

### I. General Structure for the First Degree Programme in Physics

Sem. No.	Course title	Instructional hours/week		Credit	Uty.Exam duration	Evaluation		Total credit
		L	P			Internal	Uty. exam	
I	EN1111 English Lang I	5		4	3 hours	25%	75%	16
	1111 Addl Lang I	4		3	„			
	EN1121 Foun Course I	4		2	„			
	PY1141 Core Course I	2		2	„			
	Core pract. I	-	2	-	-			
	MM1131.1 Compl. Course I	4		3	3 hours			
	Compl. Course II (CH1131.1/ST1131.2/EL1131)	2	2	2	„			
II	EN1211 Eng Lang. II	5		4	3 hours	25%	75%	17
	EN1212 Eng Lang. III	4		3	„			
	1211 Addl Lang. II	4		3	„			
	PY1221 Foun Course II	2	2	2	„			
	MM1231.1 Compl. Course III	4	-	3	„			
	Compl. Course IV (CH1231.1/ST1231.2/EL1231)	2	2	2	„			
III	EN1311 Eng Lang. IV	5		4	3 hours	25%	75%	18
	1311 Addl Lang. III	5		4	„			
	PY1341 Core Course II	3	-	3	„			
	Core Pract I	-	2	-	-			
	MM1331.1 Compl. Course V	5	-	4	3 hours			
	Compl. Course VI (CH1331.1/ST1331.2/EL1331)	3	2	3	„			

IV	EN1411 Eng Lang. V	5		4	3 hours			
	1411 Addl Lang. IV	5		4	„			
	PY1441 Core Course III	3		3	„	25%	75%	25
	PY1442 Core (Pract I) IV	-	2	3	„			
	MM1431.1 Compl. Course VII	5	-	4	3 hours			
	Compl. Course VIII (CH1431.1/ST1431.2/EL1431)	3	-	3	„			
	Compl. (Practical) IX (CH1432.1/ST1432.2/EL1432)	-	2	4	„			
V	PY1541 Core Course V	4	-	4	3 hours			
	PY1542 Core Course VI	4	-	4	„			
	PY1543 Core Course VII	4	-	4	„	25%	75%	18
	PY1544 Core Course VIII	4	-	4	„			
	Core (PracticalII)	-	4	-	-			
	Open Course (PY1551.1/PY1551.2/ PY1551.3/PY1551.4/ PY1551.5)	3	-	2	3 hours			
	Project	-	2	-	-			
VI	PY1641 Core Course IX	4	-	4	3 hours			
	PY1642 Core Course X	4	-	4	„			
	PY1643 Core Course XI	4	-	4	„	25%	75%	26
	PY1644 Core Course XII	4	-	3	„			
	PY1645 Core (Pract II) XIII	-	2	2	„			
	PY1646 Core (Pract III) XIV	-	2	3	„			
	Elective Course (PY1661.1/PY1661.2/ PY1661.3/PY1661.4/ PY1661.5)	3	-	2	„			
	PY1647 Project	-	2	4	-			

## II. Course structure:(1a). Core Courses (theory)

Sem.	Title of paper	Number of hours per week	Number of credits	Total hours/ semester	UE Duration	Weightage	
						IA	UE
1	PY1141 – Basic mechanics & Properties of matter	2	2	36	3 hrs	1	3
2	PY1221- Classical Mechanics (Foundation course 2)	2	2	36	3	1	3
3	PY1341–Thermodynamics & Statistical Physics	3	3	54	3	1	3
4	PY1441-Electrodynamics	3	3	54	3	1	3
5	PY1541– Methodology in Physics & Relativistic Mechanics	4	4	72	3	1	3
	PY1542–Quantum Mechanics	4	4	72	3	1	3
	PY1543–Electronics	4	4	72	3	1	3
	PY1544–Atomic & Molecular Physics	4	4	72	3	1	3
	PY1551– Open course	3	2	54	3	1	3
	PY1641-Solid State Physics	4	4	72	3	1	3
	PY1642–Nuclear & Particle Physics	4	4	72	3	1	3
6	PY1643- Classical & Modern Optics	4	4	72	3	1	3
	PY1644- Computer Science	4	3	72	3	1	3
	PY1661– Elective Course	3	2	54	3	1	3

**(1b). COURSE STRUCTURE FOR PRACTICALS AND PROJECT WORK****FOR THE CORE COURSE:**

Sem	Title of Paper	Duration of Exam	Number of credits	Weightage IA	Weightage UE	Allotted hours	
						Per week	Per year
4	PY1442- Mechanics, Properties of matter, Error measurements, Heat and Acoustics	3	3	1	3	S1---2 S2---2 S3---2 S4---2	144
6	PY1645-Optics, Electricity and magnetism	3	2	1	3	S5---2 S6---2	72
6	PY1646-Electronics and Computer science	3	3	1	3	S5---2 S6---2	72
6	PY-1647-Project	-	4	-	4	S5-2 S6-2	72

**2(a). Complementary Courses (General structure)**

Semester	Theory			Practical		Weightage (For both theory & practical)	
	Number of hours/week	Number of credits	Total hours/sem	number of hours/week	Number of credits	IA	UE
1	2	2	36	2	-	1	3
2	2	2	36	2	-	1	3
3	3	3	54	2	-	1	3
4	3	3	54	2	4	1	3

