

# **BACHELOR OF SCIENCE (HONORS) BIOTECHNOLOGY**

**Programme Code: BTB**

**Duration: 3 Years**

**Detailed Syllabus with Scheme of Examination**

**FROM SESSION: 2019-2020**



**Faculty of Science**

**CHHATRAPATI SHIVAJI MAHARAJ  
UNIVERSITY PANVEL, NAVI MUMBAI**

## Teaching & Evaluation Scheme SEMESTER I

Course Type	Course Code		L	T	P	IA	UE	Total Marks	Credits
DSC	BTBC101	Biochemistry & Metabolism	4	0	0	30	70	100	4
DSC	BTBC102	Biomolecules and Cell Biology	4	0	0	30	70	100	4
GE	**BTBG101	General Elective - I	4	0/1	4/0	30	70	100	4
AECC	ENBC101	English Communication	2	0	0	15	35	50	2
DSC	BTBC191	Biochemistry & Metabolism Lab	0	0	4	15	35	50	2
DSC	BTBC192	Biomolecules and Cell Biology Lab	0	0	4	15	35	50	2
GE	**BTBG191	General Elective-I lab	0	0	4	15	35	50	2
		<b>Total</b>	<b>14</b>	<b>0</b>	<b>12</b>	<b>150</b>	<b>350</b>	<b>500</b>	<b>20</b>

## SEMESTER II

Course Type	Course Code		L	T	P	IA	UE	Total Marks	Credits
DSC	BTBC201	Introduction to Biotechnology	4	0	0	30	70	100	4
DSC	BTBC202	Animal and Plant Physiology	4	0	0	30	70	100	4
GE	**BTBG201	General Elective - II	4	0/1	4/0	30	70	100	4
AECC	ESBC201	Environmental Science	2	0	0	15	35	50	2
DSC	BTBC201	Introduction to Biotechnology Lab	0	0	4	15	35	50	2
DSC	BTBC202	Animal and Plant Physiology Lab	0	0	4	15	35	50	2
GE	**BTBG201	General Elective-II Lab	0	0	4	15	35	50	2
		<b>Total</b>	<b>14</b>	<b>0</b>	<b>12</b>	<b>150</b>	<b>350</b>	<b>500</b>	<b>20</b>

### SEMESTER III

Course Type	Course Code		L	T	P	IA	UE	Total Marks	Credits
DSC	BTBC301	General Microbiology	4	0	0	30	70	100	4
DSC	BTBC302	Immunology	4	0	0	30	70	100	4
DSC	BTBC303	Enzymology	4	0	0	30	70	100	4
GE	**G201	General Elective - II	4	0/1	4/0	30	70	100	4
SEC	BTBS301	Skill enhancement course 1	2	0	0	15	35	50	2
DSC	BTBC391	General Microbiology	0	0	4	15	35	50	2
DSC	BTBC392	Immunology	0	0	4	15	35	50	2
DSC	BTBC303		0	0	4	15	35	50	2
GE	**G291	General Elective – II	0	0	4	15	35	50	2
		<b>Total</b>	<b>14</b>	<b>0</b>	<b>12</b>	<b>150</b>	<b>350</b>	<b>500</b>	<b>26</b>

### SEMESTER IV

Course Type	Course Code		L	T	P	IA	UE	Total Marks	Credits
DSC	BTBC401	Molecular biology	4	0	0	30	70	100	4
DSC	BTBC402	Bioprocess technology	4	0	0	30	70	100	4
DSC	BTBC403	Pharmagenomics	4	0	0	30	70	100	4
GE	**G401	General Elective - II	4	0/1	4/0	30	70	100	4
SEC	BTBS401	Skill enhancement course 2	2	0	0	15	35	50	2
DSC	BTBP491	Molecular biology Lab	0	0	4	15	35	50	2
DSC	BTBP492	Bioprocess technology lab	0	0	4	15	35	50	2
DSC	BTBC493	Lab	0	0	4	15	35	50	2
GE	**G201	General Elective – II	0	0	4	15	35	50	2
		<b>Total</b>	<b>14</b>	<b>0</b>	<b>12</b>	<b>150</b>	<b>350</b>	<b>500</b>	<b>26</b>

### SEMESTER V

Course Type	Course Code		L	T	P	IA	UE	Total Marks	Credits
DSC	BTBC501	Principles of genetics	4	0	0	30	70	100	4
DSC	BTBC502	Recombinant technology	4	0	0	30	70	100	4
DSE	BTBE501	Discipline Specific Elective 1	4	0/1	4/0	30	70	100	4
DSE	BTBE502	Discipline Specific Elective 2	2	0	0	15	35	50	2
DSC	BTBC501	Principles of genetics Lab	0	0	4	15	35	50	2
DSC	BTBC502	Recombinant technology Lab	0	0	4	15	35	50	2
DSE	BTBE591	Discipline Specific Elective 1 Lab	0	0	4	15	35	50	2
DSE	BTBE592	Discipline Specific Elective 2 Lab	0	0	4	15	35	50	2
		<b>Total</b>	<b>14</b>	<b>0</b>	<b>12</b>	<b>150</b>	<b>350</b>	<b>500</b>	<b>22</b>

