

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	Subject Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
Major Mandatory (4 + 2)	23CsCmpU1101	Major Paper 1 (Theory) Section 1	Programming in 'C'	2	4	40	60	100
		Major Paper 1 (Theory) Section 2	Database Concepts	2				
	23CsCmpU1102	Major Paper 2 (Practical)	Lab on 'C' Programming and Database Concepts	4	2	20	30	50
Major Electives		–						
Minor		–						
OE (2+2)	23CsCmpU1401		Computer Fundamentals	2	4	40	60	100
	23CsCopU1402		Democracy, Election and Governance	2				
VSC (2)	23CsCmpU1501	Major Specific Practical I	Fundamentals of Analog and Digital electronics Lab (Electronics)	4	2	20	30	50
SEC (2)	23CsCmpU1601	Skill Paper 1 (Practical)	Statistical Analysis using R Programming I (Statistics I)	4	2	20	30	50
AEC(2)	23CsCopU1701 / 23CsCopU1702	MIL	MIL-I (Hindi) / MIL-I (Marathi)	2	2	20	30	50
VEC (2)	23CsCopU1801	EVS Theory	Environment Science I	2	2	20	30	50
IKS (2)	23CsCmpU1901	Major Specific Theory	Vedic Maths and Computer Fundamentals	2	2	20	30	50
CC (2)	23CsCopU1001	CC-I Course	Online Course Based on Yoga	2	2	20	30	50
Total				28	22	220	330	550

Semester 2 (First Year)

Course Type	Subject Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	E S E	Total
Major Mandatory (4 + 2)	23CsCmpU2101	Major Paper 3 (Theory) Section 1	Advanced Programming in 'C'	2	4	40	60	100
		Major Paper 3 (Theory) Section 2	Advanced Database Concepts	2				
	23CsCmpU2102	Major Paper 4 (Practical)	Lab on Advanced 'C' Programming and Advanced Database Concepts	4	2	20	30	50
Major Electives		–						
Minor(2)	23CsCmpU2301	Minor Paper I (Practical)	Applied Sciences –I (Numerical Methods Using C) (Mathematics)	4	2	20	30	50
OE (2+2)	23CsCmpU2401		Digital Marketing	2	4	40	60	100
	23CsCopU2402		Fundamentals of Music	2				
VSC (2)	23CsCmpU2501	Major Specific Practical II	Introduction to Scripting Languages	4	2	20	30	50
SEC (2)	23CsCmpU2601	Skill Paper II (Practical)	Statistical Analysis using R Programming II (Statistics II)	4	2	20	30	50
AEC(2)	23CsCopU2703	English Theory	Technical English / English Communication I	2	2	20	30	50
VEC (2)	23CsCopU2801	EVS Theory	Environment Science II	2	2	20	30	50
IKS (2)		–						
CC (2)	23CsCopU2001	CC-II Course	Physical Education / Cultural Activities, NSS/NCC and Fine/ Applied/ Visual/ Performing Arts Course	2	2	20	30	50
Total				30	22	220	330	550

Semester 3 (Second Year)

Course Type	Subject Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	E S E	Total
Major Mandatory (2 * 4)	23CsCmpU3101	Major Paper 5 Section 1 (Theory)	Data Structures	2	4	40	60	100
		Major Paper 5 Section 2 (Practical)	Lab I on Data Structures	4				
	23CsCmpU3102	Major Paper 6 Section 1 (Theory)	Object Oriented Programming using C++	2	4	40	60	100
		Major Paper 6 Section 2 (Practical)	Lab II on Object-Oriented Programming using C++	4				
Major Electives		–						
Minor (4)	23CsCmpU3301	Minor Paper II (Theory)	Applied Sciences –II (Principles of Electronics Communication and Instrumentation) (Electronics)	2	4	40	60	100
		Minor Paper II (Practical)	Applied Sciences –II (Electronics Communication and Instrumentation Lab) (Electronics)	4				
OE (2)	23CsCmpU3401		Cyber Security	2	2	20	30	50
VSC (2)	23CsCmpU3501	Major Specific Practical III	Python Programming	4	2	20	30	50
SEC (2)		–						
AEC(2)	23CsCopU3703	English Theory	Technical English / English Communication II	2	2	20	30	50
VEC (2)		–						
IKS (2)		–						
FP/CEP (2)	23CsCmpU3002	FP –I	Major Specific Project	4	2	20	30	50
CC(2)	23CsCopU3001	CC-III		2	2	20	30	50
Total				32	22	220	330	550

Semester 4 (Second Year)

