE SCIENCES</i>	3	1	0	4
SEC1	CS101	Computer Programming-I	2	0	0	2
C3 (EF)	<del>BT103</del>	Biomolecules	3	0	0	3
AECC1	EN101	English Proficiency	2	0	0	2
AECC2	BS101	Human values and Buddhist Ethics	2	0	0	2
<b>PRACTICALS</b>						
C4 (EF)	BT105	Fundamental Biochemistry Lab	0	0	3	2
C5 (F)	CY103	Chemistry Lab	0	0	2	1
SEC2	CS181	Computer Programming Lab-I	0	0	<i>2</i>	<i>1</i>
		General Proficiency	0	0	0	0
<b>Total credits</b>			<b>15</b>	<b>2</b>	<i>3</i>	<i>22</i>

\*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. BS101 Human values and Buddhist Ethics

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As per University → This paper is being  
run by I.C.T.

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

### Semester 2

	S.No.	Course	L	T	P	Credits
	<b>THEORY</b>					
C6	PH102	Engineering Physics	3	1	0	4
C7	MA104	Mathematics -II	3	1	0	4
C8	BT102	Basic Microbiology	3	0	0	3
SEC3	CS102	Computer Programming-II	2	0	0	2
AECC2	EN102	Professional Communication	2	0	0	2
AECC3	ES101	Environmental Studies	3	0	0	3
	--	Open Elective	2	0	0	2
	<b>PRACTICALS</b>					
C9	PH104/CY103	Physics Lab	0	0	2	1
C10	BT106	Basic Microbiology Lab.	0	0	3	2
SEC4	CS182	Computer Lab-II	0	0	2(3)	(2) 1
		General Proficiency	0	0	0	0
		<b>Total credits</b>	<b>18</b>	<b>2</b>	<b>(8)</b>	<b>(25)</b>

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#### Skill Enhancement Course (SEC):

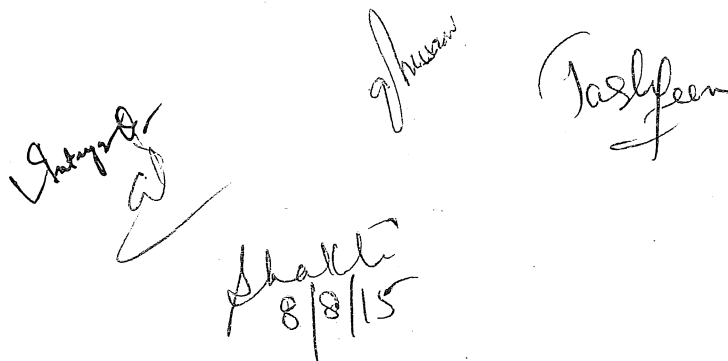
1. CS102 Computer Programming-II
2. CS182 Computer Programming Lab-II

#### Ability Enhancement Compulsory Course (AECC) :

1. EN102 Professional Communication
2. ES101 Environmental Studies

#### Open Elective (OE):

Courses Offered from other Schools


  
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### Semester 3

	S.No.	Course	L	T	P	Credits
	<b>THEORY</b>					
C11	BT203	Introduction to Eukaryotic Cell Biology	3	0	0	3
C12	BT205	Enzymology	3	1	0	4
C13	MA203	Quantitative Techniques in Biotechnology	3	1	0	4
GE1	--	Generic Elective 1	3	0	0	3
GE2	--	Generic Elective 2	2	0	0	2
OE2	--	Open Elective	3	0	0	3
	<b>PRACTICALS</b>					
C14	BT207	Enzymology Lab	0	0	3	2
C15	BT209	Basic Cell Biology Lab	0	0	3	2
		General Proficiency	0	0	0	0
		<b>Total credits</b>	<b>17</b>	<b>2</b>	<b>6</b>	<b>23</b>

