

## DEPARTMENT OF BIOTECHNOLOGY

Bridge / Refresher Courses										
No	Course Code	Course Title	Uni/Sch/ Dept	Type	L	T	P	S	Cr	CH
1		Bridge/ Refresher Course in Mathematics	SCH ELEC	BS	0	0	2	0	0	2
2		Bridge/ Refresher Course in Physics	SCH ELEC	BS	0	0	2	0	0	2
3		Bridge/ Refresher Course in Chemistry	SCH ELEC	BS	0	0	2	0	0	2
4		Bridge/ Refresher Course in English	SCH ELEC	HSS	0	0	2	0	0	2
<b>Total</b>					<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>8</b>
Induction Courses (Non Credit )										
1	18IN1001	Fundamentals of Mathematics	SCH CORE	BS	5	0	0	0	0	5
2	18IN1002	Basics of Physics	SCH CORE	BS	5	0	0	0	0	5
3	18IN1003	Introduction to Engineering	SCH CORE	ES	5	0	0	0	0	5
4	18IN1004	Human Values	SCH CORE	HSS	5	0	0	0	0	5
5	18IN1005	SWEAR Analysis	SCH CORE	ES	5	0	0	0	0	5
6	18IN1006	Cocurricular Activities	SCH CORE	GN	5	0	0	0	0	5
<b>Total</b>					<b>30</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>30</b>
SEMESTER - 1										
1	18MT2001	Basic Mathematics	SCH CORE	BS	3	0	0	0	3	3
2	18SC1104	Foundations of Computational Mathematics	SCH CORE	BS	0	0	2	0	1	2
3	18SC1105	Logic and reasoning	SCH CORE	BS	0	0	2	0	1	2
4	18SC1101	Problem solving & computer programming	SCH CORE	ES	3	0	2	0	4	5
5	18UC1101	Basic English	UNI CORE	HSS	0	0	4	0	2	4
6	18SC1106	Technical Skill - 1 (Coding)	SCH CORE	SK	0	0	0	6	1.5	6
7	18CY1001	Engineering Chemistry	SCH ELEC	ES	3	0	2	0	4	5
8	18BT1002	Engineering Graphics&Design for Biotechnologists	SCH ELEC	ES	0	0	4	0	2	4
9	18GN1107	Cocurricular Activity -1	SCH CORE	CCA	0	0	0	2	0.5	2
10	18GN1101	Counseling -1	SCH CORE	CNS	0	0	1	0	0	1
<b>Total</b>					<b>9</b>	<b>0</b>	<b>17</b>	<b>8</b>	<b>19</b>	<b>34</b>
SEMESTER - 2										
1	18SC1103	Single Variable Calculus and Matrix Algebra	SCH ELEC	BS	3	0	0	0	3	3
2	18UC1202	English Proficiency	UNI CORE	HSS	0	0	4	0	2	4
3	18SC1207	Technical Skill -2 (Coding)	SCH CORE	SK	0	0	0	6	1.5	6

4	18SC1202	Data Structures	SCH CORE	ES	3	0	2	0	4	5
5	18BT1003	Workshop Practices for Biotechnologists	SCH ELEC	ES	0	0	4	0	2	4
6	18BT1201	Cell Biology	DEP CORE	PC	3	1	0	0	4	4
7	18PH1001	Engineering Physics	SCH ELEC	ES	3	0	2	0	4	5
8	18GN1208	Cocurricular Activity -2	SCH CORE	CCA	0	0	0	1	0.5	1
9	18GN1202	Counseling -2	SCH CORE	CNS	0	0	1	0	0	1
<b>Total</b>					<b>12</b>	<b>1</b>	<b>13</b>	<b>7</b>	<b>21</b>	<b>33</b>
<b>SEMESTER - 3</b>										
1	18BT2105	Biochemistry	DEP CORE	PC	3	0	2	0	4	5
2	18BT2106	Microbiology	DEP CORE	PC	3	0	2	0	4	5
3	18ES2101	Process Engineering Principles	SCH ELEC	ES	2	1	0	0	3	3
4	18MT2011	Biostatistics	SCH ELEC	BS	2	1	0	0	3	3
5	18UC2103	Professional Communication Skills	UNI CORE	HSS	0	0	4	0	2	4
6	18TS1001	Skilling for Engineers-1(Medical Lab Technology)	SCH ELEC	SK	0	0	0	8	2	8
7	18UC0009	Ecology & Environment	UNI CORE	HSS	2	0	0	0	2	2
8	18GN2109	Cocurricular Activity -3	SCH CORE	CCA	0	0	0	2	0	2
9	18GN2103	Counseling -3	SCH CORE	CNS	0	0	1	0	0	1
<b>Total</b>					<b>12</b>	<b>2</b>	<b>9</b>	<b>10</b>	<b>20</b>	<b>33</b>
<b>SEMESTER - 4</b>										
1	18BT2107	Bioanalytical Techniques	DEP CORE	PC	3	0	2	0	4	5
2	18BT2108	Molecular Biology	DEP CORE	PC	3	1	0	0	4	4
3	18BT2109	Immunology	DEP CORE	PC	3	0	2	0	4	5
4	18ES2103	Biochemical Thermodynamics	SCH ELEC	ES	3	1	0	0	4	4
5	18UC2204	Aptitude Builder - 1	UNI CORE	HSS	0	0	4	0	2	4
6	18TS1002	Skilling for Engineers-2 (Process Engineering Tools)	SCH ELEC	SK	0	0	0	8	2	8
7	18UC0008	Indian Constitution	UNI CORE	ES	2	0	0	0	2	0
8	18GN2210	Cocurricular Activity -4	SCH CORE	CCA	0	0	0	2	0	2
9	18GN2204	Counseling -4	SCH CORE	CNS	0	0	1	0	0	1
<b>Total</b>					<b>14</b>	<b>2</b>	<b>9</b>	<b>10</b>	<b>22</b>	<b>33</b>
<b>SEMESTER - 5</b>										
1	18ES2102	Transport processes in Biological systems	SCH ELEC	ES	3	0	2	0	4	5
2	18BT3110	Bioinformatics	DEP CORE	PC	3	0	2	0	4	5
3	18BT3111	Genetic Engineering	DEP CORE	PC	3	0	2	0	4	5

