

NAME OF INSTITUTE: INSTITUTE OF BIOSCIENCES AND TECHNOLOGY

## B.Tech. Biotechnology

Semester I																		
Course code*	Course Title	Type	Teaching Scheme			Evaluation Scheme						Minimum Passing					Credit	
						Internal			External			Total	Internal			External		Total
(Mandatory)			L	T	P	CA	MSE	TW	ESE	PR	CA		MSE	TW	ESE	PR		
BTB 111	Basic Cell Biology	Core	3	-	-	20	20	20	90	-	150	-	-	-	36	-	60	3
BTB 112	Microbial Physiology	Core	3	-	-	20	20	20	90	-	150	-	-	-	36	-	60	3
BTB 113	General Biochemistry	Minor	3	-	-	20	20	20	90	-	150	-	-	-	36	-	60	3
BTB 114	Biology Concept, Connection, Innovation And Application	Minor	3	-	-	20	20	20	90	-	150	-	-	-	36	-	60	3
UGL-01	Microbiology Lab	Core	-	-	6	-	-	-	90	60	150	-	-	-	36	24	60	3
UGL-02	Biochemistry Lab	Core	-	-	6	-	-	-	90	60	150	-	-	-	36	24	60	3
UGL-03	Micro Project	BRP	-	-	4	-	-	-	60	40	100	-	-	-	24	16	40	2
UNC-01	Gandhian Thoughts	Audit	{2}	-	-	10	20	10	60	-	100	-	-	-	24	-	40	Audit
UNC-02	Universal Human Values	Audit	{1}	-	-	10	10	-	30	0	50	-	-	-	12	0	20	Audit
BTB-116	English Communication Essentials	Audit	{2}	-	-	10	20	10	60	-	100	-	-	-	24	-	40	Audit
	<b>Total</b>		<b>10(5)</b>	<b>0</b>	<b>16</b>	<b>110</b>	<b>130</b>	<b>100</b>	<b>750</b>	<b>160</b>	<b>1250</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>300</b>	<b>64</b>	<b>260</b>	<b>20</b>

Semester II																				
Course code*	Course Title	Type	Teaching Scheme			Evaluation Scheme						Minimum Passing						Credit		
						Internal			External			Total	Internal			External			Total	
						CA	MSE	TW	ESE	PR	CA		MSE	TW	ESE	PR				
(Mandatory)			L	T	P	CA	MSE	TW	ESE	PR	Total	CA	MSE	TW	ESE	PR	Total			
BTB 121	Numerical And Computational Fundamentals-I	Core	2	-	-	10	20	10	60	-	100	-	-	-	24	-	24	2		
BTB 122	Enzymology	Core	3	-	-	20	20	20	90	-	150	-	-	-	36	-	60	3		
BTB 123	Molecular Biology of Gene	Core	3	-	-	20	20	20	90	-	150	-	-	-	36	-	60	3		
BTB 124	Basic Immunology	Minor	2	-	-	10	20	10	60	-	100	-	-	-	24	-	24	2		
BTB 125	Mendel And Darwin Theory	Minor	2	-	-	10	20	10	60	-	100	-	-	-	24	-	24	2		
BTB 126	Academic Tutorials-II	AT	-	2	-	10	20	10	60	0	100	-	-	-	24	0	24	2		
UGL-01	Computational Lab	Core	-	-	6	-	-	-	90	60	150	-	-	-	36	24	60	3		
UGL-02	Immuno Enzymo Lab	Core	-	-	6	-	-	-	90	60	150	-	-	-	36	24	60	3		
UGL-03	Micro Project	BRP	-	-	4	-	-	-	60	40	100	-	-	-	24	16	40	2		
UNC-01	Communication skills	Audit	{2}	-	-	10	20	10	60	-	100	-	-	-	24	-	40	Audit		
	<b>Total</b>		<b>12(2)</b>	<b>2</b>	<b>16</b>	<b>90</b>	<b>140</b>	<b>90</b>	<b>720</b>	<b>160</b>	<b>1200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>288</b>	<b>64</b>	<b>296</b>	<b>22</b>		

