

*Progressive Education Society's*  
**Modern College of Arts, Science and Commerce (Autonomous),  
Shivajinagar, Pune 5**

**(An Autonomous College Affiliated to Savitribai Phule Pune University)**

## **Framework of Syllabus For**

**B. Sc. (Biotechnology)**

Choice Based Credit System (CBCS) Syllabus Under National Education Policy (NEP)  
**To be implemented from Academic Year 2024-2025**

### Level 4.5 (First Year) Semester I

Course Type	Course Code	Course Title	Credits		Teaching Scheme Hr/Week		Evaluation Scheme and Max Marks		
			TH	PR	TH	PR	CE	ESE	Total
Subject 1 T(2) + (T/P) (2) or T(4)	24ScBioU1101	Plant Science	2		2		20	30	50
	24ScBioU1102	Lab on 24ScBioU1101		2		4	20	30	50
Subject 2 T(2) + (T/P) (2) or T(4)	24ScBioU1201	Chemistry	2		2		20	30	50
	24ScBioU1202	Lab on 24ScBioU1102		2		4	20	30	50
Subject 3 T(2) + (T/P) (2) or T(4)	24ScBioU1301	Biochemistry	2		2		20	30	50
	24ScBioU1302	Lab on 24ScBioU1301		2		4	20	30	50
IKS T(2)	24CpCopU1901	Generic IKS	2		2		20	30	50
GE/OE (T/P) (2)	24ScBioU1401	Biotechnology and Human welfare I	2		2		20	30	50
SEC (P) (2)	24ScBioU1601	Modern Physics		2		4	20	30	50
AEC T(2)	24CpCopU1701 / 24CpCopU1702	MIL-I (Hindi) / MIL-I (Marathi)	2		2		20	30	50
VECT (2)	24CpCopU1801	Environmental Science	2		2		20	30	50
<b>Total</b>			<b>14</b>	<b>08</b>	<b>14</b>	<b>16</b>			<b>550</b>

## Level 4.5 (First Year) Semester II

Course Type	Course Code	Course Title	Credits		Teaching Scheme Hr/Week		Evaluation Scheme and Max Marks		
			TH	PR	TH	PR	CE	ESE	Total
Subject 1 T(2) + P(2) Or T(4)	24ScBioU2101	Animal Sciences	2		2		20	30	50
	24ScBioU2102	Lab Course on 24ScBioU2101		2		4	20	30	50
Subject 2 T(2) + P(2)	24ScBioU2201	Microbiology	2		2		20	30	50
	24ScBioU2202	Lab Course on 24ScBioU2201		2		4	20	30	50
Subject 3 T(2) + P(2)	24ScBioU2301	Biophysics and Instrumentation	2		2		20	30	50
	24ScBioU2302	Lab Course on 24ScBioU2301		2		4	20	30	50
GE/OE (T/P)(2)	24ScBioU2401	Biotechnology and Human welfare II	2		2		20	30	50
SEC T(2)	24ScBioU2601	Basics of Mathematics and Statistics	2		2		20	30	50
AEC T(2)	24CpCopU2703	English Communication Skills I	2		2		20	30	50
VEC T(2)	24CpCopU2801	Democracy, Election and Governance	2		2		20	30	50
CC(2)	24CpCopU2001/24CpCopU2011 / 24CpCopU2021 / 24CpCopU2031 / 24CpCopU2041 / 24CpCopU2051 / 24CpCopU2061 / 24CpCopU2071	Physical Education / Cultural Activities / NSS / NCC / Fine Arts / Applied Arts / Visual Arts / Performing Arts	2		2		20	30	50
<b>Total</b>			<b>16</b>	<b>06</b>	<b>16</b>	<b>12</b>			<b>550</b>

### Level 5.0 (Second Year) Semester III

Course Type	Course Code	Course Title	Credits		Teaching Scheme Hr/Week		Evaluation Scheme and Max Marks		
			TH	PR	TH	PR	CE	EE	Total
Major Core T (2+2 or 4), (T/P) (2)	24ScBioU3101	Cell Biology	4		4		40	60	100
	24ScBioU3102	Lab Course on 24ScBioU3101		2		4	20	30	50
VSC P(2)	24ScBioU3501	Immunology		2		4	20	30	50
IKS (T/P) (2)	24ScBioU3901	Application of IKS in Biotechnology	2		2		20	30	50
FP P(2)	24ScBioU3002	Field Project I		2		4	20	30	50
Minor (T/P) (2+2 or 4)	24ScBioU3301	Animal Development and Physiology	2		2		20	30	50
	24ScBioU3302	Lab Course on 24ScBioU3301		2		4	20	30	50
GE/OE (T/P) (2)	24ScBioU3401	Biotechnology and Human Welfare III	2		2		20	30	50
AEC T(2)	24CpCopU3703	English Communication Skills II	2		2		20	30	50
CC T(2)	24CpCopU3001	Online Course on Yoga	2		2		20	30	50
<b>Total</b>			<b>14</b>	<b>08</b>	<b>14</b>	<b>16</b>			<b>550</b>