4	18BT3112	Fermentation Technology	DEP CORE	PC	3	0	2	0	4	5
5	18BT3113	Biochemical Reaction Engineering	DEP CORE	PC	3	0	2	0	4	5
6	18UC3105	Aptitude Builder - 2	UNI CORE	HSS	0	0	4	0	2	4
7	18BT3150	Technical Proficiency & Training -1 (Genomics)	SCH CORE	SCH	1	0	0	0	1	4
8	18TS1003	Skilling for Engineers-3 (Animal Cell Culture)	SCH ELEC	SK	0	0	0	8	2	8
9	18UC0007	Indian Heritage & Culture	UNI CORE	ES	2	0	0	0	2	0
10	18IE2246	Industrial Training	SCH CORE	PR	0	0	0	0	2	0
11	18GN3111	Cocurricular Activity -5	SCH CORE	CCA	0	0	0	2	0	2
12	18GN3105	Counseling -5	SCH CORE	CNS	0	0	1	0	0	1
<b>Total</b>					<b>18</b>	<b>0</b>	<b>15</b>	<b>10</b>	<b>29</b>	<b>44</b>
<b>SEMESTER - 6</b>										
1	18BT3201	Plant Biotechnology	DEP CORE	PC	3	0	2	0	4	5
2	18BT3202	Downstream Processing	DEP CORE	PC	3	0	2	0	4	5
3		Professional Elective 1	DEP ELEC	PE	3	0	0	0	3	3
4		Professional Elective 2	DEP ELEC	PE	3	0	0	0	3	3
5		Professional Elective 3	DEP ELEC	PE	3	0	0	0	3	3
6	18BT3250	Technical Proficiency & Training-2 (Bioprocessing)	SCH CORE	SCH	1	0	0	0	1	4
7	18TS1005	Skilling for Engineers-4 (Advanced Instrumentation)	SCH ELEC	SK	0	0	0	8	2	8
8	18UC3206	Campus to Corporate	UNI CORE	HSS	0	0	4	0	2	4
9	18IE3247	Term Paper	SCH CORE	PR	0	0	4	0	2	4
10	18GN3212	Cocurricular Activity -6	SCH CORE	CCA	0	0	0	2	0	2
11	18GN3206	Counseling -6	SCH CORE	CNS	0	0	1	0	0	1
<b>Total</b>					<b>16</b>	<b>0</b>	<b>13</b>	<b>10</b>	<b>24</b>	<b>42</b>
<b>SEMESTER - 7</b>										
1		Professional Elective 4	DEP ELEC	PE	3	0	0	0	3	3
2		Professional Elective 5	DEP ELEC	PE	3	0	0	0	3	3
3		Open Elective - 1	UNI ELEC	OE	3	0	0	0	3	3
4	18IE4048/ 18IE4050	Project (Part I) / Practice School	SCH CORE	PR	0	0	0	24	6	24
5		Foreign/ Non Native Language	UNI ELEC	HSS	2	0	0	0	2	0
6		Management Elective	SCH ELEC	HSS	3	0	0	0	3	3
7		Universal Human Values & Professional Ethics	UNI CORE	HSS	1	0	2	0	2	3
<b>Total</b>					<b>15</b>	<b>0</b>	<b>2</b>	<b>24</b>	<b>22</b>	<b>39</b>
<b>SEMESTER - 8</b>										

