

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

M.Sc. Biotechnology

(Based on NEP 2020 framework)

(To be implemented from the Academic Year 2023-24)

Semester 1 (First Year)

Course Type	Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
Major Mandatory (4 + 4+4+2)	23ScBIOP111	Major Paper 1 (Theory)	Advanced Biological Chemistry	4	4	50	50	100
	23ScBIOP112	Major Paper 2 (Theory)	Cell and Molecular Biology	4	4	50	50	100
	23ScBIOP113	Major Paper 3 (Practical)	Exercises in Biotechnology I (P)	4	4	50	50	100
	23ScBIOP114	Major Paper 4 (Practical)	Exercises in Environmental Biotechnology (P)	4	2	25	25	50
Major Electives (4)	23ScBIOP125	Major Elective 1 (Theory)	Genetics and Immunology	4	4	50	50	100
	23ScBIOP126	Major Elective 2 (Theory)	Nanotechnology					
RM (4)	23ScBIOP131	RM Section 1	Research Methodology Basics & Scientific Communication	2	4	50	50	100
		RM Section 2		2				
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Total				24	22	175	175	350

Semester 2 (First Year)

Course Type	Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	ES E	Total
Major Mandatory (4 + 4+4+2)	23ScBIOP211	Major Paper 1 (Theory)	Genetic Engineering	4	4	50	50	100
	23ScBIOP212	Major Paper 2 (Theory)	Principles of Bacteriology and Virology	4	4	50	50	100

	23ScBIOP213	Major Paper 3 (Practical)	Exercises in Biotechnology II (P)	4	4	50	50	100
	23ScBIOP214	Major Paper 4 (Theory)	Medical Biotechnology (T)	2	2	25	25	50
Major Electives (4)	23ScBIOP221	Major Elective 1 (Theory)	Plant Biotechnology	4	4	50	50	100
	23ScBIOP222	Major Elective 2 (Theory)	Food Biotechnology	4				
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OJT(4)	23ScBIOP247	OJT	On Job Training	8	4	50	50	100
Total				30	22	275	275	550

Semester 3 (Second Year)

Course Type	Code	Course	Course / Paper Title	Hours/ Week	Credit	CIA	ESE	Total
Major Mandatory (4 + 4+4+2)	23ScBIOP311	Major Paper 1 (Theory)	Animal Biotechnology and Stem Cell Technology	4	4	50	50	100
	23ScBIOP312	Major Paper 2 (Theory)	Bioprocess Engineering and Fermentation Technology	4	4	50	50	100
	23ScBIOP313	Major Paper 3 (Practical)	Lab Course in 23ScBIOP311 and 23ScBIOP312	8	4	50	50	100
	23ScBIOP314	Major Paper 4 (Theory)	Agricultural Biotechnology	2	2	25	25	50
Major Electives (4)	23ScBIOP321	Major Elective 1 (Theory)	Ecology and Evolution	4	4	50	50	100
	23ScBIOP322	Major Elective 2 (Theory)	Bio-entrepreneur & Start-up designing	4				
RP (4)	23ScBIOP351	RP	Research Project	8	4	50	50	100

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Total				34	22	275	275	550

Semester 4 (Second Year)

Course Type	Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
Major Mandatory (4 + 4+4)	23ScBIOP411	Major Paper 1 (Theory)	Genomics and Proteomics	4	4	50	50	100
	23ScBIOP412	Major Paper 2 (Theory)	Biochemical and Biophysical Technique	4	4	50	50	100
	23ScBIOP413	Major Paper 3 (Theory)	Industrial Biotechnology	4	4	50	50	100
Major Electives (4)	23ScBIOP421	Major Elective 1 (T/P)	Bioinformatics (T+P)	6	4	50	50	100
	23ScBIOP422	Major Elective 2 (Theory)	Applications in Biotechnology	4	4	50	50	100
RP (4)	23ScBIOP451	RP	Research Project II	12	6	75	75	150
-	-	-	-	-	-	-	-	-
Total				34	22	275	275	550

OJT : On Job Training: Internship/Apprenticeship

FP : Field Project

RM: Research Methodology

RP: Research Project