

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. (Computer Science)

(Based on NEP 2020 framework)

(To be implemented from 2023-24)

Semester 1 (First Year)

Course Type	Course	Subject Code	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
Major Mandatory (4 + 2)	Major Paper 1 (Theory) Section 1	23CsCmpU1101	Programming in 'C' and Database Concepts	2	4	40	60	100
	Major Paper 1 (Theory) Section 2			2				
	Major Paper 2 (Practical)	23CsCmpU1102	Lab Course on 23CsCmpU1101	4	2	20	30	50
Major Electives	–							
Minor	–							
OE (2+2)	Theory	23CsCopU1401	Computer Fundamentals	2	4	40	60	100
		23CpCopU1402	Democracy, Election and Governance	2				
VSC (2)	Major Specific Practical I	23CsEleU1501	Lab Course on Basic Analog & Digital Electronics	4	2	20	30	50
SEC (2)	Skill Paper 1 (Practical)	23CsStaU1601	Lab Course on Statistical analysis using R programming I	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)	Major Specific Theory	23CsCopU1901	Vedic Maths and Computer Fundamentals	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	Subject Code	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
Major Mandatory (4 + 2)	Major Paper 3 (Theory) Section 1	23CsCmpU2101	Advanced 'C' Programming & Advanced Database Concepts	2	4	40	60	100
	Major Paper 3 (Theory) Section 2			2				
	Major Paper 4 (Practical)	23CsCmpU2102	Lab Course on 23CsCmpU2101	4	2	20	30	50
Major Electives	–							
Minor(2)	Minor Paper I (Practical)	23CsMatU2301	Lab Course on Applied Sciences –I (Numerical Methods Using C)	4	2	20	30	50
OE (2+2)	Theory	23CsCopU2401	Digital Marketing	2	4	40	60	100
		23CpCopU2402	Fundamentals of Music	2				
VSC (2)	Major Specific Practical II	23CsCmpU2501	Lab Course on Scripting Languages	4	2	20	30	50
SEC (2)	Skill Paper II (Practical)	23CsStaU2601	Lab Course on Statistical analysis using R programming II	4	2	20	30	50
AEC(2)	English Theory	23CpCopU2703	English Communication Skills I	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	Subject Code	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
Major Mandatory (2 * 4)	Major Paper 5 Section 1 (Theory + Practical)	23CsCmpU3101	Data Structures (T + P)	2	4	40	60	100
				4				
	Major Paper 6 Section 1 (Theory + Practical)	23CsCmpU3102	Object Oriented Programming using C++ (T + P)	2	4	40	60	100
				4				
Major Electives	–							
Minor (4)	Minor Paper II (Theory + Practical)	23CsEleU3301	Lab Course on Applied Sciences –II Electronic Communication and Instrumentation (T + P)	2	4	40	60	100
				4				
OE (2)	Theory	23CsCopU3401	Cyber Security	2	2	20	30	50
VSC (2)	Major Specific Practical III	23CsCmpU3501	Lab Course on Python Programming	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	23CsCmpU3002	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	Subject Code	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
Major Mandatory (2 * 4)	Major Paper 7 (Theory + Practical)	23CsCmpU4101	Operating System Concepts (T + P)	2	4	40	60	100
				4				
	Major Paper 8 (Theory + Practical)	23CsCmpU4102	Computer Networks and Cyber Security (T + P)	2	4	40	60	100
				4				
Major Electives	-							
Minor (4)	Minor Paper III (Theory + Practical)	23CsMatU4301	Applied Sciences –III (T + P) (Discrete Mathematics)	2	4	40	60	100
				4				
OE (2)	Theory	23CsCopU4401	Web Designing	2	2	20	30	50
VSC (2)	–							
SEC (2)	Skill Paper III (Theory)	23CsStaU4601	Data Mining	2	2	20	30	50
AEC(2)	MIL	23CpCopU4701 / 23CpCopU4702	MIL-II (Hindi) / MIL-II (Marathi)	2	2	20	30	50
VEC (2)	–							
IKS (2)	–							
FP / CEP(2)	CEP –I	23CsCmpU4003	Community Engagement Project	4	2	20	30	50
CC(2)	CC-IV Course	23CpCopU4001	Health and Wellness	2	2	20	30	50
Total				30	22	220	330	550

Semester 5 (Third Year)

Course Type	Course	Subject Code	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
Major Mandatory (2 * 4 + 2)	Major Paper 9 Section 1 (Theory)	23CsCmpU5101	System Programming & Programming in Java	2	4	40	60	100
	Major Paper 9 Section 2 (Theory)			2				
	Major Paper 10 Section 1 (Theory)	23CsCmpU5102	Object Oriented Software Engineering & Theory of Computer Science	2	4	40	60	100
	Major Paper 10 Section 2 (Theory)			2				
	Major Paper 11 (Practical)	23CsCmpU5103	Lab Course on 23CsCmpU5101	4	2	20	30	50
Major Electives	Elective I (Theory + Practical)	23CsCmpU5201	Android Programming (T +P)	2	4	40	60	100
				4				
	Elective I (Theory + Practical)	23CsMatU5202	Operations Research (T + P)	2	4	40	60	100
				4				
	Elective I (Theory + Practical)	23CsEleU5203	Intel 8051 and AVR Microcontrollers (T+P)	2	4	40	60	100
				4				
Minor (4)	Minor Paper IV (Theory + Practical)	23CsMatU5301	Applied Sciences – IV (T + P) (Linear Algebra)	2	4	40	60	100
				4				
OE (2)	–							
VSC (2)	Major Specific Practical IV	23CsEleU5501	Lab Course on Raspberry Pi Programming & Computer Maintenance	4	2	20	30	50
SEC (2)	–							
AEC(2)	–							
VEC (2)	–							
IKS (2)	–							
FP / CEP(2)	FP –II	23CsCmpU5002	Field Project II	4	2	20	30	50
Total				32	22	220	330	550

Semester 6 (Third Year)

Course Type	Course	Subject Code	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
Major Mandatory (2 * 4 + 2)	Major Paper 12 (Theory) Section 1	23CsCmpU6101	Web Technology & Programming in Advanced Java	2	4	40	60	100
	Major Paper 12 (Theory) Section 2			2				
	Major Paper 13 (Theory) Section 1	23CsCmpU6102	Software Project Management & Introduction to Data Science	2	4	40	60	100
	Major Paper 13 (Theory) Section 1			2				
	Major Paper 14 (Practical)	23CsCmpU6103	Lab Course on 23CsCmpU6101	4	2	20	30	50
Major Electives	Elective II (Theory + Practical)	23CsCmpU6201	Big Data Analytics (T + P)	2	4	40	60	100
				4				
	Elective II (Theory + Practical)	23CsMatU6202	Computational Geometry (T +P)	2	4	40	60	100
				4				
	Elective II (Theory + Practical)	23CsEleU6203	Embedded systems (T + P)	2	4	40	60	100
	4							
Minor (4)	Minor Paper V (Theory + Practical)	23CsEleU6301	Applied Sciences –V (T + P) Advanced Communication and IoT Based Instrumentation	2	4	40	60	100
				4				
OE (2)	–							
VSC (2)	–							
SEC (2)	–							
AEC(2)	–							
VEC (2)	–							
OJT (4)	OJT	23CsCmpU6004	On job Training	8	4	40	60	100
FP / CEP(2)	–							
Total				32	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

