

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. (Microbiology)

(Based on NEP 2020 framework)
(To be implemented from the Academic Year 2023-24)

Semester 1 (First Year)

Course Type	Course	Course Code	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
Major Mandatory (4 + 2)	Major Paper 1 (Theory)	23ScMicU1101	Fundamentals of Microbiology	2	4	40	60	100
				2				
	Major Paper 2 (Practical)	23ScMicU1102	Lab Course on 23ScMicU1101	4	2	20	30	50
Major Electives	-							
Minor	-							
OE (2 + 2)		23ScMicU1401	History of Microbiology	2	4	40	60	100
		23CpCopU1402	Democracy, Election and Governance	2				
VSC (2)	Major Specific Practical I	23ScMicU1501	Lab Course on Biosafety and good laboratory practices	4	2	20	30	50
SEC (2)	Skill Paper 1 (Practical)	23ScMicU1601	Lab Course on Basic Laboratory Practices	4	2	20	30	50
AEC(2),	MIL	23CpCopU1701 23CpCopU1702	MIL-I (Hindi) / MIL-I (Marathi)	2	2	20	30	50
VEC (2)	EVS Theory	23CpCopU1801	Environment Science I	2	2	20	30	50
IKS (2)	Generic IKS	23CpCopU1901	Generic IKS	2	2	20	30	50
CC (2)	CC-I Course	23CpCopU1001	Online Course Based on Yoga	2	2	20	30	50
Total				28	22	220	330	550

Semester 2 (First Year)

Course Type	Course	Course Code	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
Major Mandatory (4 + 2)	Major Paper 3 (Theory)	23ScMicU2101	Biochemistry and Microbiology	2	4	40	60	100
				2				
	Major Paper 4 (Practical)	23ScMicU2102	Lab Course on 23ScMicU2101	4	2	20	30	50
Major Electives	-							
Minor	Minor Paper I (Practical)	23ScMicU2301	Lab Course on Aseptic technique and Sterilization	4	2	20	30	50
OE (2 + 2)		23ScMicU2401	Introduction to Microbial World-1	2	4	40	60	100
		23CpCopU2402	Fundamentals of Music	2				
VSC (2)	Major Specific Practical II	23ScMicU2501	Lab Course on Techniques in Microbiology	4	2	20	30	50
SEC (2)	Skill Paper II (Practical)	23ScMicU2601	Lab course on Introduction to Microscopy	4	2	20	30	50
AEC(2),	English Theory	23CpCopU2703	English Communication Skills II	2	2	20	30	50
VEC (2)	EVS Theory	23CpCopU2801	Environment Science II	2	2	20	30	50
IKS (2)		—						
CC (2)	CC-II Course	23CpCopU2001 / 23CpCopU2011 / 23CpCopU2021 / 23CpCopU2031 / 23CpCopU2041 / 23CpCopU2051 / 23CpCopU2061 / 23CpCopU2071	Physical Education / Cultural Activities / NSS / NCC / Fine Arts / Applied Arts / Visual Arts / Performing Arts	2	2	20	30	50
Total				30	22	220	330	550

Semester 3 (Second Year)

Course Type	Course Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
Major Mandatory (4 + 4)	Major Core Paper 5 (Theory) Section 1	23ScMicU3101	Environmental Microbiology I & Metabolism	2	4	40	60	100
	Major Core Paper 5 (Theory) Section 2			2				
	Major Paper 6 (Practical)	23ScMicU3102	Lab Course on 23ScMicU3101	4	2	20	30	50
	Major Paper 7 (Theory)	23scMicU1901	Vedic Microbiology	2	2	20	30	50
Major Electives	-							
Minor (4)	Minor Paper II (Theory + Practical)	23ScMicU3301	Soil and Agricultural Microbiology (T + P)	2	4	40	60	100
				4				
OE (2)		23ScMicU3401	Introduction to Microbial World-2	2	2	20	30	50
VSC (2)	Major Specific Practical III	23ScMicU3501	Lab Course on food Microbiology	4	2	20	30	50
SEC (2)	--		--	--	--	--	--	--
AEC(2),	English Theory	23CpCopU3703	English Communication Skills II	2	2	20	30	50
VEC (2)	--		--	--	--	--	--	--
IKS (2)	--		--	--	--	--	--	--
FP/CEP (2)	FP –I	23ScMicU3002	Field Project I	4	2	20	30	50
CC(2)	CC III	23CpCopU3001	Fitness	2	2	20	30	50
Total				32	22	220	330	550

Semester 4 (Second Year)

