Department of Physics Pavanatma College, Murickassery Idukki-685604

Curriculum Framework



Academic Year 2018 – 2019

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Course - I

Semester - I

Methodology And Perspectives Of Physics

1	Course	Core					
2	Course Type	Theory					
3	Course Code	PH1CRT01					
4	Credit	2					
5	Duration of External Examination	3 hours					
6	External Assessment	60					
7	Internal Assessment	15					
8	Total hours	36					
9	Hours per Week	2					
10	Number of Modules	3					
	Distribution of Internal Marks						
11	Attendance	5					
12	Assignment/Seminar	2					
13	Assessment Test	$8 (2 \times 4 = 8)$					

Module	Module Title	Delivery Methods	Total hours
1	Concepts and Development Physics	Chalk and talk, ICT	8
2	Number systems-Introductory Vector Analysis-Coordinate systems	Chalk and talk	18
3	Experimental methods and error analysis	Chalk and talk	10

1.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type				
1	Assessment tests	Internal Assessment				
2	Assignments	Internal Assessment				
3	Seminar	Internal Assessment				
4	University Examination	External Assessment				

1.4 Course Outcome

CO-1	Able to understand the developments in physics through					
CO-1	centuries and its methodology.					
CO 9	Able to understand different number systems, co-ordinate					
CO-2	systems and their applications					
CO 9	To understand various experimental methods to measure					
CO-3	physical quantities and to estimate errors in measurement.					

1.5 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	2	0	0	0	0	1	0	0	0
CO-2	3	0	0	0	0	0	0	0	0	0
CO-3	3	0	0	2	0	0	0	0	0	0

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	2	0	0	0	0	0
CO-2	2	0	1	0	0	0
CO-3	2	Mus	0	0	1	2

Course - II

Semester - II

Mechanics And Properties Of Matter

1	Course	Core
2	Course Type	Theory
3	Course Code	PH2CRT02
4	Credit	2
5	Duration of External Examination	3 hours
6	External Assessment	60
7	Internal Assessment	15
8	Total hours	36
9	Hours per Week	2
10	Number of Modules	3
	Distribution of Inter	rnal Marks
11	Attendance	5
12	Assignment/Seminar	2
13	Assessment Test	$8 (2 \times 4 = 8)$

Madula	Module Title	Dolizzary Mothoda	Total
Module	Module Title	Delivery Methods	hours
1	Wave motion-Oscillations	Chalk and talk	12
2	Rotational mechanics	Chalk and talk	7
3	Elasticity-Hydrodynamics	Chalk and talk	17

2.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Assignments	Internal Assessment
3	Seminar	Internal Assessment
4	University Examination	External Assessment

2.4 Course Outcome

CO-1	Able to understand the mathematical formulation of wave
	and oscillatory motions
CO-2	Able to understand the mathematical formulation of
CO-2	rotational motion
CO 2	Able to understand the concepts of mechanical properties of
CO-3	solids and fluids

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	0	0	2	0	0	0	0	0	1
CO-2	3	0	0	2	0	0	0	0	0	1
CO-3	3	0	0	2	0	0	0	0	0	1

CO	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	3	1	2	1	1	2
CO-2	3	1		0	1	2
CO-3	3	1	2	0	1	2

Course - III

Semester - III

Optics, Laser And Fiber Optics

1	Course	Core
2	Course Type	Theory
3	Course Code	PH3CRT03
4	Credit	3
5	Duration of External Examination	3 hours
6	External Assessment	60
7	Internal Assessment	15
8	Total hours	54
9	Hours per Week	3
10	Number of Modules	3
	Distribution of Inter	rnal Marks
11	Attendance	5
12	Assignment/Seminar	2
13	Assessment Test	$8 (2 \times 4 = 8)$

Module	Module Title	Dolizzary Mothoda	Total
	Module Title	Delivery Methods	hours
1	Interference	Chalk and talk, ICT	13
2	Diffraction- Polarization	Chalk and talk ,ICT	22
3	Laser- Fiber Optics	Chalk and talk	19

3.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Assignments	Internal Assessment
3	Seminar	Internal Assessment
4	University Examination	External Assessment

3.4 Course Outcome

CO-1	Able to understand the mathematical formulation and
	experimental aspects of interference of light
CO 9	Able to understand the mathematical formulation and
CO-2	experimental aspects of diffraction and polarization of light
CO 2	Able to understand the mathematical formulation and
CO-3	technological aspects of laser and fiber optics

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	0	0	2	0	0	0	0	0	0
CO-2	3	0	0	2	0	0	0	0	0	0
CO-3	3	0	0	2	0	0	0	0	0	2

CO	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	3	1	2	0	2	2
CO-2	3	1		0	2	2
CO-3	3	1	2	1	2	2

