

## Outline of the syllabus for B.Sc. in Biotechnology (Royal School of Bio-Sciences)

### 1<sup>ST</sup> SEMESTER

COMPONENT	COURSE CODE	COURSE TITLE	LEVEL	CREDIT	L-T-P
Major (Core)	BTC152M101	Biochemistry	100	3	2-1-0
	BTC152M112	Practical on Biochemistry	100	3	0-0-6
Minor *	BTC152N101	Biotechnology and Human Welfare	100	3	3-0-0
Interdisciplinary (IDC)	IKS992K101	Indian Knowledge System – I	100	3	3-0-0
Ability Enhancement Course (AEC)	CEN982A101	Communicative English – I	100	1	1-0-0
	BHS982A102	BHS – I	100	1	1-0-0
Skill Enhancement Course (SEC)	BTC152S111	Compost Preparation and Applications	100	3	0-0-6
Value Added Course (VAC) **	VAC992V1---	To be chosen from a pool of courses	100	3	
SWAYAM				3/4	
<b>TOTAL CREDIT FOR 1<sup>ST</sup> SEMESTER</b>				<b>20+3/4</b>	

### 2<sup>ND</sup> SEMESTER

COMPONENT	COURSE CODE	COURSE TITLE	LEVEL	CREDIT	L-T-P
Major (Core)	BTC152M201	Microbiology	100	2	2-0-0
	BTC152M211	Practical in Microbiology	100	1	0-0-2
Major (Core)	BTC152M202	Cell Biology	100	2	2-0-0
	BTC152M212	Practical in Cell Biology	100	1	0-0-2
Minor	BTC152N201	Basic Instrumentation in Biology	100	3	3-0-0
IDC	IKS992K201	Indian Knowledge System – II	100	3	3-0-0
AEC	CEN982A201	Communicative English – II	100	1	1-0-0
	BHS982A202	BHS – II	100	1	1-0-0
SEC	BTC152S211	Biochemical Analysis of Food	100	3	0-0-6
VAC	VAC992V2---	To be chosen from a pool of courses	100	3	
SWAYAM				3/4	
<b>TOTAL CREDIT FOR 2<sup>ND</sup> SEMESTER</b>				<b>20+3/4</b>	

**Exit 1 – UG Certificate in Biotechnology (with 40 credits + a vocational course of 4 credits in summer break)**

### 3<sup>RD</sup> SEMESTER

COMPONENT	COURSE CODE	COURSE TITLE	LEVEL	CREDIT	L-T-P
Major (Core)	BTC152M301	Genetics	200	3	2-1-0
	BTC152M311	Practical in Genetics	200	1	0-0-2
Major (Core)	BTC152M302	Biophysical Chemistry	200	4	3-1-0
Minor	BTC152N301	Introduction to IPR	200	4	3-1-0
IDC #	BTC152I301	Health and Hygiene	200	3	3-0-0
AEC	CEN982A301	Communicative English – III	200	1	1-0-0
	BHS982A302	BHS – III	200	1	1-0-0
SEC	BTC152S311	Clinical Biochemistry	200	3	0-0-6
SWAYAM				3/4	
<b>TOTAL CREDIT 3<sup>RD</sup> SEMESTER</b>				<b>20+3/4</b>	

### 4<sup>TH</sup> SEMESTER

COMPONENT	COURSE CODE	COURSE TITLE	LEVEL	CREDIT	L-T-P
Major (Core)	BTC152M401	Molecular Biology	200	3	2-1-0
	BTC152M411	Practical in Molecular Biology	200	1	0-0-2
Major (Core)	BTC152M402	Immunology	200	3	2-1-0
	BTC152M412	Practical in Immunology	200	1	0-0-2
Major (Core)	BTC152M403	Bioethics, Biosafety and IPR	200	4	3-1-0
Minor	BTC152N401	Biofertilizer and Its Application	200	3	3-0-0
	BTC152N402	Food Biotechnology	200	3	3-0-0
AEC	CEN982A401	Communicative English – IV	200	1	1-0-0

