



UTTARANCHAL UNIVERSITY

**Uttaranchal College of Applied & Life Sciences
Department of Biotechnology**

Scheme of Examination

&

Detailed Syllabus

For

**B.Sc. (Hons) Biotechnology
(3 year Programme)**

**Under Choice Based Credit System
(With effect from 2019-2020)**

**Department of Biotechnology
Uttaranchal College of Applied & Life Sciences (UCALS)
Uttaranchal University, Dehradun**



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Uttaranchal College of Applied & Life Sciences
Department of Biotechnology

B.Sc. (Honors) Biotechnology (3years course)

(As per new guidelines of UGC)

Evaluation Scheme

Semester – I									
S. No.	Code	Paper Title	L-T-P	Credit	Theory		Practical		Total
					End sem.	Sess.	End sem.	Sess.	
1	TBBT 101	Biochemistry & Metabolism	4-0-0	4	60	40	-	-	100
2	TBBT 102	Cell Biology	4-0-0	4	60	40	-	-	100
3	TBBT 103	Generic Elective-1 (GE-1)	4-0-0	4	60	40	-	-	100
4	TBES 104	Environmental Science(AECC-1)	2-0-0	2	60	40	-	-	100
5	*RMB 105 *RMM105	Remedial Biology Remedial Math	2-0-0	0	-	50	-	-	-
6	ADP 106	Academic activity	0-0-2	1	-	-	-	50	50
7	PBBT 101	Biochemistry & Metabolism	0-0-4	2	-	-	25	25	50
8	PBBT 102	Cell Biology	0-0-4	2	-	-	25	25	50
9	PBBT 103	Generic Elective-1 (GE-1)	0-0-2	1	-	-	25	25	50
		Total	16-0-12	20					600

*This is non credit course but minimum qualifying marks 40 % i.e. 20 out of 50 is required.



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Semester – II									
S.No.	Code	Paper Title	L-T-P	Credit	Theory		Practical		Total
					End sem.	Sess.	End sem.	Sess.	
1	TBBT 201	Animal Physiology	4-0-0	4	60	40	-	-	100
2	TBBT 202	Plant Physiology	4-0-0	4	60	40	-	-	100
3	TBBT 203	Generic Elective-2 (GE-2)	4-0-0	4	60	40	-	-	100
4	TBEC 204	English Communication (AECC-1)	2-0-0	2	60	40	-	-	100
5	ADM 205	Biostatistics & Computational Biology	2-1-0	3	60	40	-	-	100
6	ADP 206	Seminar	0-0-2	1	-	-	-	50	50
7	PBBT 201	Mammalian Physiology	0-0-4	2	-	-	25	25	50
8	PBBT 202	Plant Physiology	0-0-4	2	-	-	25	25	50
9	PBBT 203	Generic Elective-2 (GE-2)	0-0-2	1	-	-	25	25	50
		Total	16-1-12	23					700



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Semester – III

S.No.	Code	Paper Title	L-T-P	Credit	Theory		Practical		Total
					End sem.	Sess.	End sem.	Sess.	
1	TBBT 301	Genetics	4-0-0	4	60	40	-	-	100
2	TBBT 302	General Microbiology	4-0-0	4	60	40	-	-	100
3	TBBT 303	Chemistry -1	4-0-0	4	60	40	-	-	100
4	TBBT 304	Generic Elective-3 (GE-3)	3-0-0	3	60	40	-	-	100
5	TBBT 305	Skill Enhancement Course (SEC-1)	3-0-0	3	60	40	-	-	100
6	ADP 306	Activity/ SWAYAM /NPTEL	0-0-4	2	-	-	-	50	50
7	PBBT 301	Genetics	0-0-4	2	-	-	25	25	50
8	PBBT 302	General Microbiology	0-0-4	2	-	-	25	25	50
9	PBBT 303	Chemistry -1	0-0-2	1	-	-	25	25	50
10	PBBT 304	Generic Elective-3 (GE-3)	0-0-2	1	-	-	-	25	25
11	PBBT 305	Skill Enhancement Course (SEC-1)	0-0-2	1	-	-	-	25	25
		Total	18-0-18	27					750



