

*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 and Syllabus**

**For**

**M.Sc. (Mathematics)**

(Based on NEP 2020 framework)

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

## Semester 1 (First Year)

Course Type	Course Code	Course	Course / Paper Title	Hours / Week	Credit	C I A	ES E	Total
<b>Major Mandatory (4 +4 +4 +2)</b>	23ScMatP 111	Major Paper 1(Theory)	Linear Algebra	4	4	50	50	100
	23ScMatP 112	Major Paper 2(Theory)	Group Theory	4	4	50	50	100
	23ScMatP 113	Major Paper 3(Theory)	Graph Theory	4	4	50	50	100
	23ScMatP 114	Major Paper 4(Practical)	Lab Course on 23ScMatP111, 23ScMatP112 & 23ScMatP113	4	2	25	25	50
<b>Major Electives (4)</b>	23ScMatP 121	Major Elective 1 (Theory + Practical)	Ordinary Differential Equations (T + P)	2	4	50	50	100
				4				
	23ScMatP 122	Major Elective 2 (Theory + Practical)	C- Programming Language ( T + P)	2				
				4				
<b>RM (4)</b>	23ScMatP 131	RM Section 1(Theory)	Research Methodology Basics & Research in Discrete Mathematics	2	4	50	50	100
		RM Section 2 (Practical)		4				
<b>OJT/FP</b>								
<b>RP</b>								
<b>Total</b>				28	22	275	275	550

## Semester 2 (First Year)

Course Type	Course Code	Course	Course / Paper Title	Hours / Week	Credit	Cl A	ESE	Total
<b>Major Mandatory (4 +4 +4 +2)</b>	23ScMatP 211	Major Paper 1(Theory)	Partial Differential Equations	4	4	50	50	100
	23ScMatP 212	Major Paper 2(Theory)	Rings and Modules	4	4	50	50	100
	23ScMatP 213	Major Paper 3(Theory)	General Topology	4	4	50	50	100
	23ScMatP 214	Major Paper 4(Practical)	Lab Course on 23ScMatP211, 23ScMatP212 & 23ScMatP213	4	2	25	25	50
<b>Major Electives (4)</b>	23ScMatP 221	Major Elective 1 (Theory + Practical)	Numerical Analysis ( T + P)	2	4	50	50	100
				4				
	23ScMatP 222	Major Elective 2 (Theory + Practical)	C++ and Data Structures ( T + P)	2				
				4				
<b>RM</b>								
<b>OJT/FP (4)</b>	<b>23ScMatP 241</b>		On Job Training	8	4	50	50	100
<b>RP</b>								
<b>Total</b>				30	22	275	175	550

### Semester 3 (Second Year)

Course Type	Course Code	Course	Course / Paper Title	Hours / Week	Credit	CI A	ES E	Total
<b>Major Mandatory (4+4+4+2)</b>	23ScMatP 311	Major Paper 1(Theory)	Measure and Integration	4	4	50	50	100
	23ScMatP 312	Major Paper 2(Theory)	Field Theory	4	4	50	50	100
	23ScMatP 313	Major Paper 3(Theory)	Functional Analysis	4	4	50	50	100
	23ScMatP 314	Major Paper 4(Practical)	Lab Course on 23ScMatP311, 23ScMatP312 & 23ScMatP313	4	2	25	25	50
<b>Major Electives (4)</b>	23ScMatP 321	Major Elective 1 (Theory + Practical)	Mathematical Statistics and Probability (T + P)	2	4	50	50	100
				4				
	23ScMatP 312	Major Elective 2 (Theory + Practical)	Python Programming Language (T + P)	2				
				4				
<b>RM</b>								
<b>OJT/FP</b>								
<b>RP (4)</b>	23ScMatP 351		Research Project-I	8	4			
<b>Total</b>				30	22	275	175	550

### Semester 4 (Second Year)

Course Type	Course Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
<b>Major Mandatory (4 + 4 + 4)</b>	23ScMatP4 11	Major Paper 1(Theory)	Advanced Calculus	4	4	50	50	100
	23ScMatP4 12	Major Paper 2(Theory)	Applied Combinatorics	4	4	50	50	100
	23ScMatP4 13	Major Paper 3(Theory)	Number Theory	4	4	50	50	100
<b>Major Electives (4)</b>	23ScMatP4 21	Major Elective 1 (Theory +Practical)	Computational Geometry ( T + P)	2	4	50	50	100
				4				
	23ScMatP4 22	Major Elective 2 (Theory +Practical)	Data Mining with R Package ( T + P)	2				
				4				
<b>RM</b>								
<b>OJT/FP</b>								
<b>RP (6)</b>	23ScMatP4 51		Research Project-II	12	6	75	75	150
<b>Total</b>				30	22	275	175	550

OJT : On Job Training: Internship/Apprenticeship  
 FP : Field Project  
 RM: Research Methodology  
 RP: Research Project