Semester III																				
Course code*	Course Title	Type	Teaching Scheme			Evaluation Scheme						Minimum Passing						Credit		
						Internal			External			Total	Internal			External			Total	
						CA	MSE	TW	ESE	PR	CA		MSE	TW	ESE	PR				
(Mandatory)			L	T	P	CA	MSE	TW	ESE	PR	Total	CA	MSE	TW	ESE	PR	Total			
BTB 231	Numerical And Computational Fundamentals-II	Core	3	-	-	20	20	20	90	-	150	-	-	-	36	-	60	3		
BTB 232	Genetics And Evolution	Core	3	-	-	20	20	20	90	-	150	-	-	-	36	-	60	3		
BTB 233	Chemistry of Biomolecules	Core	3	-	-	20	20	20	90	-	150	-	-	-	36	-	60	3		
BTB 234	Microbe infection And Immunity	Minor	3	-	-	20	20	20	90	-	150	-	-	-	36	-	60	3		
BTB 235	Instrumentation In Biotechnology	Minor	2	-	-	10	20	10	60	-	100	-	-	-	24	-	24	2		
UGL-01	Bio-Computational Lab	Core	-	-	6	0	0	0	90	60	150	-	-	-	36	24	60	3		
UGL-02	Genetics Lab	Core	-	-	6	-	-	-	90	60	150	-	-	-	36	24	60	3		
UGL-03	Mini Project	BRP	-	-	6	0	0	0	90	60	150	-	-	-	36	24	60	3		
UNC-01	Environmental Studies	Audit	{2}	-	-	10	20	10	60	-	100	-	-	-	24	-	40	Audit		
UNC-02	Gandhian Studies	Audit	{2}	-	-	10	20	10	60	-	100	-	-	-	24	-	40	Audit		
	<b>Total</b>		<b>11(4)</b>	<b>0</b>	<b>18</b>	<b>110</b>	<b>140</b>	<b>110</b>	<b>810</b>	<b>180</b>	<b>1350</b>	-	-	-	<b>324</b>	<b>72</b>	<b>284</b>	<b>23</b>		

Semester IV																				
Course code*	Course Title	Type	Teaching Scheme			Evaluation Scheme						Minimum Passing						Credit		
						Internal			External			Total	Internal			External			Total	
						CA	MSE	TW	ESE	PR	CA		MSE	TW	ESE	PR				
(Mandatory)			L	T	P	CA	MSE	TW	ESE	PR	Total	CA	MSE	TW	ESE	PR	Total			
BTB 241	Numerical And Computational Fundamentals-III	Core	3	-	-	20	20	20	90	-	150	-	-	-	36	-	60	3		
BTB 242	Genomics And Proteomics	Core	3	-	-	20	20	20	90	-	150	-	-	-	36	-	60	3		
BTB 243	Introduction to Fermentation Technology	Core	3	-	-	20	20	20	90	-	150	-	-	-	36	-	60	3		
BTB 244	Principles of Developmental Biology	Minor	2	-	-	10	20	10	60	-	100	-	-	-	24	-	24	2		
BTB 245	Recombinant DNA Technology	Minor	2	-	-	10	20	10	60	-	100	-	-	-	24	-	24	2		
BTB 246	Introduction To Python	Minor	2	-	-	10	20	10	60	-	100	-	-	-	24	-	40	2		
UGL-01	Bio-Fermentation Lab	Core	-	-	6	0	0	0	90	60	150	-	-	-	36	24	60	3		
UGL-02	Indus Lab	Core	-	-	6	-	-	-	90	60	150	-	-	-	36	24	60	3		
UGL-03	Mini Project	BRP	-	-	4	-	-	-	60	40	100	-	-	-	24	16	40	2		
	<b>Total</b>		<b>15</b>	<b>0</b>	<b>16</b>	<b>90</b>	<b>120</b>	<b>90</b>	<b>690</b>	<b>160</b>	<b>1150</b>	-	-	-	<b>276</b>	<b>64</b>	<b>248</b>	<b>23</b>		