#### Generic Elective (GE) 1:

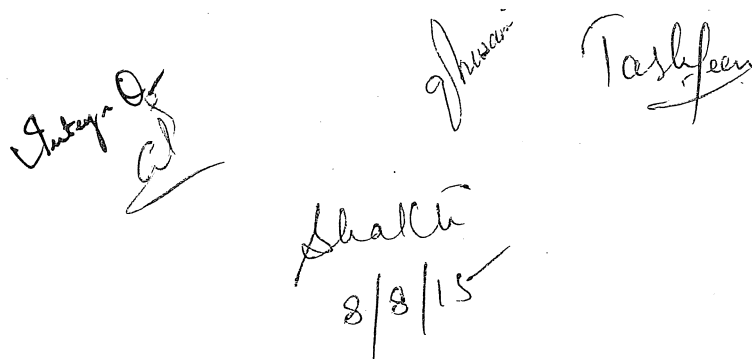
1. BT201 Organic Chemistry
2. CH509 Medicinal Chemistry-1
3. BT213 Ecology & Environment

#### Generic Elective (GE) 2:

1. BT211 Microbiology quality control in pharma and food industry
2. BT210 Physical and Inorganic Chemistry
3. ES409 Environmental Biophysics

#### Open Elective (OE) :

Courses offered from other Schools


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

**Semester 4**

	S.No.	Course	L	T	P	Credits
	<b>THEORY</b>					
C16	BT202	Principles of Biochemical Engineering	3	1	0	4
C17	BT204	Bioenergetics	2	1	0	3
C18	BT206	Biochemistry	3	1	0	4
SEC5		Skill Enhancement Course	2	0	0	2
C19	BT510	Bioanalytical Techniques	3	1	0	4
	<b>PRACTICALS</b>					
C20	BT212	Biochemical engineering/Bioenergetics lab	0	0	3	2
SEC6		Skill Enhancement Course	0	0	2	1
C21	BT214	Bioanalytical and Biochemistry Lab	0	0	3	2
		General Proficiency	0	0	0	0
		<b>Total credits</b>	<b>13</b>	<b>4</b>	<b>8</b>	<b>22</b>

**Skill Enhancement Course (SEC): (Any one theory with corresponding lab)**

1. EE202 Measurements and Instrumentation
2. EE216 Measurements and Instrumentation Lab
3. BT216 Medical LabTechnology
4. BT218 Medical LabTechnology Lab

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### Semester 5

	S.No.	Course	L	T	P	Credits
	<b>THEORY</b>					
C22	BT301	Cell Biology	3	0	0	3
C23	BT315	Genetics	3	0	0	3
C24	BT303	Industrial Microbiology	3	0	0	3
C25	BT305	Plant Growth and Development	3	0	0	3
SEC7	BT307	Seminar	0	0	0	2
GE	--	Generic Elective	3	0	0	3
	<b>PRACTICALS</b>					
C26	BT311	Cell Biology and Genetics lab	0	0	6	3
C27	BT313	Industrial Microbiology lab	0	0	6	3
		General Proficiency	0	0	0	0
		<b>Total credits</b>	<b>14</b>	<b>0</b>	<b>12</b>	<b>23</b>

### Generic Elective (GE):

1. BT309 Entrepreneurship Development
2. BT317 Enzyme Technology

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

**Semester 6**

	S.No.	Course	L	T	P	Credits
	<b>THEORY</b>					
C	BT302	Molecular Biology	3	0	0	3
C	BT304	Developmental Biology	3	0	0	3
C	BT306	Virology	3	0	0	3
C	BT308	Environmental Biotechnology	3	0	0	3
C	BT310	Developments in Therapeutics	3	0	0	3
	<b>PRACTICAL</b>					
C	BT312	Molecular & Developmental Biology Lab	0	0	6	3
C	BT314	Environmental Biotechnology Lab.	0	0	6	3
		General Proficiency	0	0	0	0
		<b>Total credits</b>	<b>15</b>	<b>0</b>	<b>12</b>	<b>21</b>

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**Integrated B.Tech. + M.Tech./MBA (Biotechnology) Programme****Semester 7**

	S.No.	Course	L	T	P	Credits
<b>THEORY</b>						
C	BT501	Recombinant DNA technology	3	0	0	3
C	BT503	Biophysical Chemistry	3	10	0	3+1
C	BT505	Principles of Immunology	3	0	0	3
DSE1	--	Discipline Specific Elective 1*	3	0	0	3
DSE2	--	Discipline Specific Elective 2*	3	0	0	3
			0	0	0	
<b>PRACTICAL</b>						
C	BT511	Recombinant DNA technology lab	0	0	6	3
C	BT513	Biophysical Chemistry lab	0	0	6	3
C	BT515	Immunology Lab.	0	0	6	3
		General Proficiency	0	0	0	0
		<b>Total credits</b>	<b>15</b>	<b>0</b>	<b>18</b>	<b>(24) 25</b>

