

DEPARTMENT OF PHYSICS AND MATERIALS SCIENCE AND ENGINEERING
Curriculum Structure of 2-year M. Sc. Program in Physics
(Effective from 2023)
FIRST SEMESTER

S. No.	Course Code	Course	Contact hours				Credit
			L	T	P	Total	
1.	19M21PH111	Classical Mechanics	3	1	-	4	4
2.	19M21PH112	Mathematical Physics	3	1	-	4	4
3.	19M21PH113	Quantum Mechanics	3	1	-	4	4
4.	19M21PH114	Electronics	3	1	-	4	4
5.	19M25PH111	Laboratory-1	-	-	8	8	4
6.	19M21HS111	Presentation and Communication Skills	2		-	2	Audit
		TOTAL	14	4	8	26	20

SECOND SEMESTER

S. No.	Course Code	Course	Contact hours				Credit
			L	T	P	Total	
1.	19M21PH115	Classical Electrodynamics	3	1	-	4	4
2.	19M21PH116	Atomic, Molecular and Laser Physics	3	1	-	4	4
3.	19M21PH117	Statistical Mechanics	3	1	-	4	4
4.	19M21PH118	Condensed Matter Physics	3	1	-	4	4
5.		DE-1	3	-	-	3	3
6.	19M25PH112	Laboratory-2	-	-	8	8	4
		TOTAL	15	4	8	27	23

THIRD SEMESTER

S. No.	Course Code	Course	Contact hours				Credit
			L	T	P	Total	
1.	19M21PH211	Nuclear and Particle Physics	3	1	-	4	4
2.	19M21PH212	Advanced Quantum Mechanics	3	1	-	4	4
3.	19M21PH213	Numerical Techniques and Computer Programming	3	-	-	3	3
4.	19M21PH214 OR 19M21PH215	Special Paper-1: Advanced Condensed Matter Physics-1 OR Special Paper-1: Optoelectronics	3	-	-	3	3
5.		DE-2	3	-	-	3	3
6.		DE-3	3	-	-	3	3
7.	19M25PH211 OR 19M25PH212	Laboratory-3 (Solid State Physics) OR Laboratory-3 (Applied Optics)	-	-	8	8	4
		TOTAL	18	2	8	28	24

FOURTH SEMESTER

S. No.	Course Code	Course	Contact hours				Credit
			L	T	P	Total	
1.	19M21PH216 Or 19M21PH217	Special Paper-2: Advanced Condensed Matter Physics-2 OR Special Paper-2: Fiber Optics	3	-	-	3	3
2.	19M27PH211	Dissertation	-	-	20	20	10
		TOTAL	3	-	20	23	13

TOTAL CREDITS: 80

DE: Departmental Elective

Departmental Electives (DE-1) II Semester

- | | |
|---|------------|
| 1) Laser and Applications | 20M22PH211 |
| 2) Semiconductor and Electronic Devices | 20M22PH213 |
| 3) Astrophysics and Cosmology | 24M22PH111 |

Departmental Electives III Semester

DE-2 and DE-3 for Condensed Matter Physics specialization

- | | |
|--|------------------|
| 1) Introduction to Nanoscience | 20M22PH215 (DE2) |
| 2) Thin Film Deposition Techniques | 20M22PH218 (DE2) |
| 3) Design and Fabrication of Solar Cells | 20M22PH216 (DE3) |
| 4) Characterization of Solids | 20M22PH217 (DE3) |

DE-2 and DE-3 for Applied Optics specialization

- | | |
|----------------------------------|------------------|
| 1) Quantum Optics | 20M22PH212 (DE2) |
| 2) Quantum Field Theory | 20M22PH214 (DE2) |
| 3) Plasma Physics | 20M22PH219 (DE3) |
| 4) Optical and Quantum Computing | 20M22PH220 (DE3) |
| 5) Integrated Optics | 20M22PH221 (DE3) |