Course - IV

Semester - IV

Semiconductor Physics

1	Course	Core
2	Course Type	Theory
3	Course Code	PH4CRT04
4	Credit	3
5	Duration of External Examination	3 hours
6	External Assessment	60
7	Internal Assessment	15
8	Total hours	54
9	Hours per Week	3
10	Number of Modules	3
	Distribution of Inter	rnal Marks
11	Attendance	5
12	Assignment/Seminar	2
13	Assessment Test	$8 (2 \times 4 = 8)$

Module	Module Title	Delivery Methods	Total hours
1	Semiconducting diodes and applications	Chalk and talk, ICT	14
2	Transistors Configurations and Feed back- Amplifiers and Oscillators	Chalk and talk, ICT	24
3	FET, Operational Amplifier and Modulation	Chalk and talk, ICT	16

4.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Assignments	Internal Assessment
3	Seminar	Internal Assessment
4	University Examination	External Assessment

4.4 Course Outcome

CO-1	Able to understand basic concepts of electronics
CO-2	Able to understand transistors and its applications
CO-3	Able to understand integrated circuits and its applications

4.5 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	1	0	2	0	0	0	0	0	2
CO-2	3	1	0	2	0	0	0	0	0	2
CO-3	3	1	0	2	0	0	0	0	0	2

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	3	1	1	3	1	1
CO-2	3	1	1	3	1	1
CO-3	3	1	1	3	1	1

Electricity And Electrodynamics

1	Course	Core
2	Course Type	Theory
3	Course Code	PH5CRT05
4	Credit	3
5	Duration of External Examination	3 hours
6	External Assessment	60
7	Internal Assessment	15
8	Total hours	54
9	Hours per Week	3
10	Number of Modules	4
	Distribution of Inter	rnal Marks
11	Attendance	5
12	Assignment/Seminar	2
13	Assessment Test	$8 (2 \times 4 = 8)$

Module	Module Title	Delivery Methods	Total hours
1	Alternating Current and Network Theorems	Chalk and talk	15
2	Transient Current and Thermo electricity	Chalk and talk	8
3	Electrostatics and Magnetostatics	Chalk and talk	20
4	Maxwell's Equations and Electromagnetic wave propagation	Chalk and talk	11

5.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Assignments	Internal Assessment
3	Seminar	Internal Assessment
4	University Examination	External Assessment

5.4 Course Outcome

CO-1	Able to analyse electrical networks and circuits
CO-2	Able to understand transient currents and thermoelectric
00-2	effects
CO-3	Basic understanding of electrodynamics. Able to understand
CO-3	the mathematical formalism of e.m wave propagation

5.5 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	1	0	2	0	0	0	0	0	2
CO-2	3	1	0	2	0	0	0	0	0	2
CO-3	3	1	0	2	0	0	0	0	0	2

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	3	1	1	3	1	3
CO-2	3	1	1	3	1	3
CO-3	3	1	1	3	1	1

Classical And Quantum Mechanics

1	Course	Core
2	Course Type	Theory
3	Course Code	PH5CRT06
4	Credit	3
5	Duration of External Examination	3 hours
6	External Assessment	60
7	Internal Assessment	15
8	Total hours	54
9	Hours per Week	3
10	Number of Modules	3
	Distribution of Inter	rnal Marks
11	Attendance	5
12	Assignment/Seminar	2
13	Assessment Test	$8 (2 \times 4 = 8)$

Module	Module Title	Delivery Methods	Total	
Module	Module Title	Denvery Methods	hours	
	Lagrangian and			
1	Hamiltonian Formulations	Chalk and talk	15	
	of Classical Mechanics	200778		
	Historical development and	X 'CX		
9	origin of quantum theory-	Ob alle and talle	24	
2	General Formalism of	Chalk and talk	24	
	Quantum Mechanics			
3	Schrodinger equation and	Chalk and talk	15	
3	its applications	Chaik and taik	15	

6.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Assignments	Internal Assessment
3	Seminar	Internal Assessment
4	University Examination	External Assessment

6.4 Course Outcome

CO-1	Able to understand potential formulation
CO-2	Able to understand the development and origin of q.m
CO-3	To understand schrodinger equation and its applications

6.5 CO - PO Mapping

CO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	1	0	2	0	0	0	0	0	1
CO-2	3	1	0	2	0	0	0	0	0	1
CO-3	3	1	0	2	0	0	0	0	0	1

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	3	1	3	3	1	1
CO-2	3	2	3	3	1	0
CO-3	3	2	3	3	1	0

Digital Electronics And Programming

1	Course	Core
2	Course Type	Theory
3	Course Code	PH5CRT07
4	Credit	3
5	Duration of External Examination	3 hours
6	External Assessment	60
7	Internal Assessment	15
8	Total hours	54
9	Hours per Week	3
10	Number of Modules	3
	Distribution of Inter	rnal Marks
11	Attendance	5
12	Assignment/Seminar	2
13	Assessment Test	$8(2\times 4=8)$

