

*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 M.Sc. ( Physics)**

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

### Semester I (First Year -2 yr PG)

Course Type	Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
<b>Major Mandatory</b> (4+4+4+2)	23ScPhyP111	Major Paper 1 (Theory)	Mathematical Methods for Physics	4	4	50	50	100
	23ScPhyP112	Major Paper 2 (Theory)	Classical Mechanics	4	4	50	50	100
	23ScPhyP113	Major Paper 3 (Theory)	Quantum Mechanics - I	4	4	50	50	100
	23ScPhyP114	Major Paper 4 (Practical)	Lab Course on Physics General I	4	2	25	25	50
<b>Major Elective</b>	23ScPhyP121	Elective Paper 1 (Theory)	Electronics	4	4	50	50	100
	23ScPhyP122	Elective paper 2 (Theory)	Laser Physics					
<b>RM</b>	23ScPhyP131	RM Paper 1 Section 1	Research Methodology Basics & Research in Physics	2	4	50	50	100
		RM Paper 2 Section 2		2				
<b>OJT/FP</b>		—	—	—	—			—
<b>RP</b>		—	—	—	—			—
<b>Total</b>				24	22	275	275	550

### Semester II (First Year -2 yr PG)

Course Type	Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
<b>Major Mandatory</b> (4+4+4+2)	23ScPhyP211	Major Paper 1 (Theory)	Electrodynamics - I	4	4	50	50	100
	23ScPhyP212	Major Paper 2 (Theory)	Statistical Mechanics	4	4	50	50	100
	23ScPhyP213	Major Paper 3 (Theory)	Atomic and Molecular Physics	4	4	50	50	100
	23ScPhyP214	Major Paper 4 (Practical)	Lab Course on Physics General II	4	2	25	25	50
<b>Major Electives</b>	23ScPhyP221	Elective Paper 1 (Theory)	Material Science	4	4	50	50	100
	23ScPhyP222	Elective Paper 2 (Theory)	Principle of Communication					
<b>RM</b>		—	—	—	—			—
<b>OJT</b>	23ScPhyP241		On Job Training	8	4	50	50	100
<b>RP</b>		—	—	—	—			—
<b>Total</b>				28	22	275	275	550

### Semester III (Second Year -2 yr PG)

Course Type	Course Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
<b>Major Mandatory</b> (4+4+4 + 2)	23ScPhyP311	Major Paper 1 (Theory)	Quantum Mechanics - II	4	4	50	50	100
	23ScPhyP312	Major Paper 2 (Theory)	Solid State Physics	4	4	50	50	100
	23ScPhyP313	Major Paper 3 (Theory)	Experimental Technique in Physics	4	4	50	50	100
	23ScPhyP314	Major Paper 4 (Practical)	Lab on Computational Physics	4	2	25	25	50
<b>Major Electives</b>	23ScPhyP321	Elective paper 1 (Theory)	Physics of Thin Films	4	4	50	50	100
	23ScPhyP322	Elective paper 2 (Theory)	Quantum Computing					
<b>RM</b>		—	—	—				—
<b>OJT/FP</b>		—	—	—				—
<b>RP</b>	23ScPhyP351		Research Project - 1	8	4	50	50	100
<b>Total</b>				28	22	275	275	550

### Semester IV (Second Year -2 yr PG)

Course Type	Code	Course	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
<b>Major Mandatory</b> (4+4+4 )	23ScPhyP411	Major Paper 1 (Theory)	Electrodynamics - II	4	4	50	50	100
	23ScPhyP412	Major Paper 2 (Theory)	Nuclear Physics	4	4	50	50	100
	23ScPhyP413	Major Paper 3 (Theory)	Physics of Nanomaterials	4	4	50	50	100
<b>Major Electives</b>	23ScPhyP421	Elective paper 1 (Theory)	Advanced Computational Physics	4	4	50	50	100
	23ScPhyP422	Elective paper 2 (Theory)	Energy Studies					
<b>RM</b>		—	—	—				—
<b>OJT/FP</b>		—	—	—				—
<b>RP</b>	23ScPhyP451		Research Project - II	12	6	75	75	150
<b>Total</b>				28	22	275	275	550

OJT : On Job Training: Internship/Apprenticeship

FP : Field Project

RM: Research Methodology

RP: Research Project