Course Type	Course Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
Major Mandatory (4 + 4)	Major Core Paper 8 (Theory) Section 1	23ScMicU4101	Environmental Microbiology II and Bacterial Genetics	2	4	40	60	100
	Major Core Paper 8 (Theory) Section 2			2				
	Major Paper 9 (Practical)	23ScMicU4102	Lab Course on 23ScMicU4101	8	4	40	60	100
Major Electives	-							
Minor (4)	Minor Paper III (Theory + Practical)	23ScMicU4301	Air and Water Microbiology (T + P)	2	4	40	60	100
				4				
OE (2)		23ScMicU4401	Community Hygiene	2	2	20	30	50
VSC (2)	--		--	--	--	--	--	--
SEC (2)	Skill Paper III (Practical)	23ScMicU4601	Lab Course on Dairy Microbiology	4	2	20	30	50
AEC(2),	MIL	23CpCopU4701	MIL-II (Hindi) / MIL-II (Marathi)	2	2	20	30	50
		23CpCopU4702						
VEC (2)	--		--	--	--	--	--	--
IKS (2)	--		--	--	--	--	--	--
FP / CEP(2)	CEP –I	23ScMicU4003	Community Engagement Project I	4	2	20	30	50
CC(2)	CC-4	23CpCopU4001	Health and Wellness	2	2	20	30	50
Total				32	22	220	330	550

Semester 5 (Third Year)

Course Type	Course Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
Major Mandatory (4 + 4 + 2)	Major Core Paper 10 (Theory) Section 1	23ScMicU5101	Medical Microbiology-I and Immunology-I	2	4	40	60	100
	Major Core Paper 10 (Theory) Section 2			2				
	Major Paper 11 (Theory) Section 1	23ScMicU5102	Biochemistry-I and Molecular Biology-I	2	4	40	60	100
	Major Paper 11 (Theory) Section 2			2				
	Major Paper 12 (Practical)	23ScMicU5103	Lab Course on 23ScMicU5102	4	2	20	30	50
Major Electives	Elective I (Theory + Practical)	23ScMicU5201	Applied Microbiology -I (T + P)	2	4	40	60	100
				4				
	Elective II (Theory + Practical)	23ScMicU5203	Biostatistics and Bioinformatics (T + P)	2	4	40	60	100
				4				
Minor (4)	Minor Paper IV (Theory + Practical)	23ScMicU5301	Introduction to Fermentation (T + P)	2	4	40	60	100
				4				
OE (2)	--		--	--	--	--	--	--
VSC (2)	Major Specific Practical IV	23ScMicU5501	Lab Course on Clinical Microbiology	4	2	20	30	50
SEC (2)	--		--	--	--	--	--	--
AEC(2),	--		--	--	--	--	--	--
VEC (2)	--		--	--	--	--	--	--
IKS (2)	--		--	--	--	--	--	--
FP / CEP(2)	FP –II (Project)	23ScMicU5002	Field Project II	4	2	20	30	50
Total				32	22	220	330	550

Semester 6 (Third Year)

Course Type	Course Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
Major Mandatory (4 + 4 + 2)	Major Core Paper 13 (Theory) Section 1	23ScMicU6101	Medical Microbiology II and Immunology-II	2	4	40	60	100
	Major Core Paper 13 (Theory) Section 2			2				
	Major Paper 14 (Theory) Section 1	23ScMicU6102	Biochemistry I and Molecular Biology-II	2	4	40	60	100
	Major Paper 14 (Theory) Section 2			2				
	Major Paper 15 (Practical)	23ScMicU6103	Lab Course on 23ScMicU6102	4	2	20	30	50
Major Electives	Elective III (Theory + Practical)	23ScMicU6201	Applied Microbiology -II (T + P)	2	4	40	60	100
				4				
	Elective IV (Theory + Practical)	23ScMicU6202	Biostatistics and Biophysics (T + P)	2	4	40	60	100
				4				
Minor (4)	Minor Paper V (Theory)	23ScMicU6301	Ecology	4	4	40	60	100
OE (2)	--		--	--	--	--	--	--
VSC (2)	--		--	--	--	--	--	--
SEC (2)	--		--	--	--	--	--	--
AEC(2),	--		--	--	--	--	--	--
VEC (2)	--		--	--	--	--	--	--
IKS (2)	--		--	--	--	--	--	--
FP / CEP(2)	--		--	--	--	--	--	--
OJT(4)	OJT	23CpCopU6004	On Job Training	8	4	40	60	100
Total				30	22	220	330	550

OE : Open Elective

AEC: Ability Enhancement Course

VEC: value Education Courses
CC : Co-Curricular Courses
IKS : Indian Knowledge System
OJT : On Job Training
FP : Field Project
VSC : Vocational Skill Courses
CEP : Community Engagement Project