DEPARTMENT PROFILE

The Department of Physics was started in the year 1967. Pre-University course was introduced in the college for the students who studied Physics as Ancillary subject. There were tutors and demonstrators for teaching theory and practical. Later on, the Department was upgraded with B.Sc., (Physics) Major course in the year 1980 in the college. Since then the Department has been offering the course to cater the needs of the science and engineering sectors. The Department has adequate number of class rooms, Staff room and a well equipped laboratory to accommodate nearly 100 numbers of major students and 132 numbers of ancillary students. So far 34 batches of students have successfully finished their graduation. Many students have joined in various prestigious institutions like M.I.T, I.I.T., I.I.Sc for their higher studies. Some of the students are working in highly prestigious educational institutions/government sectors both in the state and central governments like ISRO, IGCAR etc.,

VISION

(i) To impart quality education both in theoretical as well as experimental Physics with special emphasis on "learning by doing"

(ii) To build a foundation for excellence and encourage the development of the institution

MISSION

TheMission of the Department is to awaken the young minds and discover their talents in theory and in practical Physics, through dedication to teach, commitment towards students and innovative instructional methods like PPT and Visual aids.

Signature of the Chairman/HOD

DISTRIBUTION OF CREDITS (UG PROGRAMME)

PART	SEM	COURSES	NO.OF COURSES	HOURS	CREDITS	TOTAL CREDITS
I	I-IV	LANGUAGE	4	6	3	12
II	I-IV	ENGLISH	4	6	3	12
III	I-VI	CORE	15-20	4-6	4-5	60
III	I-IV	ALLIED	5	6	4	20
III	V,VI	ELECTIVE	3	5	5	15
IV	I-IV	SKILL BASED SUBJECT(SBS)	6	2	2	12
IV	I	VALUE EDUCATION	1	2	2	2
IV	II	ENVIRONMENTAL STUDIES	1	2	2	2
IV	III,IV	NON-MAJOR ELECTIVE(NME)	2	2	2	4
V	IV	EXT.ACTIVITY	1	0	1	1
TOTAL CREDITS						140

Undergraduate (UG) Programme Outcomes (POs)

Undergraduate (B.A., B.Sc., B.Com., B.C.A., B.B.A., etc.,) is a 3-year degree Programme with 6 semesters consisting the following Programme Outcomes (POs) under various criteria including critical thinking, problem solving, effective communication, societal/ citizenship/ ethical credibility, sustainable growth and employable abilities.

PO 1	**Critical Thinking**: Intellectual exploration of knowledge towards actions in clear and rational manner by understanding the logical connections between ideas and decisions.
PO 2	**Problem Solving**: Understanding the task/ problem followed by planning and narrow execution strategy that effectively provides the solution.
PO 3	**Effective Communication**: Knowledge dissemination by oral and verbal mechanisms to the various components of our society.
PO 4	**Societal/ Citizenship/ Ethical Credibility**: Realization of various value systems/ moral dimensions and demonstrate the empathetic social concern as well as equity in all the decisions, executions and actions.
PO 5	**Environmental Concern and Sustainable Growth**: Understanding the emerging environmental challenges and provide the possible contribution in sustainable development that integrates environment, economy and employment.
PO 6	**Skill Development and Employable Abilities**: Adequate training in relevant skill sector and creating employable abilities among the under graduates.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

On completion of B.Sc. Physics programme, the students are expected to

PSO 1	acquire core knowledge in Physics, including major areas of Classical Mechanics, Quantum Mechanics, Electromagnetism, Optics, Electronics, Modern physics, Thermal physics and Mathematical methods.
PSO 2	develop the proficiency in the acquisition of data using a variety of laboratory instruments and in the analysis and interpretation of such data.
PSO 3	have learned laboratory skills enabling them to take measurements in physics laboratory and analyse the measurements to draw valid conclusion.
PSO 4	be capable of oral and written scientific communication and will prove that they can think critically and work independently.
PSO 5	realize and develop an understanding of the impact of physics and science on society.
PSO 6	discover physics concepts in other disciplines such as Mathematics, Computer Science, Chemistry etc.,