Module	Module Title	Delivery Methods	Total
Modele	Todule Module Title Delivery Met		hours
1	Boolean algebra and logic	Chalk and talk	9
2	Combinational logic- Sequential logic	Chalk and talk	19
3	Programming in C++	Chalk and talk	26

7.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Assignments	Internal Assessment
3	Seminar	Internal Assessment
4	University Examination	External Assessment

7.4 Course Outcome

CO-1	Identify logic gates and perform operations of boolean
	algebra
CO 9	Analyse combinational logic circuits and sequential logic
CO-2	circuits
GO 0	Analyse c++ program structure and create simple c++
CO-3	programs

7.5 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	3	0	0	0	0	2	0	0	2
CO-2	3	3	0	0	0	0	2	0	0	2
CO-3	3	3	0	3	0	1/	2	0	2	2

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	3	0	3	3	1	0
CO-2	3	0	3	3	1	0
CO-3	0	0	3	3	1	0

Course - VIII

Semester - V

Environmental Physics And Human Rights

1	Course	Core
2	Course Type	Theory
3	Course Code	PH5CRT08
4	Credit	4
5	Duration of External Examination	3 hours
6	External Assessment	80
7	Internal Assessment	20
8	Total hours	72
9	Hours per Week	4
10	Number of Modules	5
	Distribution of Inter	rnal Marks
11	Attendance	5
12	Assignment/Seminar	5
13	Assessment Test	$10 (2 \times 5 = 10)$

Module	Module Title	Delivery Methods	Total hours
1	Water Resources and Its Management- Remote sensing- Environmental Pollution	Chalk and talk	15
2	Waste Management- Environment Impact Assessment and Control	Chalk and talk, ICT	12
3	Non-renewable and Renewable Energy Sources	Chalk and talk, ICT	13
4	Solar energy	Chalk and talk, ICT	14
5	Human Rights Human Rights and United Nations- Human Rights National Perspective	Chalk and talk, ICT	18

8.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Assignments	Internal Assessment
3	Seminar	Internal Assessment
4	University Examination	External Assessment

8.4 Course Outcome

CO-1	To understand the importance of water resource and its				
00-1	management, and environmental pollution				
	To understand the importance of waste management,				
CO-2	environmental impact, non-renewable and renewable energy				
	resources and solar energy				
	To understand the importance of water resource and its				
CO 2	managemet, and environmental pollution. To understand				
CO-3	the importance of waste management and environmental				
	impact assessment ,human right issues				

8.5 CO - PO Mapping

CO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	0	2	0	0	0	0	0	1	0	1
CO-2	0	2	0	0	0	0	0	1	0	1
CO-3	0	2	0	0	0	0	0	1	0	1

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	0	0	CKIAS	0	0	0
CO-2	0	0	0	0	0	0
CO-3	1	0	0	0	0	0

Course - IX

Semester - V

Our Universe

1	Course	Core
2	Course Type	Theory
3	Course Code	PH5OPT01
4	Credit	4
5	Duration of External Examination	3 hours
6	External Assessment	80
7	Internal Assessment	20
8	Total hours	72
9	Hours per Week	4
10	Number of Modules	4
	Distribution of Inter	rnal Marks
11	Attendance	5
12	Assignment/Seminar	5
13	Assessment Test	$10 (2 \times 5 = 10)$

Module	Modulo Titlo	Dolivory Mothoda	Total
Module	Module Title	Delivery Methods	hours
1	Our universe	Chalk and talk, ICT	10
2	Cosmology	Chalk and talk, ICT	14
3	Observational Astronomy	Chalk and talk, ICT	24
4	Solar system	Chalk and talk, ICT	24

9.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Assignments	Internal Assessment
3	Seminar	Internal Assessment
4	University Examination	External Assessment

9.4 Course Outcome

CO-1	To understand the structure of universe and galaxies
CO-2	To understand the evolution of universe and stars
CO 2	To understand the techniques and terms involved with
CO-3	astronomy, to understand the structure of solar system

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	0	3	0	0	0	0	3	0	0	0
CO-2	0	3	0	0	0	0	3	0	0	0
CO-3	0	3	0	0	0	0	3	0	0	0

CO	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	0	0	0	2	0	1
CO-2	0	0	A OTE	2	0	2
CO-3	0	0	0	2	0	1

Thermal And Statistical Physics

1	Course	Core		
2	Course Type	Theory		
3	Course Code	PH6CRT09		
4	Credit	3		
5	Duration of External Examination	3 hours		
6	External Assessment	60		
7	Internal Assessment	15		
8	Total hours	54		
9	Hours per Week	3		
10	Number of Modules	3		
	Distribution of Inter	nal Marks		
11	Attendance	5		
12	Assignment/Seminar	2		
13	Assessment Test	$8 (2 \times 4 = 8)$		