1		Open Elective - 2	UNI ELEC	OE	3	0	0	0	3	3
2		Open Elective - 3	UNI ELEC	OE	3	0	0	0	3	3
3	18IE4049/ 18IE4050/ 18IE4051	Project (Part II) / Practice School/ Internship	SCH CORE	PR	0	0	0	24	6	24
<b>Total</b>					<b>6</b>	<b>0</b>	<b>0</b>	<b>24</b>	<b>12</b>	<b>30</b>
<b>GRAND TOTAL</b>					<b>1</b>	<b>2</b>	<b>5</b>	<b>92</b>	<b>95</b>	<b>169</b>
					<b>8</b>					<b>314</b>

### PROFESSIONAL ELECTIVES

GENETIC ENGINEERING										
1	18BT3251	Molecular Genetics	DEP ELEC	PE	3	0	0	0	3	3
2	18BT3252	Transgenic Technology	DEP ELEC	PE	3	0	0	0	3	3
3	18BT3253	Molecular Expression Technology	DEP ELEC	PE	3	0	0	0	3	3
4	18BT3254	Genomics and Proteomics	DEP ELEC	PE	3	0	0	0	3	3
5	18BT4150	Molecular markers and Diagnostics	DEP ELEC	PE	3	0	0	0	3	3
6	18BT4151	Gene and the Environment	DEP ELEC	PE	3	0	0	0	3	3
7	18BT4152	Microbial Genetics	DEP ELEC	PE	3	0	0	0	3	3
8	18BT4153	DNA Forensics	DEP ELEC	PE	3	0	0	0	3	3
INDUSTRIAL BIOTECHNOLOGY										
1	18BT3255	Microbial Technology	DEP ELEC	PE	3	0	0	0	3	3
2	18BT3256	Pharmaceutical Biotechnology	DEP ELEC	PE	3	0	0	0	3	3
3	18BT3257	Metabolic Engineering	DEP ELEC	PE	3	0	0	0	3	3
4	18BT3258	Bioresource Technology	DEP ELEC	PE	3	0	0	0	3	3
5	18BT4154	Bioprocess Economics and Plant Design	DEP ELEC	PE	3	0	0	0	3	3
6	18BT4155	Enzyme Engineering	DEP ELEC	PE	3	0	0	0	3	3
7	18BT4156	Bioprocess Validation and cGMP	DEP ELEC	PE	3	0	0	0	3	3
8	18BT4157	Food Technology	DEP ELEC	PE	3	0	0	0	3	3
9	18BT4158	Pharmacovigilance and Safety	DEP ELEC	PE	3	0	0	0	3	3
BIOINFORMATICS										
1	18BT3259	PERL and Bioperl programming	DEP ELEC	PE	3	0	0	0	3	3
2	18BT3260	Biomedical Informatics	DEP ELEC	PE	3	0	0	0	3	3
3	18BT3261	Molecular Modelling and Drug Design	DEP ELEC	PE	3	0	0	0	3	3
4	18BT3262	Structural Biology	DEP ELEC	PE	3	0	0	0	3	3
5	18BT4159	Systems Biology	DEP ELEC	PE	3	0	0	0	3	3
6	18BT4160	Applied Bioinformatics	DEP ELEC	PE	3	0	0	0	3	3
7	18BT4161	Python and R Programming	DEP ELEC	PE	3	0	0	0	3	3
8	17BT4162	Data Base Management System	DEP ELEC	PE	3	0	0	0	3	3
MEDICAL BIOTECHNOLOGY										
1	18BT3263	Stem cell technology	DEP ELEC	PE	3	0	0	0	3	3
2	18BT3264	Healthcare Biotechnology	DEP ELEC	PE	3	0	0	0	3	3

3	18BT3265	Cancer Biology	DEP ELEC	PE	3	0	0	0	3	3
4	18BT3266	Neurobiology	DEP ELEC	PE	3	0	0	0	3	3
5	18BT4163	Bioelectronics & Biosensors	DEP ELEC	PE	3	0	0	0	3	3
6	18BT4164	Tissue Engineering	DEP ELEC	PE	3	0	0	0	3	3
7	18BT4165	Virology	DEP ELEC	PE	3	0	0	0	3	3
8	18BT4166	Nanobiotechnology	DEP ELEC	PE	3	0	0	0	3	3