B.Sc. PHYSICS - COURSE STRUCTURE
I SEMESTER

S.No.	Subject Code	Subject Title	Hrs./ week	Exam (Hrs.)	CA	SE	Total	Credits
1	21UACT11/ H11/S11	Tamil/Hindi/Sanskrit	6	3	25	75	100	3
2	21UACE11	English	6	3	25	75	100	3
3	21UPSC11	Core 1: Mechanics & Relativity	5	3	25	75	100	5
4	21UPSS11	Skill 1 :Laser Physics	2	3	25	75	100	2
5	21UPSA11	Allied I :Ancillary	4	3	25	75	100	4
6		Core :Major Practical 1 *	3	-	-	-	-	-
7		Allied : Ancillary Practical-I *	2	-	-	-	-	-
8	21UACVE1	Value Education	2	3	25	75	100	2
		TOTAL	30	**TOTAL CREDITS**				19

*** Practical exam will be conducted in the second semester.**

II SEMESTER

S.No.	Subject Code	Subject Title	Hrs./ week	Exam (Hrs.)	CA	SE	Total	Credits
1	21UACT21/ H21/S21	Tamil/Hindi/Sanskrit	6	3	25	75	100	3
2	21UACE21	English	6	3	25	75	100	3
3	21UPSC21	Core 2:Properties of Matter and Sound	5	3	25	75	100	5
4	21UPSS21	Skill 2: C Programming	2	3	25	75	100	2
5	21UPSA21	Allied II :Ancillary	4	3	25	75	100	4
7	21UPSCP1	Core :Major Practical 1	3	3	40	60	100	2
8	21UPSAP1	Allied :Ancillary Practical-I	2	3	40	60	100	2
6	21UACES1	Environmental Studies	2	3	25	75	100	2
		TOTAL	30	**TOTAL CREDITS**				23

Passed in the BOS Meeting held on 18-03-2020

III SEMESTER

S.No.	Subject Code	Subject Title	Hrs./ week	Exam (Hrs.)	CA	SE	Total	Credits
1		Tamil/Hindi/Sanskrit	6	3	25	75	100	3
2		English	6	3	25	75	100	3
3		Core 3 :Electricity & Electromagnetism	4	3	25	75	100	4
4		Core 4: Heat & Thermodynamics	4	3	25	75	100	4
5		Allied I: Ancillary Physics	4	3	25	75	100	4
6		NME : Fundamental of Physics - I	2	3	25	75	100	2
7		Core : Major Practical 2*	2	-	-	-	-	-
8		Allied :Ancillary Practical-II *	2	-	-	-	-	-
		TOTAL	30	**TOTAL CREDITS**				20

*** Practical exam will be conducted in the fourth semester.**

IV SEMESTER

S.No.	Subject Code	Subject Title	Hrs./ week	Exam (Hrs.)	CA	SE	Total	Credits
1		Tamil/Hindi/Sanskrit	6	3	25	75	100	3
2		English	6	3	25	75	100	3
3		Core 5 : Optics & Spectroscopy	4	3	25	75	100	4
4		Core 6 : Mathematical Methods	4	3	25	75	100	4
5		Allied II :Ancillary	4	3	25	75	100	4
6		NME : Fundamental of Physics - II	2	3	25	75	100	2
7		Core : Major Practical 2	2	3	40	60	100	2
8		Allied : Ancillary Practical-II	2	3	40	60	100	2
		TOTAL	30		**TOTAL CREDITS**			24+*1

*** EA -1 credit**

Passed in the BOS Meeting held on 18-03-2020

V SEMESTER

S.No.	Subject Code	Subject Title	Hrs./ week	Exam (Hrs.)	CA	SE	Total	Credits
1		Core 7 : Atomic Physics & Quantum Mechanics	5	3	25	75	100	5
2		Core 8: Nuclear Physics	4	3	25	75	100	4
3		Elective 1 :Analog Electronics	5	3	25	75	100	5
4		Skill 3: Astrophysics	2	3	25	75	100	2
5		Skill 4: Medical Physics	2	3	25	75	100	2
6		Core : Major Practical 3	6	3	40	60	100	5
7		Core : Major Practical 4	6	3	40	60	100	5
		TOTAL	30		Total Credits			28