Module	Module Title	Delivery Methods	Total hours
	Equation of state for gases-		
1	Zeroth law of thermodynamics- First laws of thermodynamics- Heat engines and second law of thermodynamics	Chalk and talk	21
2	Entropy- Thermodynamic relations- Conduction and radiation	Chalk and talk	17
3	Statistical mechanics- Statistical distributions	Chalk and talk	16

10.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Assignments	Internal Assessment
3	Seminar	Internal Assessment
4	University Examination	External Assessment

10.4 Course Outcome

CO-1	Able to understand laws of thermodynamics
CO-2	Able to understand laws of thermodynamics
CO 2	Able to understand the various thermodynamic variables
CO-3	and their importance

10.5 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	1	0	0	0	0	0	0	0	0
CO-2	3	1	0	0	0	0	0	0	0	0
CO-3	3	1	0	0	0	0	0	0	0	0

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	3	1	3	0	1	1
CO-2	3	2	3	0	1	1
CO-3	3	2	3	0	1	0

Course - XI

Semester - VI

Relativity And Spectroscopy

1	Course	Core		
2	Course Type	Theory		
3	Course Code	PH6CRT10		
4	Credit	3		
5	Duration of External Examination	3 hours		
6	External Assessment	60		
7	Internal Assessment	15		
8	Total hours	72		
9	Hours per Week	4		
10	Number of Modules	3		
	Distribution of Inter	rnal Marks		
11	Attendance	5		
12	Assignment/Seminar	2		
13	Assessment Test $8 (2 \times 4 = 8)$			

Module	Module Title	Dolinour Mothoda	Total
Module	Module Title	Delivery Methods	hours
1	Special Theory of Relativity	Chalk and talk	18
2	Atomic Spectroscopy	Chalk and talk, ICT	21
	Molecular Spectroscopy-	. 20772	
3	NMR and ESR	Chalk and talk, ICT	33
	Spectroscopy		

11.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Assignments	Internal Assessment
3	Seminar	Internal Assessment
4	University Examination	External Assessment

11.4 Course Outcome

CO-1	Able to understand the special theory of relativity
CO-2	Able to understand the special theory of relativity
CO-3	Able to understand the concepts of atomic and molecular
CO-3	spectroscopy and its applications

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	1	0	0	0	0	0	0	0	0
CO-2	3	1	0	0	0	0	0	0	0	0
CO-3	3	1	0	0	0	0	0	0	0	0

11.6	CO - PSC	Mappin	g/A			
CO	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	3	1	1	2	1	0
CO-2	3	1	JTH IN	2	1	1
CO-3	3	1	1	2	1	1

Course - XII

Semester - VI

Nuclear, Particle Physics And Astrophysics

1	Course	Core		
2	Course Type	Theory		
3	Course Code	PH6CRT11		
4	Credit	3		
5	Duration of External Examination	3 hours		
6	External Assessment	60		
7	Internal Assessment	15		
8	Total hours	54		
9	Hours per Week	3		
10	Number of Modules	3		
	Distribution of Inter	nal Marks		
11	Attendance	5		
12	Assignment/Seminar	2		
13	Assessment Test	8 (2 × 4 = 8)		

Module	Module Title	Delivery Methods	Total hours	
	Nuclear structure- Nuclear			
1	Radiation Detectors,	Chalk and talk	18	
•	Counters and Particle	Chair and tair	10	
	Accelerators	X C		
2	Nuclear Transformations-	Chalk and talk	10	
2	Cosmic rays	Chark and talk	19	
0	Particle Physics-		177	
3	Astrophysics	Chalk and talk	17	

12.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Assignments	Internal Assessment
3	Seminar	Internal Assessment
4	University Examination	External Assessment

12.4 Course Outcome

CO-1	Able to understand the properties of nucleus and its
00-1	structure
	Able to understand the basic concepts various nuclear
CO-2	transformations and the physics of cosmic rays and its
	properties
GO 9	Able to understand the basic concepts particle physics and
CO-3	astrophysics

12.5 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	1	0	0	0	0	0	0	0	0
CO-2	3	1	0	0	0	0	0	0	0	0
CO-3	3	1	0	0	0	0	0	0	0	0

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	3	1	3	0	1	0
CO-2	3	2	3	0	1	0
CO-3	3	2	3	0	1	0

Course - XIII

Semester - VI

Solid State Physics

1	Course	Core		
2	Course Type	Theory		
3	Course Code	PH6CRT12		
4	Credit	3		
5	Duration of External Examination	3 hours		
6	External Assessment	60		
7	Internal Assessment	15		
8	Total hours	54		
9	Hours per Week	4		
10	Number of Modules	3		
	Distribution of Inter	rnal Marks		
11	Attendance	5		
12	Assignment/Seminar	2		
13	Assessment Test	$8 (2 \times 4 = 8)$		