Course Type	Subject Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
Major Mandatory (2 * 4)	23CsCmpU4101	Major Paper 7 Section 1 (Theory)	Operating System Concepts	2	4	40	60	100
		Major Paper 7 Section 2 (Practical)	Lab I on Operating System Concepts	4				
	23CsCmpU4102	Major Paper 8 Section 1 (Theory)	Computer Networks and Cyber Security	2	4	40	60	100
		Major Paper 8 Section 2 (Practical)	Lab II on Computer Networks	4				
Major Electives		-						
Minor (4)	23CsCmpU4301	Minor Paper III (Theory)	Applied Sciences –III (Discrete Mathematics) (Mathematics)	2	4	40	60	100
		Minor Paper III (Practical)	Applied Sciences –III (Lab on Discrete Mathematics) (Mathematics)	4				
OE (2)	23CsCmpU4401		Web Designing	2	2	20	30	50
VSC (2)		–						
SEC (2)	23CsCmpU4601	Skill Paper III (Theory)	Data Mining (Statistics III)	2	2	20	30	50
AEC(2)	23CsCopU4701 / 23CsCopU4702	MIL	MIL-II (Hindi) / MIL-II (Marathi)	2	2	20	30	50
VEC (2)		–						
IKS (2)		–						
FP / CEP(2)	23CsCmpU4003	CEP –I	Community Engagement Project I	4	2	20	30	50
Total				28	22	220	330	550

Semester 5 (Third Year)

Course Type	Subject Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	E S E	Total
Major Mandatory (2 * 4 + 2)	23CsCmpU5101	Major Paper 9 Section 1 (Theory)	System Programming	2	4	40	60	100
		Major Paper 9 Section 2 (Theory)	Programming in Java	2				
	23CsCmpU5102	Major Paper 10 Section 1 (Theory)	Object Oriented Software Engineering	2	4	40	60	100
		Major Paper 10 Section 2 (Theory)	Theory of Computer Science	2				
	23CsCmpU5103	Major Paper 11 (Practical)	Lab on System Programming and Programming in Java	4	2	20	30	50
Major Electives	23CsCmpU5201	Elective I (Theory)	Android Programming	2	4	40	60	100
		Elective I (Practical)	Lab on Android Programming	4				
	23CsCmpU5202	Elective I (Theory)	Operations Research (Mathematics)	2	4	40	60	100
		Elective I (Practical)	Lab on Operations Research (Mathematics)	4				
	23CsCmpU5203	Elective I (Theory)	Intel 8051/AVR architecture, programming and interfacing (Electronics)	2	4	40	60	100
		Elective I (Practical)	Intel 8051/AVR architecture, programming and interfacing Lab (Electronics)	4				
Minor (4)	23CsCmpU5301	Minor Paper IV (Theory)	Applied Sciences – IV (Linear Algebra) (Mathematics)	2	4	40	60	100
		Minor Paper IV (Practical)	Applied Sciences – IV (Lab on Linear Algebra) (Mathematics)	4				
OE (2)		–						
VSC (2)	23CsCmpU5501	Major Specific Practical IV	Raspberry Pi Programming & Computer System Maintenance (Electronics)	4	2	20	30	50
SEC (2)		–						
AEC(2)		–						
VEC (2)		–						
IKS (2)		–						
FP / CEP(2)	23CsCmpU5002	FP –II	Field Project II	4	2	20	30	50
Total				32	22	220	330	550

Semester 6 (Third Year)

Course Type	Subject Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	E S E	Total
Major Mandatory (2 * 4 + 2)	23CsCmpU6101	Major Paper 12 (Theory)	Web Technology	2	4	40	60	100
		Major Paper 12 (Theory)	Programming in Advanced Java	2				
	23CsCmpU6102	Major Paper 13 (Theory)	Software Project Management	2	4	40	60	100
		Major Paper 13 (Theory)	Introduction to Data Science	2				
	23CsCmpU6103	Major Paper 14 (Practical)	Lab on Web Technology and Programming in Advanced Java	4	2	20	30	50
Major Electives	23CsCmpU6201	Elective II (Theory)	Big Data	2	4	40	60	100
		Elective II (Practical)	Lab on Big Data	4				
	23CsCmpU6202	Elective II (Theory)	Computational Geometry (Mathematics)	2	4	40	60	100
		Elective II (Practical)	Lab on Computational Geometry (Mathematics)	4				
	23CsCmpU6203	Elective II (Theory)	Embedded system (Electronics)	2	4	40	60	100
		Elective II (Practical)	Embedded system Lab (Electronics)	4				
Minor (4)	23CsCmpU6301	Minor Paper V (Theory)	Applied Sciences –V Advanced Communication and IoT Based Instrumentation (Electronics)	2	4	40	60	100
		Minor Paper V (Practical)	Applied Sciences –V Advanced Communication and IoT Based Instrumentation Lab (Electronics)	4				
OE (2)		–						
VSC (2)		–						
SEC (2)		–						
AEC(2)		–						
VEC (2)		–						
OJT (4)	23CsCmpU6004	OJT	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