Semester V																				
Course code*	Course Title	Type	Teaching Scheme			Evaluation Scheme						Minimum Passing						Credit		
						Internal			External			Total	Internal			External			Total	
						CA	MSE	TW	ESE	PR	CA		MSE	TW	ESE	PR				
(Mandatory)			L	T	P	CA	MSE	TW	ESE	PR	Total	CA	MSE	TW	ESE	PR	Total			
BTB 351	Numerical And Computational Fundamentals-IV	Core	2	-	-	10	20	10	60	-	100	-	-	-	24	-	24	2		
BTB 352	Plant Tissue Engineering	Core	2	-	-	10	20	10	60	-	100	-	-	-	24	-	24	2		
BTB 353	Cell Signalling	Minor	2	-	-	10	20	10	60	-	100	-	-	-	24	-	24	2		
BTB 354	Stem Cell Biology	Minor	2	-	-	10	20	10	60	-	100	-	-	-	24	-	24	2		
BTB 355	Advanced Python	Minor	2	-	-	10	20	10	60	-	100	-	-	-	24	-	40	2		
BTB 356	Academic Tutorials-V	AT	-	2	-	10	20	10	60	-	100	-	-	-	24	-	24	2		
BTB 357	Seminar (Subject Base Seminar)	SBS	0	0	1	0	0	0	30	20	50	-	-	-	12	8	20	1		
UGL-01	Python Lab	Core	-	-	6	0	0	0	60	40	100	-	-	-	24	16	40	2		
UGL-02	Tissue Lab	Core	-	-	6	-	-	-	90	60	150	-	-	-	36	24	60	3		
UGL-03	Mini Project	BRP	-	-	4	-	-	-	60	40	100	-	-	-	24	16	40	2		
BTB 358	Foregin Language	SCC	2	-	-	10	20	10	60	-	100	-	-	-	24	-	24	2		
	<b>Total</b>		<b>12</b>	<b>2</b>	<b>17</b>	<b>70</b>	<b>140</b>	<b>70</b>	<b>660</b>	<b>160</b>	<b>1100</b>	-	-	-	<b>264</b>	<b>64</b>	<b>344</b>	<b>22</b>		

Semester VI																				
Course code*	Course Title	Type	Teaching Scheme			Evaluation Scheme						Minimum Passing						Credit		
						Internal			External			Total	Internal			External			Total	
						CA	MSE	TW	ESE	PR	CA		MSE	TW	ESE	PR				
(Mandatory)			L	T	P	CA	MSE	TW	ESE	PR	Total	CA	MSE	TW	ESE	PR	Total			
BTB 361	Cancer Biology	Core	3	-	-	20	20	20	90	-	150	-	-	-	36	-	60	3		
BTB 362	Animal Tissue Engineering	Core	2	-	-	10	20	10	60	-	100	-	-	-	24	-	24	2		
BTB 363	Molecular Cytogenetics	Minor	3	-	-	20	20	20	90	-	150	-	-	-	36	-	60	3		
BTB 364	Data Science with Python	Minor	2	-	-	10	20	10	60	-	100	-	-	-	24	-	40	2		
BTB 365	Academic Tutorials-VI	AT	-	2	-	10	20	10	60	-	100	-	-	-	24	-	24	2		
BTB 366	Seminar (Research Paper Based)	RBS	1	-	-	10	10	-	30	-	50	-	-	-	12	-	20	1		
UGL-01	Python Lab.	Core	-	0	6	-	-	-	90	60	150	-	-	-	36	24	60	3		
UGL-02	Tissue Lab	Core	-	-	6	-	-	-	90	60	150	-	-	-	36	24	60	3		
UGL-03	Open Elective- 1- Pharmaceutical Microbiology 2- Enterprise Feasibility 3- Bioinformatics	SOE	-	-	6	-	-	-	90	60	150	-	-	-	36	24	60	3		
UGL-04	Mini Project	BRP	-	-	4	-	-	-	60	40	100	-	-	-	24	16	40	2		
	<b>Total</b>		<b>11</b>	<b>2</b>	<b>22</b>	<b>80</b>	<b>110</b>	<b>70</b>	<b>720</b>	<b>220</b>	<b>1200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>288</b>	<b>88</b>	<b>328</b>	<b>24</b>		