Module	Module Title	Delivery Methods	Total hours
1	Crystal structure	Chalk and talk	18
2	Bonding in solids- Free electron theory and elementary band theory- Semiconducting properties of materials	Chalk and talk	31
3	Dielectric properties of materials- Magnetic properties of materials- Superconductivity	Chalk and talk	22

13.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type		
1	Assessment tests	Internal Assessment		
2	Assignments	Internal Assessment		
3	Seminar	Internal Assessment		
4	University Examination	External Assessment		

13.4 Course Outcome

CO-1	Able to understand the basic concept related to crystal			
CO-1	structure			
	Able to understand the basic concepts of bonding in solids,			
CO-2	free electron theory, band theory, semiconducting properties			
	of materials.			
CO 2	Able to understand the basic concepts dielectric properties			
CO-3	and magnetic properties of materials and superconductivity			

13.5 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	1	0	0	0	0	0	0	0	0
CO-2	3	1	0	0	0	0	0	0	0	0
CO-3	3	1	0	0	0	0	0	0	0	0

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	3	1	3	0	1	2
CO-2	3	2	3	0	1	2
CO-3	3	2	3	0	1	1

Course - XIV

Semester - VI

Material Science

1	Course	Core
2	Course Type	Theory
3	Course Code	PH6CBT02
4	Credit	3
5	Duration of External Examination	3 hours
6	External Assessment	60
7	Internal Assessment	15
8	Total hours	54
9	Hours per Week	3
10	Number of Modules	3
	Distribution of Inter	rnal Marks
11	Attendance	5
12	Assignment/Seminar	2
13	Assessment Test	$8 (2 \times 4 = 8)$

Module	Module Title	Delivery Methods	Total hours		
1	Structure and Properties of Materials	Chalk and talk			
2	Optical Properties of Materials- Modern Engineering Materials	Chalk and talk	18		
3	Nanoscience- Material Characterization Techniques	Chalk and talk	18		

14.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Assignments	Internal Assessment
3	Seminar	Internal Assessment
4	University Examination	External Assessment

14.4 Course Outcome

CO-1	Able to understand the basic concepts of structure and
00-1	properties of materials
CO 9	Able to understand the basic concepts of optical properties of
CO-2	materials and modern engineering materials
CO 9	Able to understand the basic concepts of nanoscience and
CO-3	material characterization techniques

14.5 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	2	2	1	1	0	0	1	0	0	1
CO-2	2	2	1	1	0	0	1	0	0	1
CO-3	2	2	1	1	0	0	1	0	0	1

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	2	1	2	0	2	2
CO-2	2	1	2	0	2	2
CO-3	2	Musi	2	0	2	2

Mechanics And Properties Of Matter(P)

1	Course	Core					
2	Course Type	Practical					
3	Course Code	PH2CRP01					
4	Credit	2					
5	Duration of External Examination	3 hours					
6	External Assessment	40					
7	Internal Assessment	10					
8	Total hours	72					
9	Hours per Week	2					
10	Number of Experiments	15					
11	Total Week to complete	21					
	Distribution of Internal Marks						
12	Attendance	2					
13	Record	4					
14	Assessment Test	4 (1 × 4 = 1)					

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Practical Record	Internal Assessment
3	Exprimental Skill	Internal Assessment
4	University Examination	External Assessment

15.3 Course Outcome

	Have gained practical knowledge by applying the			
CO-1	experimental methods related to mechanics, properties of			
	matter			
	Be able to apply the analytical techniques and graphical			
CO-2	analysis to the experimental data related to mechanics,			
	properties of matter			

15.4 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	3	3	3	0	3	0	0	3	3
CO-2	3	3	3	3	0	3	0	0	3	3

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	0	3	3	0	3	3
CO-2	0	3	3	0	3	3

Optics and Semiconductor Physics(P)

1	Course	Core					
2	Course Type	Practical					
3	Course Code	PH4CRP02					
4	Credit	2					
5	Duration of External Examination	3 hours					
6	External Assessment	40					
7	Internal Assessment	10					
8	Total hours	72					
9	Hours per Week	2					
10	Number of Experiments	15					
11	Total Week to complete	21					
	Distribution of Internal Marks						
12	Attendance	2					
13	Record	4					
14	Assessment Test	4 (1 × 4 = 1)					

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Practical Record	Internal Assessment
3	Exprimental Skill	Internal Assessment
4	University Examination	External Assessment

16.3 Course Outcome

	Have gained practical knowledge by applying the					
CO-1	experimental methods related to optics, semiconductor					
	physics					
	Be able to apply the analytical techniques and graphical					
CO-2	analysis to the experimental data related to optics,					
	semiconductor physics					

