

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
Total			14	08	14	16			550

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
Total			16	06	16	12			550

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
Total			14	08	14	16			550

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
Total			14	08	14	16.			550

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
	24ScBioU5201	Nanotechnology	2		2		20	30	50
	24ScBioU5202	Lab Course on 24ScBioU5201		2		4	20	30	50
Major Elective (T/P) (2+2 or 4)	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
Total			10	12	10	24			550

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 or 4)	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
	OR								
	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	On Job Training		4		8	40	60	100
Total			10	12	10	24			550