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Semester – IV									
S.No.	Code	Paper Title	L-T-P	Credit	Theory		Practical		Total
					End sem.	Sess.	End sem.	Sess.	
1	TBBT 401	Molecular biology	4-0-0	4	60	40	-	-	100
2	TBBT 402	Immunology	4-0-0	4	60	40	-	-	100
3	TBBT 403	Chemistry-II	4-0-0	4	60	40	-	-	100
4	TBBT 404	Generic Elective-4(GE-4)	3-0-0	3	60	40	-	-	100
5	TBBT 405	Skill Enhancement Course – 2 (SEC-2)	3-0-0	3	60	40	-	-	100
6	ADP 406	Seminar Presentation	0-0-2	1	-	-	50	50	100
7	ADP 407	*Personality Development Program	2-0-0	0	-	50	-	-	-
8	PBBT 401	Molecular biology	0-0-4	2	-	-	25	25	50
9	PBBT 402	Immunology	0-0-4	2	-	-	25	25	50
10	PBBT 403	Chemistry-II	0-0-2	1	-	-	25	25	50
11	PBBT 404	Generic Elective-4(GE-4)	0-0-2	1	-	-	-	25	25
12	PBBT 405	Skill Enhancement Course – 2 (SEC-2)	0-0-2	1	-	-	-	25	25
		Total	20-0-16	26					800

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Semester – V									
S.No.	Code	Paper Title	L-T-P	Credit	Theory		Practical		Total
					End sem.	Sess.	End sem.	Sess.	
1	TBBT 501	Bio-process Technology	4-0-0	4	60	40	-	-	100
2	TBBT 502	Recombinant DNA technology	4-0-0	4	60	40	-	-	100
3	TBBT 503	Discipline Specific Elective – 1 (DSE-1)	4-0-0	4	60	40	-	-	100
4	TBBT 504	Discipline Specific Elective – 2 (DSE-2)	4-0-0	4	60	40	-	-	100
5	ADP 505	Presentation (Industrial training)	0-0-2	1	-	-	-	100	100
6	ADP 506	Reasoning Skills	2-0-0	1	-	-	25	25	50
7	PBBT 501	Bio-process Technology	0-0-4	2	-	-	25	25	50
8	PBBT 502	Recombinant DNA technology	0-0-4	2	-	-	25	25	50
9	PBBT 503	Discipline Specific Elective – 1 (DSE-1)	0-0-2	1	-	-	25	25	50
10	PBBT 504	Discipline Specific Elective – 2 (DSE-2)	0-0-2	1	-	-	25	25	50
		Total	18-0-14	24					750



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Semester – VI

S.No	Code	Paper Title	L-T-P	Credit	Theory		Practical		Total
					End sem.	Sess.	End sem.	Sess.	
1	TBBT 601	Bio Analytical Tools & Techniques	4-0-0	4	60	40	-	-	100
2	TBBT 602	Genomics and Proteomics	4-0-0	4	60	40	-	-	100
3	TBBT 603	Discipline Specific Elective – 3	4-0-0	4	60	40	-	-	100
4	TBBT 604	Discipline Specific Elective – 4	4-0-0	4	60	40	-	-	100
5	ADP 605	Dissertation(Major) & Presentation	0-0-8	4	-	-	150	50	200
6	PBBT 601	Bio Analytical Tools & Techniques	0-0-4	2	-	-	25	25	50
7	PBBT 602	Genomics and Proteomics	0-0-4	2	-	-	25	25	50
8	PBBT 603	Discipline Specific Elective – 3	0-0-2	1	-	-	25	25	50
9	PBBT 604	Discipline Specific Elective – 4	0-0-2	1	-	-	25	25	50
		Total	16-0-20	26	-	-	-	-	800
		Grand Total (I to VI Sem)		146					4400



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Generic Electives: (any one per semester in semesters 1-4)-**GE 1 to GE 4**

1. **Biotechnology and Human Welfare(TBBT/PBBT-103)**
2. **Developmental Biology(TBBT/PBBT-203)**
3. **Bioethics and Biosafety (TBBT/PBBT-304)**
4. **Entrepreneurship Development (TBBT/PBBT-404)**

Skill Enhancement Courses: (any one per semester in semesters 3-4) – **SEC 1 to SEC 2**

SEC 1 (TBBT-305 (I))

1. **Enzymology (01)**
2. Drug Designing(02)

SEC 2 (TBBT-405 (I))

1. **Molecular Diagnostics (01)**
2. Basics of Forensic Science (03)

Discipline Specific Electives: (any two per semester in semesters 5-6) - **DSE 1 to DSE 4**

DSE 1

1. **Bioinformatics**
2. IPR, Entrepreneurship, Bioethics & Biosafety
3. Microbial Physiology
4. Biostatistics

DSE 3

1. **Plant Biotechnology**
2. Animal Diversity I
3. Plant Diversity I

DSE 2

1. Ecology and Environment Management
2. **Environmental Biotechnology**
3. Medical Microbiology
4. Plant Anatomy & Physiology

DSE 4

1. Industrial Fermentation
2. **Animal Biotechnology**
3. Animal Diversity II
4. Plant Diversity II



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