16.4 CO - PO Mapping

CO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	3	3	3	0	3	0	0	3	3
CO-2	3	3	3	3	0	3	0	0	3	3

CO	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	0	3	3	0	3	3
CO-2	0	3	3	0	3	3

Electricity, Magnetism and LASER(P)

Course	Core
Course Type	Practical
Course Code	PH6CRP03
Credit	2
Duration of External Examination	3 hours
External Assessment	40
Internal Assessment	10
Total hours	72
Hours per Week	2
Number of Experiments	15
Total Week to complete	21
Distribution of Inter	nal Marks
Attendance	2
Record	4
Assessment Test	4 (1 × 4 = 1)
	Course Type Course Code Credit Duration of External Examination External Assessment Internal Assessment Total hours Hours per Week Number of Experiments Total Week to complete Distribution of Inter Attendance Record

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Practical Record	Internal Assessment
3	Exprimental Skill	Internal Assessment
4	University Examination	External Assessment

17.3 Course Outcome

	Have gained practical knowledge by applying the
CO-1	experimental methods related to electricity, magnetism and
	laser
	Be able to apply the analytical techniques and graphical
CO-2	analysis to the experimental data related to electricity,
	magnetism and laser

17.4 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	3	3	3	0	3	0	0	3	3
CO-2	3	3	3	3	0	3	0	0	3	3

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	0	3	3	0	3	3
CO-2	0	3	3	0	3	3

Course - IV

Semester - V & VI

Digital Electronics(P)

Course	Core
Course Type	Practical
Course Code	PH6CRP04
Credit	2
Duration of External Examination	3 hours
External Assessment	40
Internal Assessment	10
Total hours	72
Hours per Week	2
Number of Experiments	15
Total Week to complete	21
Distribution of Inter	nal Marks
Attendance	2
Record	4
Assessment Test	4 (1 × 4 = 1)
	Course Type Course Code Credit Duration of External Examination External Assessment Internal Assessment Total hours Hours per Week Number of Experiments Total Week to complete Distribution of Internal Attendance Record

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Practical Record	Internal Assessment
3	Exprimental Skill	Internal Assessment
4	University Examination	External Assessment

18.3 Course Outcome

CO-1	Have gained practical knowledge by applying the
	experimental methods related to digital electronics
	Be able to apply the analytical techniques and graphical
CO-2	analysis to the experimental data related to digital
	electronics

18.4 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	3	3	3	0	3	0	0	3	3
CO-2	3	3	3	3	0	3	0	0	3	3

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	0	3	3	0	3	3
CO-2	0	3	3	0	3	3

Semester - V & VI

Thermal Physics, Spectroscopy and C++ Programming(P)

1	Course	Core				
2	Course Type	Practical				
3	Course Code	PH6CRP05				
4	Credit	2				
5	Duration of External Examination	3 hours				
6	External Assessment	40				
7	Internal Assessment	10				
8	Total hours	72				
9	Hours per Week	2				
10	Number of Experiments	15				
11	Total Week to complete	21				
Distribution of Internal Marks						
12	Attendance	2				
13	Record	4				
14	Assessment Test	4 (1 × 4 = 1)				

No.	Assessment Methods	Evaluation Type	
1	Assessment tests	Internal Assessment	
2	Practical Record	Internal Assessment	
3	Exprimental Skill	Internal Assessment	
4	University Examination	External Assessment	

19.3 Course Outcome

	Have gained practical knowledge by applying the		
CO-1	experimental methods related thermal physics, spectroscopy,		
	c++		
	Be able to apply the analytical techniques and graphical		
CO-2	analysis to the experimental data related to thermal physics,		
	spectroscopy, c++		

19.4 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	3	3	3	0	3	0	0	3	3
CO-2	3	3	3	3	0	3	0	0	3	3

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	0	3	3	0	3	3
CO-2	0	3	3	0	3	3

Semester - V & VI

Acoustics, Photonics and Advanced Semiconductor Physics(P)

1	Course	Core					
2	Course Type	Practical					
3	Course Code	PH6CRP06					
4	Credit	2					
5	Duration of External Examination	3 hours					
6	External Assessment	40					
7	Internal Assessment	10					
8	Total hours	72					
9	Hours per Week	2					
10	Number of Experiments	15					
11	Total Week to complete	21					
	Distribution of Internal Marks						
12	Attendance	2					
13	Record	4					
14	Assessment Test	4 (1 × 4 = 1)					

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Practical Record	Internal Assessment
3	Exprimental Skill	Internal Assessment
4	University Examination	External Assessment

20.3 Course Outcome

	Have gained practical knowledge by applying the			
CO-1	experimental methods related to acoustics, photonics,			
	advanced semiconductor physics			
	Be able to apply the analytical techniques and graphical			
CO-2	analysis to the experimental data related to acoustics,			
	photonics, advanced semiconductor physics			