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	BHS982A402	BHS – IV	200	1	1-0-0
SWAYAM				3/4	
<b>TOTAL CREDIT 4<sup>TH</sup> SEMESTER</b>				<b>20+3/4</b>	
<b>Exit 2 – UG Diploma in Biotechnology (with 80 credits + a vocational course of 4 credits in summer break of 2<sup>nd</sup> year)</b>					
<b>5<sup>TH</sup> SEMESTER</b>					
<b>COMPONENT</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>LEVEL</b>	<b>CREDIT</b>	<b>L-T-P</b>
Major (Core)	BTC152M501	Genomics and Proteomics	300	4	4-0-0
	BTC152M502	Plant and Animal Biotechnology	300	4	4-0-0
	BTC152M513	Practical – V	300	4	0-0-8
Minor	BTC152N501	Basics of Molecular Biology	300	4	3-1-0
<b>INTERNSHIP</b>			300	4	
<b>TOTAL CREDIT FOR 5<sup>TH</sup> SEMESTER</b>				<b>20</b>	
<b>6<sup>TH</sup> SEMESTER</b>					
<b>COMPONENT</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>LEVEL</b>	<b>CREDIT</b>	<b>L-T-P</b>
Major (Core)	BTC152M601	Genetic Engineering	300	4	4-0-0
	BTC152M602	Bioinformatics and Biostatistics	300	4	4-0-0
	BTC152M603	Bioprocess Engineering	300	4	4-0-0
	BTC152M614	Practical – VI	300	4	0-0-8
Minor	BTC152N601	Entrepreneurship Development	300	4	3-1-0
<b>TOTAL CREDIT FOR 6<sup>TH</sup> SEMESTER</b>				<b>20</b>	
<b>Course completion Option 1 – UG Degree (B.Sc.) in Biotechnology (with 120 credits)</b>					
<b>7<sup>TH</sup> SEMESTER</b>					
<b>COMPONENT</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>LEVEL</b>	<b>CREDIT</b>	<b>L-T-P</b>
Major (Core)	BTC152M701	Environmental Biotechnology	400	4	3-1-0
	BTC152M702	Medical Biotechnology	400	4	3-1-0
	BTC152M703	Plant and Animal Physiology	400	4	3-1-0
	BTC152M714	Practical – VII	400	4	0-0-8
Minor	BTC152N701	Pharmaceutical Biotechnology	400	4	3-1-0
<b>TOTAL CREDIT 7<sup>TH</sup> SEMESTER</b>				<b>20</b>	
<b>8<sup>TH</sup> SEMESTER</b>					
<b>COMPONENT</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>LEVEL</b>	<b>CREDIT</b>	<b>L-T-P</b>
Major (Core)	BTC152M801	Research Methodology & Scientific Writing	400	4	3-1-0
Minor	BTC152N801	Ecology & Environment Management	400	4	3-1-0
<b>Project/Dissertation</b>	<b>BTC152M821</b>	<b>Students with <math>\geq 75\%</math> till the 6<sup>th</sup> semester</b>	400	12	0-0-24
<i>(Major courses for the rest of the students in lieu of Project/ Dissertation)</i>					
Major (Core)	BTC152M802	Developmental Biology	400	4	3-1-0
	BTC152M803	Ecosystem Degradation and Intervention	400	4	3-1-0
	BTC152M804	Techniques in Molecular Biology	400	4	3-1-0
<b>TOTAL CREDIT 8<sup>TH</sup> SEMESTER</b>				<b>20</b>	
<b>Course completion Option 2 – B.Sc. (Honours) in Biotechnology (with 160 credits)</b>					
<b>§ Course completion Option 3 – B.Sc. (Honours with Research) in Biotechnology (with 160 credits)</b>					

\* Students must choose a **minor course** outside their major course (a separate department) and are expected to **continue with the same department** in subsequent semesters. As such the minor papers offered by Department of Biotechnology are for students from other departments only.

\*\* Students must choose a **VAC** outside their major course (a separate department) and are free to **choose a course offered by the same or different departments** in subsequent semesters.

# Students must choose an **IDC** outside their major course (a separate department).

§ This option is available only to the students securing  $\geq 75\%$  (cumulative) till the 6<sup>th</sup> semester.