**(2b). COMPLEMENTARY COURSES (Theory and Practical)****1. Physics for Mathematics B.Sc Programme**

Semester	Title of the course	No. of hours/week	No. of credits	Total credits	Total hours per sem.	UE duration	weightage	
							CE	UE
1	PY1131.1- Mechanics & properties of matter	2	2	2	36	3	1	3
	Practical	2			36			
2	PY1231.1- Heat and Thermodynamics	2	2	2	36	3	1	3
	Practical	2			36			
3	PY1331.1- Optics, magnetism & electricity	3	3	3	54	3	1	3
	Practical	2			36			
4	PY1431-Modern Physics & Electronics	3	3	7	54	3	1	3
	PY1432-Practical	2	4		36			

## 2. Physics for Chemistry and Polymer Chemistry B.Sc Programmes

Semester	Title of the course	No. of hours/week	No. of credits	Total credits	Total hours per sem.	UE duration	weightage	
							IA	UE
1	PY1131.2-Rotational dynamics & properties of matter	2	2	2	36	3	1	3
	Practical	2			36			
2	PY1231.2- Thermal Physics	2	2	2	36	3	1	3
	Practical	2			36			
3	PY1331.2- Optics, Magnetism & Electricity	3	3	3	54	3	1	3
	Practical	2			36			
4	PY1431.2-Atomic physics, Quantum mechanics & Electronics	3	3	7	54	3	1	3
	PY1432- Practical	2	4		36	3	1	3

### 3. Physics for Statistics B.Sc Programme

Semester	Title of the course	No. of hours/week	No. of credits	Total credits	Total hours per sem.	UE duration	weightage	
							IA	UE
1	PY1131.3- Mechanics & properties of matter	2	2	2	36	3	1	3
	Practical	2			36			
2	PY1231.3- Thermal Physics & statistical mechanics	2	2	2	36	3	1	3
	Practical	2			36			
3	PY1331.3- Physical and modern optics & electricity	3	3	3	54	3	1	3
	Practical	2			36			
4	PY1431.3- Modern physics & Electronics	3	3	7	54	3	1	3
	PY1432- Practical	2	4		36	3	1	3

#### 4. Physics for Geology B.Sc Programme

Semester	Title of the course	No. of hours/week	No. of credits	Total credits	Total hours per sem.	UE duration	weightage	
							IA	UE
1	PY1131.4 Mechanics & properties of matter	2	2	2	36	3	1	3
	Practical	2			36			
2	PY1231.4 Thermal Physics & Physics of the Earth	2	2	2	36	3	1	3
	Practical	2			36			
3	PY1331.4 Optics and electrodynamics	3	3	3	54	3	1	3
	Practical	2			36			
4	PY1431.4 Modern Physics, Electronics & crystallography	3	3	7	54	3	1	3
	PY1432- Practical	2	4		36	3	1	3



### 5. Physics for Home Science B.Sc Programme

Semester	Title of the course	No. of hours/week	No. of credits	Total credits	Total hours per sem.	UE duration	weightage	
							IA	UE
1	PY1131.5- Mechanics & properties of matter	2	2	2	36	3	1	3
	Practical	2			36			
2	PY1231.5- Thermal Physics	2	2	2	36	3	1	3
	Practical	2			36			

3	PY1331.5- Optics and electricity	3	3	3	54	3	1	3
	Practical	2			36			
4	PY1431.5- Atomic physics & Electronics	3	3	7	54	3	1	3
	PY1432- Practical	2	4		36	3	1	3

## 6. Electronics for Physics B.Sc Programme

Semester	Title of the course	No. of hours/week	No. of credits	Total credits	Total hours per sem.	UE duration	Weightage	
							IA	UE
1	EL1131- Electronics I	2	2	2	36	3	1	3
	Practical	2			36			
2	EL1231- Electronics II	2	2	2	36	3	1	3
	Practical	2			36			
3	EL1331- Electronics III	3	3	3	54	3	1	3
	Practical	2			36			
4	EL1431- Electronics IV	3	3	7	54	3	1	3
	EL1432- Practical	2	4		36	3	1	3

## **AIM AND OBJECTIVES OF THE PROGRAMME**

In this programme, we aim to provide a solid foundation in all aspects of physics and to show a broad spectrum of modern trends in physics and to develop experimental, computational and mathematical skills of students. The syllabi are framed in such a way that it bridges the gap between the plus two and post graduate levels of physics by providing a more complete and logical framework in almost all areas of basic physics.

The programme also aims

- (i) to provide education in physics of the highest quality at the undergraduate level and generate graduates of the caliber sought by industries and public service as well as academic teachers and researchers of the future.
- (ii) to attract outstanding students from all backgrounds.
- (iii) to provide an intellectually stimulating environment in which the students have the opportunity to develop their skills and enthusiasms to the best of their potential.
- (iv) to maintain the highest academic standards in undergraduate teaching.
- (v) to impart the skills required to gather information from resources and use them.
- (vi) to equip the students in methodology related to physics.

### **Objectives**

By the end of the first year (2<sup>nd</sup> semester), the students should have,

- (i) attained a common level in basic mechanics and properties of matter and laid a secure foundation in mathematics for their future courses.
- (ii) developed their experimental and data analysis skills through a wide range of experiments in the practical laboratories.

By the end of the fourth semester, the students should have

- (i) been introduced to powerful tools for tackling a wide range of topics in Thermodynamics, Statistical Mechanics and Electrodynamics.
- (ii) Become familiar with additional relevant mathematical techniques.
- (iii) Further developed their experimental skills through a series of experiments which also illustrate major themes of the lecture courses.

By the end of the sixth semester, the students should have

- (i) covered a range of topics in almost all areas of physics including quantum physics, solid state physics,

computational physics, electronics etc.

(ii) had experience of independent work such as projects, seminars etc. (iii) developed their understanding of core physics.