20.4 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	3	3	3	0	3	0	0	3	3
CO-2	3	3	3	3	0	3	0	0	3	3

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	0	3	3	0	3	3
CO-2	0	3	3	0	3	3

Course - I

Semester - I

Properties of matter and Thermodynam-

ics

1	Course	Complementary					
2	Course Type	Theory					
3	Course Code	PH1CMT02					
4	Credit	2					
5	Duration of External Examination	3 hours					
6	External Assessment	60					
7	Internal Assessment	15					
8	Total hours	36					
9	Hours per Week	2					
10	Number of Modules	3					
	Distribution of Internal Marks						
11	Attendance	5					
12	Assignment/Seminar	2					
13	Assessment Test	$8 (2 \times 4 = 8)$					

Madala	Madala midla	Dalinama Madhada	Total
Module	Module Title	Delivery Methods	hours
1	Elasticity	Chalk and talk	13
2	Surface tension -	Chalk and talk	10
2	Hydrodynamics	Chark and talk	10
3	Thermodynamics	Chalk and talk	13

21.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Assignments	Internal Assessment
3	Seminar	Internal Assessment
4	University Examination	External Assessment

21.4 Course Outcome

CO 1	Analyse the theory of elasticity and the experimental				
CO-1	methods for the determination of modulus elasticity				
CO 9	Analyse the theory and experimental methods of surface				
CO-2	tension and liquid flow.				
GO 9	Analyse thermodynamic laws and relations and the theory of				
CO-3	heat engines				

21.5 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	3	1	1	0	0	2	0	1	0
CO-2	3	3	1	1	0	0	2	0	1	0
CO-3	3	3	1	1	0	0	2	0	1	0

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	3	0	0	0	1	1
CO-2	3	0	0	0	1	1
CO-3	3	0	0	0	1	1

Course - II

Semester - II

Mechanics and Superconductivity

1	Course	Complementary		
2	Course Type	Theory		
3	Course Code	PH2CMT02		
4	Credit	2		
5	Duration of External Examination	3 hours		
6	External Assessment	60		
7	Internal Assessment	15		
8	Total hours	36		
9	Hours per Week	2		
10	Number of Modules	3		
	Distribution of Inter	rnal Marks		
11	Attendance	5		
12	Assignment/Seminar	2		
13	Assessment Test	$8 (2 \times 4 = 8)$		

Madula	Modulo Titlo	Dolinour Mothoda	Total
Module	Module Title	Delivery Methods	hours
1	Motion under gravity-	Chalk and talk	15
1	Rotational dynamics	Chark and talk	15
2	Ocillations, Waves	Chalk and talk	13
3	Superconductivity	Chalk and talk	8

22.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type
1	Assessment tests	Internal Assessment
2	Assignments	Internal Assessment
3	Seminar	Internal Assessment
4	University Examination	External Assessment

22.4 Course Outcome

CO-1	Analyse the theory of motion under gravity and rotational motion
CO-2	Analyse the theory of oscillatory motion and waves
CO-3	Analyse the experimental observations regarding the
00-9	superconducting phenomenon

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	3	1	1	0	0	2	0	1	0
CO-2	3	3	1	1	0	0	2	0	1	0
CO-3	3	3	1	1	0	0	2	0	1	0

22.6	CO – PSC	Mappin	g/A			
CO	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	3	0	0	0	1	1
CO-2	3	0	JTHO IN	0	1	1
CO-3	3	0	0	0	1	1

Course - III

Semester - III

Modern Physics and magnetism

1	Course	Complementary
2	Course Type	Theory
3	Course Code	PH3CMT02
4	Credit	3
5	Duration of External Examination	3 hours
6	External Assessment	60
7	Internal Assessment	15
8	Total hours	54
9	Hours per Week	3
10	Number of Modules	4
	Distribution of Inter	rnal Marks
11	Attendance	5
12	Assignment/Seminar	2
13	Assessment Test	$8 (2 \times 4 = 8)$

Madula	Module Title	Dolizzary Mothoda	Total
Module	Module 11tie	Delivery Methods	hours
1	Modern Physics	Chalk and talk	18
2	Quantum Mechanics-	Chalk and talk	18
2	Spectroscopy	Chark and tark	10
3	Electronics	Chalk and talk	8
4	Magnetism	Chalk and talk	10

23.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type		
1	Assessment tests	Internal Assessment		
2	Assignments	Internal Assessment		
3	Seminar	Internal Assessment		
4	University Examination	External Assessment		

23.4 Course Outcome

CO-1	To understand the basics of modern physics- atom models,				
CO-1	nuclear models and radioactivity				
To understand the inadequacies of classical physics					
CO-2	development of quantum theory and its basics principles				
CO 9	To understand the basics of semiconductor electronics and				
CO-3	fundamentals of magnetism				