VI SEMESTER

S.No.	Subject Code	Subject Title	Hrs./ week	Exam (Hrs.)	CA	SE	Total	Credits
1		Core 9 : Solid State Physics	4	3	25	75	100	4
2		Elective 2: Classical and Statistical Mechanics	5	3	25	75	100	5
3		Elective 3: Digital Electronics and Communication	5	3	25	75	100	5
4		Skill 5: Opto Electronics	2	3	25	75	100	2
5		Skill 6: Nano Physics	2	3	25	75	100	2
6		Core : Major Practical 5	6	3	40	60	100	5
7		Core : Major Practical 6	6	3	40	60	100	5
		TOTAL	30		Total Credits			28

I SEMESTER

S.No.	Subject Code	Subject Title	Hrs./ week	Exam (Hrs.)	CA	SE	Total	Credits
1	21UACT11/ H11/S11	Tamil/Hindi/Sanskrit	6	3	25	75	100	3
2	21UACE11	English	6	3	25	75	100	3
3	21UPSC11	Core 1: Mechanics & Relativity	5	3	25	75	100	5
4	21UPSS11	Skill 1 :Laser Physics	2	3	25	75	100	2
5	21UPSA11	Allied I :Ancillary	4	3	25	75	100	4
6		Core :Major Practical 1 *	3	-	-	-	-	-
7		Allied : Ancillary Practical-I *	2	-	-	-	-	-
8	21UACVE1	Value Education	2	3	25	75	100	2
		TOTAL	30	**TOTAL CREDITS**				19

*** Practical exam will be conducted in the second semester.**

COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UPSC11	MECHANICS AND RELATIVITY	CORE	5	–	–	5

L– Lecture T – Tutorial P – Practical

Year	Semester	Internal	External	Total
I	I	25	75	100

COURSE OBJECTIVES:

The Course intends to provide the students to have a thorough understanding of the basic concepts of mechanics and relativity in Physics. It provides the details about Laws of motion, Dynamics of rigid body, Gravitation, Central force motion and also deals with Statics and Hydrodynamics.

COURSE OUTCOMES (COs):

At the end of this course, students will be able to

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)
Co1	apply laws of conservation of momentum appropriately in rigid body rotations and analyze the change in velocity and loss of Kinetic energy for the impact of elastic bodies.	K2,K3,K4
Co2	explain the Moment of Inertia of rigid bodies.	K1,K2,K5
Co3	elucidate the Kepler's laws of motion and ascertain the gravitational constant and acceleration due to gravity at different places.	K1,K4
Co4	describe the properties velocity, torque, angular acceleration and centre of mass of rotating body.	K4,K5
Co5	explain the concept of Relativity and its applications.	K2,K3

K1- Knowledge (remembering), K2-Understanding, K3-Applying, K4- Analyzing, K5-Evaluating, K6 – Creating

MECHANICS AND RELATIVITY

Unit - I: Laws of Motion

Laws of conservation of energy, linear momentum and angular momentum - work energy theorem - work done by gravitational force - work done by spring force – potential energy - conservative and non conservative forces - Collision – Elastic and inelastic collision – (Fundamental laws of impact) – Newton's law of impact – coefficient of restitution – Impact of a smooth sphere on a fixed plane – Direct impact between two smooth spheres – Oblique impact between two smooth spheres – Calculation of final velocities of the spheres – Loss of K.E due to impact.