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

**Discipline Specific Elective (DSE) 1:**

1. BT407 Nanobiotechnology
2. FT301 Food Analysis and Quality Control
3. One Course offered by the School of Management

**Discipline Specific Elective (DSE) 2:**

1. BT417 Vaccine Design and Development
2. BT409 Industrial and Food Biotechnology
3. One Course offered by the School of Management

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### Semester 8

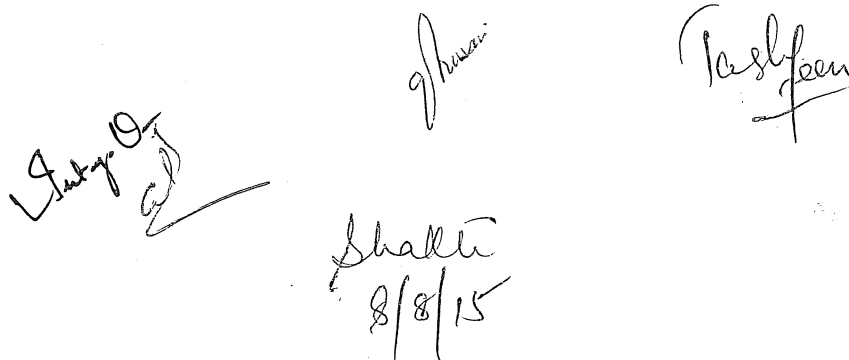
	S.No.	Course	L	T	P	Credits
	<b>THEORY</b>					
C	BT502	Genomics and Proteomics	4	0	0	4
C	BT506	Bioinformatics and Computational biology	3	0	0	3
C	BT508	Bioprocess Engineering & Technology	3	1	0	4
GE	--	Generic Elective	3	0	0	3
SEC8	BT518	Seminar	0	0	0	2
	<b>PRACTICAL</b>					
C	BT512	Genomics and Proteomics lab	0	0	6	3
C	BT514	Bioinformatics and Computational Biology lab	0	0	6	3
C	BT516	Bioprocess Engineering & Technology lab	0	0	6	3
		General Proficiency	0	0	0	0
		<b>Total credits</b>	<b>13</b>	<b>1</b>	<b>18</b>	<b>25</b>

#### Generic Elective (GE):

1. BT504 Regulation Ethics and Patenting in Biotechnology
2. FT507 Food Quality & Standards
3. ES504 Environmental Economics, Policies, Conservation & Legislations
4. BT520 Molecular Medicine

#### After 8<sup>th</sup> semester:

	S.No.	Course	L	T	P	Credits
	BT600	Summer Project (4-6 weeks)	0	0	0	5
		<b>Total credits</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>


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

### Semester 9

	S.No.	Course	L	T	P	Credits
<b>DSE3-DSE6</b>	<b>(Select any <i>four</i> papers)</b>					
	BT601	Advanced Animal Biotechnology	3	0	0	3
	BT603	Advanced Plant Biotechnology	3	0	0	3
	BT605	Molecular Microbial Biotechnology	3	0	0	3
	BT607	Protein/Enzyme Engineering	3	0	0	3
	BT609	Molecular modeling and Drug design	3	0	0	3
	BT611	Systems Biology and computational genomics	3	0	0	3
	BT613	Industrial Environmental Biotechnology	3	0	0	3
<b>DSE7-DSE9</b>	<b>LABS (Select any <i>Three</i> labs) *To match with course work</b>					
	BT615	Animal Biotech lab	0	0	6	3
	BT617	Plant Biotech lab	0	0	6	3
	BT619	Bioinformatics lab	0	0	6	3
	BT621	Molecular Microbial Biotechnology lab	0	0	6	3
	BT623	Industrial Environmental Biotech lab	0	0	6	3
	<b>PROJECTS</b>					
Project	BT627	Dissertation-I	0	0	10	5
		General Proficiency	0	0	0	0
		<b>Total credits</b>	<b>12</b>	<b>0</b>	<b>28</b>	<b>26</b>

### Semester 10

S.No.	Course	L	T	P	Credits
BT602	Dissertation-II	0	0	0	25
	General Proficiency	0	0	0	0
	<b>Total credits</b>				<b>25</b>

**Total Credits = 240**

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