23.5 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	3	1	1	0	0	2	0	1	0
CO-2	3	3	1	1	0	0	2	0	1	0
CO-3	3	3	1	1	0	0	2	0	1	0

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	3	0	0	0	1	1
CO-2	3	0	0	0	1	1
CO-3	3	0	0	0	1	1

Course - IV

Semester - IV

Optics and solid state Physics

1	Course	Complementary		
2	Course Type	Theory		
3	Course Code	PH4CMT02		
4	Credit	3		
5	Duration of External Examination	3 hours		
6	External Assessment	60		
7	Internal Assessment	15		
8	Total hours	54		
9	Hours per Week	3		
10	Number of Modules	4		
	Distribution of Inter	rnal Marks		
11	Attendance	5		
12	Assignment/Seminar	2		
13	Assessment Test	$8 (2 \times 4 = 8)$		

Madala	M. J. J. Wills	Dalinam Madhada	Total	
Module	Module Title	Delivery Methods	hours	
1	Interference, diffraction	Chalk and talk	22	
1	and Polarization	Chark and talk		
2	laser and fiber optics	Chalk and talk	10	
3	Dielectrics	Chalk and talk	10	
4	Crystallography	Chalk and talk	12	

24.3 Evaluation Methods

No.	Assessment Methods	Evaluation Type		
1	Assessment tests	Internal Assessment		
2	Assignments	Internal Assessment		
3	Seminar	Internal Assessment		
4	University Examination	External Assessment		

24.4 Course Outcome

CO 1	To understand the fundamentals of the optical phenomena-					
CO-1	Interference, diffraction and polarization					
GO 9	To understand the principles and applications of Lasers and					
CO-2	fibre optics					
GO 9	To understand crystal structure and crystallography ,					
CO-3	electrical properties of materials					

24.5 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	3	1	1	0	0	2	0	1	0
CO-2	3	3	1	1	0	0	2	0	1	0
CO-3	3	3	1	1	0	0	2	0	1	0

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	3	0	0	0	1	1
CO-2	3	0	0	0	1	1
CO-3	3	0	0	0	1	1

Complimentary Physics Practical I(P)

1	Course	Complementary					
2	Course Type	Practical					
3	Course Code	PH2CMP02					
4	Credit	2					
5	Duration of External Examination	3 hours					
6	External Assessment	40					
7	Internal Assessment	10					
8	Total hours	144					
9	Hours per Week	2					
10	Number of Experiments	15					
11	Total Week to complete	39					
	Distribution of Internal Marks						
12	Attendance	2					
13	Record	4					
14	Assessment Test	4 (1 × 4 = 1)					

No.	Assessment Methods	Evaluation Type		
1	Assessment tests	Internal Assessment		
2	Practical Record	Internal Assessment		
3	Exprimental Skill	Internal Assessment		
4	University Examination	External Assessment		

25.3 Course Outcome

	Have gained practical knowledge by applying the				
CO-1	experimental methods related to mechanics, properties of				
	matter and thermodynamics				
	Be able to apply the analytical techniques and graphical				
CO-2	analysis to the experimental data related to mechanics,				
	properties of matter and thermodynamics				

25.4 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	3	3	3	0	3	0	0	3	3
CO-2	3	3	3	3	0	3	0	0	3	3

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	0	2	0	0	0	0
CO-2	0	0	3	0	0	0

Semester – III & IV

Complimentary Physics Practical II(P)

1	Course	Complementary		
2	Course Type	Practical		
3	Course Code	PH4CMP02		
4	Credit	2		
5	Duration of External Examination	3 hours		
6	External Assessment	40		
7	Internal Assessment	10		
8	Total hours	144		
9	Hours per Week	2		
10	Number of Experiments	15		
11	Total Week to complete	39		
	Distribution of Inter	nal Marks		
12	Attendance	2		
13	Record	4		
14	Assessment Test	4 (1 × 4 = 1)		
9 10 11 12 13	Hours per Week Number of Experiments Total Week to complete Distribution of Inter Attendance Record	2 15 39 nal Marks 2 4		

No.	Assessment Methods	Evaluation Type		
1	Assessment tests	Internal Assessment		
2	Practical Record	Internal Assessment		
3	Exprimental Skill	Internal Assessment		
4	University Examination	External Assessment		

26.3 Course Outcome

	Have gained practical knowledge by applying the				
CO-1	experimental methods related to mechanics, properties of				
	matter and thermodynamics				
	Be able to apply the analytical techniques and graphical				
CO-2	analysis to the experimental data related to mechanics,				
	properties of matter and thermodynamics				

26.4 CO - PO Mapping

СО	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10
CO-1	3	3	3	3	0	3	0	0	3	3
CO-2	3	3	3	3	0	3	0	0	3	3

СО	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
CO-1	0	2	0	0	0	0
CO-2	0	0	3	0	0	0