Unit - II: Dynamics of Rigid body

Moment of inertia – Theorems of perpendicular and parallel axes – M.I of circular ring, disc, solid cylinder about an axis passing through its centre and perpendicular to its own axis - M.I of a Solid sphere about all axes – Compound pendulum – theory – equivalent simple pendulum – reversibility of centers of oscillation and suspension – determination of g and k

Unit - III: Gravitation

Newton's law of gravitation – Kepler's laws of planetary motion – G by Boy's method – Mass and density of earth – Acceleration due to gravity – Variation of g with altitude, depth and latitude of earth - Value of g at poles and equator. Gravitational field – Gravitational potential – Gravitational potential due to spherical shell – Gravitational potential due to a solid sphere
((i) Point outside the sphere (ii) point on the surface and (iii) Point inside the sphere)

Unit - IV: Central Force Motion

Angular velocity, angular momentum and K.E of rotation – Torque and angular acceleration – Relation between them – Expression for acceleration of a body rolling down an inclined plane without slipping. Center of mass –velocity and acceleration of centre of mass –Rocket motion-Satellite

Unit - V: Relativity

Frames of reference - Galilean transformation - Michelson - Morley experiment -Postulates of special theory of relativity - Lorentz transformation - length Contraction – time dilation - Relativity of simultaneity - addition of velocities - variation of mass with velocity– Mass energy relation.

BOOKS FOR STUDY:

1. Mechanics – Part I and II by Narayanamoorthy, National Publishing Company.
2. Mechanics by D.S.Mathur, S.Chand& Co., 2ndEdition (2001).
3. Mechanics by P. Duraipandian, LaxmiDuraipandian, MuthamizhJayapragasam, S.Chand& Co., New Delhi (1988).
4.Modern Physics by R. Murugeshan and KiruthigaSivaprasath, S. Chand &Co.,(2008
5. Properties of Matter by R.Murugeshan, S. Chand & Co., New Delhi (2001).

BOOKS FOR REFERENCE:

Fundamentals of Physics by D. Halliday, R.Rensick and J. Walker, 6th edition, Wiley,NY (2001).

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	S	M		M		
CO2	M				M	L
CO3	S	M				
CO4	M			M		
CO5			M		M	L

S – STRONG, M – MEDIUM, L - LOW

Passed in the BOS Meeting held on 18-03-2020

COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UPSS11	LASER PHYSICS	SBS	2	–	–	2

L– Lecture T – Tutorial P – Practical

Year	Semester	Internal	External	Total
I	I	25	75	100

COURSE OBJECTIVE:

To introduce the principles of laser operation and their applications.

COURSE OUTCOMES (COs):

At the end of this course, students will be able to

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)
Co1	**understand** the basic concepts of Laser.	K1,K2
Co2	**explain** the types of Lasers.	K6, K3
Co3	**explain the Industrial applications of Laser**.	K3, K2
Co4	**explain** the application of Laser in the Medical field.	K3, K2
Co5	**infer the importance of Laser in Communications.**	K5, K3

K1- Knowledge (remembering), K2-Understanding, K3-Applying, K4- Analyzing, K5-Evaluating, K6 – Creating

LASER PHYSICS

Unit –I

Fundamentals of LASER

Laser action- Principles of Laser- Spontaneous emission – Stimulated emission – Population inversion – Pumping – Laser Characteristics

Unit - II

Production of LASER

Helium – Neon Laser – Ruby Laser – CO2 Laser – Semiconductor Laser

Unit - III

Industrial Applications of LASER

Laser cutting – Welding – Drilling – Hologram – Recording and reconstruction of hologram

Unit - IV

Lasers in Medicine

Lasers in Surgery – Lasers in ophthalmology – Lasers in cancer treatment

Unit –V

Lasers in Communication

Optic fibre communication – Total internal reflection – Block diagram of fibre optic communication system (Qualitative analysis) – Advantages of fibre optic communication.

BOOKS FOR STUDY:

1. N. Avadhanulu,*An introduction to LASERS*, S. Chand & Company,2001.
2. Engineering Physics – I by G.Senthilkumar VRB publishers (p) Ltd
3.Modern Physics R.Murugeshan, S.Chand& Sons, New Delhi, Unit V

REFERENCE BOOKS:

1. Engineering Physics –I by Dr. P. Mani Dhanam Publications, Chennai.

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	S	M		M		
CO2	M				M	L
CO3	S	M				
CO4	M			M		
CO5			M		M	L

S – STRONG, M – MEDIUM, L - LOW

COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UPSA11	PROPERTIES OF MATTER, THERMAL PHYSICS AND OPTICS	ANCILLARY	4	–	–	4

L– Lecture T – Tutorial P – Practical

Year	Semester	Internal	External	Total
I	I	25	75	100

COURSE DESCRIPTION:

This course helps to develop an understanding of the various concepts in different areas of physics. This course covers elastic properties of materials to know the strength of materials, viscous properties of liquid, heat transfer processes, basic properties of light.

