

***Progressive Education Society's***  
**Modern College of Arts, Science and Commerce**

**(Autonomous),**

**Shivajinagar, Pune - 5**

**(An Autonomous College Affiliated to  
Savitribai Phule Pune University, Pune: 7)**

**Framework of Syllabus**

**For**

**M.Sc. (Computer Application)**

**(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
<b>Major Mandatory (4 + 4+4+2)</b>	23CsCmaP111	Major Paper 1 (Theory)	Design and Analysis of Algorithms	4	4	50	50	100
	23CsCmaP112	Major Paper 2 (Theory)	.NET	4	4	50	50	100
	23CsCmaP113	Major Paper 3 (Theory)	Web Programming - I	4	4	50	50	100
	23CsCmaP114	Major Paper 4 (Practical/Theory)	Lab on .NET and Web Programming-I	4	2	25	25	50
<b>Major Electives (4)</b>	23CsCmaP121	Major Elective 1 (T/P)	Software Development Engineering in Testing	4	4	50	50	100
		Major Elective 2 (T/P)	Advanced Database Concepts	4				
<b>RM (4)</b>	23CsCmaP122	RM Section 1	Research Methodology & Artificial Intelligence	2	4	50	50	100
		RM Section 2		2				
<b>OJT(4),</b>		–	–	–	–	–	–	–
<b>Total</b>				24	22	275	275	550

### Semester 2 (First Year)

Course Type	Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
<b>Major Mandatory (4 + 4+4+2)</b>	23CsCmaP211	Major Paper 1 (Theory)	Paper1: Advanced Operating System	4	4	50	50	100
	23CsCmaP212	Major Paper 2 (Theory)	Paper2: Information System Security	4	4	50	50	100
	23CsCmaP213	Major Paper 3 (Theory)	Paper3: Web Programming-II	4	4	50	50	100
	23CsCmaP214	Major Paper 4 (Practical/Theory)	Lab on AOS and Web Programming-II	4	2	25	25	50
<b>Major Electives (4)</b>	23CsCmaP221	Major Elective 1 (T/P)	Soft Computing	4	4	50	50	100
	23CsCmaP222	Major Elective 2 (T/P)	Cloud and Grid Computing	4				
<b>RM (4)</b>		–	–	–	–	–	–	–
		–	–	–				
<b>OJT(4),</b>	23CsCmaP204	OJT	On Job Training	8	4	50	50	100
<b>Total</b>				28	22	275	275	550

### Semester 3 (Second Year)

Course Type	Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
<b>Major Mandatory (4 + 4+4+2)</b>	23CsCmaP311	Major Paper 1 (Theory + Practical)	Mobile Technologies (T + P)	6	4	50	50	100
	23CsCmaP312	Major Paper 2 (Theory)	Data Mining and Data Warehousing	4	4	50	50	100
	23CsCmaP313	Major Paper 3 (Theory)	Block Chain Technology	4	4	50	50	100
	23CsCmaP314	Major Paper 4 (Practical)	Programming Language (Python)	4	2	25	25	50
<b>Major Electives (4)</b>	23CsCmaP321	Major Elective 1 (Theory + Practical)	Data Science (T + P)	6	4	50	50	100
	23CsCmaP322	Major Elective 2 (Theory)	User Experience and Design	4				
<b>RP (4)</b>	23CsCmaP304	RP	Research Project I	8	4	50	50	100
<b>OJT(4),</b>								
<b>Total</b>				34	22	275	275	550

### Semester 4 (Second Year)

<b>Course Type</b>	<b>Code</b>	<b>Course</b>	<b>Course / Paper Title</b>	<b>Hours / Week</b>	<b>Credit</b>	<b>CIA</b>	<b>ESE</b>	<b>Total</b>
<b>Major Mandatory (4 + 4+4)</b>	23CsCmaP411	Major Project 1	Industrial Training	2	16	200	200	400
<b>RP (4)</b>	23CsCmaP404	RP	Research Project II	12	6	75	75	150
<b>OJT(4),</b>								
<b>Total</b>				22	22	275	275	550

OJT : On Job Training: Internship/Apprenticeship

FP : Field Project

RM: Research Methodology

RP: Research Project