Semester VII																				
Course code*	Course Title	Type	Teaching Scheme			Evaluation Scheme						Minimum Passing						Credit		
						Internal			External			Total	Internal			External			Total	
						CA	MSE	TW	ESE	PR	CA		MSE	TW	ESE	PR				
(Mandatory)			L	T	P	CA	MSE	TW	ESE	PR	Total	CA	MSE	TW	ESE	PR	Total			
BTB 471	Molecular Pharming And Biopharmaceuticals	Core	3	-	-	20	20	20	90	-	150	-	-	-	36	-	60	3		
BTB 472	R language	Core	3	-	-	20	20	20	90	-	150	-	-	-	36	-	60	3		
BTB 473	Gene, Marker And Omics Technology	Minor	2	-	-	10	20	10	60	-	100	-	-	-	24	-	24	2		
BTB 474	Seminar (Research Paper Based)	RBS	1	-	-	10	10	-	30	-	50	-	-	-	12	-	20	1		
UGL-01	Biopharmaceutical Lab.	Core	-	-	4	-	-	-	60	40	100	-	-	-	24	16	40	2		
UGL-02	R Lab	Core	-	-	4	-	-	-	60	40	100	-	-	-	24	16	40	2		
BTB-475	Open Elective - 1-Biotechnology-Paper 2- Advanced Technology Enterprise 3- Writing And Referencing Skills	SOE	-	-	4	10	20	10	60	-	100	-	-	-	24	-	40	2		
UGL-03	CoreProject	BRP	-	-	14	-	-	-	210	140	350	-	-	-	84	56	140	7		
	<b>Total</b>		<b>9</b>		<b>26</b>	<b>70</b>	<b>90</b>	<b>60</b>	<b>660</b>	<b>220</b>	<b>1100</b>	-	-	-	<b>264</b>	<b>88</b>	<b>304</b>	<b>22</b>		
Semester VIII																				
Course code*	Course Title	Type	Teaching Scheme			Evaluation Scheme						Minimum Passing						Credit		
						Internal			External			Total	Internal			External			Total	
						CA	MSE	TW	ESE	PR	CA		MSE	TW	ESE	PR				
(Mandatory)			L	T	P	CA	MSE	TW	ESE	PR	Total	CA	MSE	TW	ESE	PR	Total			
BTB-481	Advanced Topics in Molecular Biology	3	-	-	20	20	20	90	-	150	-	-	-	36	0	60	3	2		
BTB-482	Post Genomic Biology	2	-	-	10	20	10	60	-	100	-	-	-	24	-	40	2	2		
BTB-483	Seminar (Research Paper Based)	1	-	-	10	10	-	30	-	50	-	-	-	12	-	20	1	1		
UGL-01	Big Idea	-	-	20	-	-	-	300	200	500	-	-	-	120	80	200	10	11		
	<b>Total</b>		<b>0</b>		<b>40</b>	<b>50</b>	<b>30</b>	<b>480</b>	<b>200</b>	<b>800</b>	<b>0</b>	-	-	-	<b>80</b>	<b>320</b>	<b>16</b>	<b>16</b>		

L- Lecture, T-Tutorial, P-Practical, CA- Continuous Assessment, MSE- Mid Semester Examination, ESE- End Semester Examination, PR-Practical, TW- Total Marks  
BTB- B. Tech. Biotechnology, OEC- Open Elective Courses, UGL-Undergraduate Laboratory, UNC- Undergraduate Non credit