### Level 5.0 (Second Year) Semester IV

Course Type	Course Code	Course Title	Credits		Teaching Scheme Hr/Week		Evaluation Scheme and Max Marks		
			TH	PR	TH	PR	CE	EE	Total
Major Core T(2+2 or 4), (T/P)(2)	24ScBioU4101	Molecular Biology	4		4		40	60	100
	24ScBioU4102	Lab Course on 24ScBioU4101		2		4	20	30	50
VSC P(2)	24ScBioU4501	Genetics		2		4	20	30	50
CEP P(2)	24ScCopU4003	Community Engagement Project		2		4	20	30	50
Minor (T/P)(2+2 or 4)	24ScBioU4301	Plant Development and Physiology	2		2		20	30	50
	24ScBioU4302	Lab Course on 24ScBioU4301		2		4	20	30	50
GE/OE (T/P) (2)	24ScBioU4401	Biotechnology and Human Welfare IV	2		2		20	30	50
SEC T(2)	24ScBioU4601	Metabolism	2		2		20	30	50
AEC T(2)	24CpCopU4701 / 24CpCopU4702	MIL-II (Hindi) / MIL-II (Marathi)	2		2		20	30	50
CC T(2)	24CpCopU4001	Health and Wellness	2		2		20	30	50
<b>Total</b>			<b>14</b>	<b>08</b>	<b>14</b>	<b>16.</b>			<b>550</b>

### Level 5.5 (Third Year) Semester V

Course Type	Course Code	Course Title	Credits		Teaching Scheme Hr/Week		Evaluation Scheme and Max Marks		
			TH	PR	TH	PR	CE	EE	Total
Major Core T(2+2+2+2 or 4 + 2+2 or 4 + 4) P(2+2 or 4)	24ScBioU5101	Microbial Biotechnology	2		2		20	30	50
	24ScBioU5102	Protein Biology	2		2		20	30	50
	24ScBioU5103	Environment Ecology and Biodiversity	2		2		20	30	50
	24ScBioU5104	Bioinformatics	2		2		20	30	50
	24ScBioU5105	Lab Course on 24ScBioU5101 & 24ScBioU5102		2		4	20	30	50
	24ScBioU5106	Lab Course on 24ScBioU5103 & 24ScBioU5104		2		4	20	30	50
Major Elective (T/P) (2+2 or 4)	24ScBioU5201	Nanotechnology	2		2		20	30	50
	24ScBioU5202	Lab Course on 24ScBioU5201		2		4	20	30	50
	OR								
	24ScBioU5203	Plant Tissue Culture	2		2		20	30	50
	24ScBioU5204	Lab Course on 24ScBioU5203		2		4	20	30	50
VSC P(2)	24ScBioU5501	Critical Analysis of Scientific Paper and Scientific Writing		2		4	20	30	50
FP (2)	24ScBioU5001	Field Project II		2		4	20	30	50
Minor (T/P) (2)	24ScBioU5302	Lab Course on Applications of Biotechnology		2		4	20	30	50
<b>Total</b>			<b>10</b>	<b>12</b>	<b>10</b>	<b>24</b>			<b>550</b>

### Level 5.5 (Third Year) Semester VI

Course Type	Course Code	Course Title	Credits		Teaching Scheme Hr/Week		Evaluation Scheme and Max Marks		
			TH	PR	TH	PR	CE	EE	Total
Major Core T(2+2+2+2 or 4+2+2 or 4+4) P(2+2 or4)	24ScBioU6101	Biophysical and Biochemical Techniques	2		2		20	30	50
	24ScBioU6102	Agricultural Biotechnology	2		2		20	30	50
	24ScBioU6103	Recombinant DNA Technology	2		2		20	30	50
	24ScBioU6104	Biosafety, Bioethics and IPR	2		2		20	30	50
	24ScBioU6105	Lab Course on 24ScBioU6101 & 24ScBioU6102		2		4	20	30	50
	24ScBioU6106	Lab Course on 24ScBioU6103		2		4	20	30	50
Major Elective (T/P) (2+2 or 4)	24ScBioU6201	Food Biotechnology	2		2		20	30	50
	24ScBioU6202	Lab Course on 24ScBioU6201		2		4	20	30	50
	<b>OR</b>								
	24ScBioU6203	Animal Tissue Culture	2		2		20	30	50
	24ScBioU6204	Lab Course on 24ScBioU5203		2		4	20	30	50
VSC P(2)	24ScBioU6501	Lab Course on Molecular Diagnostics		2		4	20	30	50
OJT (2)	24ScBioU6004	<a href="#">On Job Training</a>		4		8	40	60	100
<b>Total</b>			<b>10</b>	<b>12</b>	<b>10</b>	<b>24</b>			<b>550</b>