### SEMESTER VI

Course Type	Course Code		L	T	P	IA	UE	Total Marks	Credits
DSC	BTBC601	Bioanalytical Tools	4	0	0	30	70	100	4
DSC	BTBC602	Genomics and Proteomics	4	0	0	30	70	100	4
DSE	BTBE301	Discipline Specific Elective 3	4	0/1	4/0	30	70	100	4
DSE	BTBE302	Discipline Specific Elective 4	2	0	0	15	35	50	2
DSC	BTBC691	Bioanalytical Tools Lab	0	0	4	15	35	50	2
DSC	BTBC692	Genomics and Proteomics Lab	0	0	4	15	35	50	2
DSE	BTBE391	Discipline Specific Elective 3 lab	0	0	4	15	35	50	2
DSE	BTBE392	Discipline Specific Elective 4 Lab	0	0	4	15	35	50	2
		<b>Total</b>	<b>14</b>	<b>0</b>	<b>12</b>	<b>150</b>	<b>350</b>	<b>500</b>	<b>26</b>

**List of Generic Electives offered by Department of Biotechnology for Other Department Students**

Semester	Course Code	Generic Electives	(L-T-P)	Credits
I	Generic elective 1	Biochemistry & Metabolism	4-0-4	6
I		Biomolecules and Cell Biology	4-0-4	6
II	Generic elective 2	General Microbiology	4-0-4	6
II		Immunology	4-0-4	6
III	Generic elective 3	Molecular Biology	4-0-4	6
III		Bioprocess technology	4-0-4	6
IV	Generic elective 4	Principles of Genetics	4-0-4	6
IV		Bioanalytical tools	4-0-4	6

**Ability Enhancement Compulsory Courses (AECC)**

Semester	Offering Department	Course Code (T+P)	Course Name	(L-T-P)	Credits
I	English	ENBC101	English Communication	2-0-0	2
II	Basic Sciences	ESBC201	Environmental Studies	2-0-0	6

**List of Department-Specific Electives (DSE-1 to DSE-4) offered by Department for students in B.Sc. (Hons.) (4 to be selected, 2 in each of 5th and 6th semester)**

Semester	Course Code (T+P)	Course Name	(L-T-P)	Credits
V	BTBE501+BTBE591	Plant Biotechnology	4-0-2	6
V	BTBE502+BTBE592	Bioinformatics	4-0-2	6
V	BTBE503+BTBE593	Agriculture Biotechnology	4-0-2	6
VI	BTBE601+BTBE691	IPR & Biosafety	4-0-2	6
VI	BTBE602+BTBE692	Environment Biotechnology	4-0-2	6
VI	BTBE603+BTBE693	Fermentation Technology	4-0-2	6

**List of Generic Electives Available for students of B.Sc. (Hons.) Biotechnology**

Semester	Offering Department	Course Code (T+P)	Course Name	(L-T-P)	Credits
I	Chemistry		Inorganic Chemistry I	4-0-2	6
II	Chemistry		Organic Chemistry I	4-0-2	6
III	Chemistry		Organic Chemistry II	4-0-2	6
IV	Chemistry		Inorganic Chemistry II	4-0-2	6
I	Botany		Microbiology and Phycology	4-0-2	6
II	Botany		Plant physiology and Ecology	4-0-2	6
III	Botany		Reproductive biology	4-0-2	6
IV	Botany		Phytogeography	4-0-2	6
I	Zoology		Non-Chordates	4-0-2	6
II	Zoology		chordates	4-0-2	6
III	Zoology		Animal Physiology: Controlling and coordinating system	4-0-2	6
IV	Zoology		Biochemistry Of Metabolic Processes	4-0-2	6
I	Biochemistry		Biomolecules	4-0-2	6
II	Biochemistry		Enzymes	4-0-2	6
III	Biochemistry		Membrane Biology	4-0-2	6

			and Bioenergetics		
IV	Biochemistry		Gene organization, replication and repair	4-0-2	6
I	Bioinformatics		Biomolecules and cell biology	4-0-2	6
II	Bioinformatics		Introduction to bioinformatics	4-0-2	6
III	Bioinformatics		Structural bioinformatics	4-0-2	6
IV	Bioinformatics		Chemiinformatics	4-0-2	6

**List of Skill Enhancement Course (SEC-1 & SEC-2) offered by Department (Any 2 to be selected)**

Semester	Course Code	Course Name	(L-T-P)	Credits
III	BTBS301+BT BS391	Basics Of Forensic Science	4-0-2	4
III	BTBS302+BT BS392	Molecular Diagnostics	4-0-2	4
IV	BTBS401+BT BS491	Basics of Neuroscience	4-0-2	4
IV	BTBS402+BT BS492	Animal Biotechnology	4-0-2	4

**Department Specific Course (DSC), Department Specific Elective (DSE), Generic Elective Course (GE), Skill Enhancement Course (SEC), Ability Enhancement Core Course (AECC)**