COURSE OBJECTIVE:

The main objective of this course is to give the essence of basic concepts, laws, and phenomena in areas of properties of matter, thermal physics, and optics in physics.

COURSE OUTCOMES (COs):

On successful completion of the course, the students will be able to

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)
Co1	**understand** the basic concepts of the elastic behavior of solids and the bending behavior of beams and d**etermine** the expressions for young's modulus and rigidity modulus.	K2, K3
Co2	**explain** the physics of the flow of liquid in terms of viscosity and d**erive** the equation of Bernoulli's theorem in hydrodynamics and its applications.	K2, K3
Co3	**identify** modes of heat transfer in solids, liquids, and gases and **explain** laws governing radiations.	K1, K2
Co4	**define** fundamental laws of thermodynamics and **explain** their application to thermodynamic processes - Carnot cycle, entropy change in a reversible and irreversible process.	K1, K2
Co5	**describe** the phenomena in wave optics like interference, diffraction, and polarization, **identify** the differences in them and **demonstrate** the experiments based on these phenomena.	K1, K2, K3,

K1- Knowledge (remembering), K2-Understanding, K3-Applying, K4- Analyzing, K5-Evaluating,K6 – Creating

Passed in the BOS Meeting held on 18-03-2020

PROPERTIES OF MATTER, THERMAL PHYSICS AND OPTICS

UNIT - I: Elasticity

Introduction-stress, strain, Hooke's law – Poisson's ratio (definition alone) -Torsion- Expression for Couple per unit twist – work done in twisting a wire –Torsional oscillations of a body– Rigidity modulus of a wire and M.I. of a disc by torsion pendulum(dynamic torsion method)-Bending of beams - definitions – Expression for bending moment – determination of young's modulus – uniform and non-uniform bending (pin and microscope method).

UNIT - II: Viscosity

Definition – Viscous force – Co-efficient of viscosity – Poiseuille's formula for coefficient of viscosity of a liquid – determination of co-efficient of viscosity using burette and comparison of Viscosities – Equation of continuity- the energy ofliquid- Bernoulli's theorem **:** Statement and proof – application: Venturimeter.

UNIT - III: Conduction, Convection, and Radiation

Conduction**:** Thermal conductivity- coefficient of thermal conductivity - Lee's disc method – Convection: convection in atmosphere- Lapse rate – greenhouse effect – Radiation**:** Black body radiation – Planck's radiation law –Wien's displacement law – Stefan's law of radiation (No derivations) – Newton's law of cooling.

UNIT - IV: Thermodynamics

Zeroth and I Law of thermodynamic- specific heat capacity- adiabatic and isothermal process – Entropy – Change in entropy in reversible and irreversible process – change in entropy of a perfect gas – change in entropy when ice is converted into steam- II law of thermodynamics - Carnot's engine and Carnot's cycle – Efficiency of a Carnot's engine.

UNIT - V: Optics

Interference **:** Interference in thin films(reflected ray)- Air wedge – thickness of a thin wire – Newton's rings – determination of wavelength using Newton's rings- Diffraction**:** –Theory of plane transmission grating – normal incidence - Polarization**:** Production of polarized light by Nicol Prism - optical activity – Biot's laws – Specific rotatory power – Determination of specific rotatory power using Laurent's half shade polarimeter.

TEXT BOOKS:

1. Properties of matter – Brijlal and Subramanyam – Eurasia Publishing co., New Delhi, III Edition 1983
2. The element of properties of matter – D.S.Mathur – S.Chand& Company Ltd, New Delhi, 10th Edition 1976
3. Heat and Thermodynamics–Brijlal& Subramanyam, S.Chand& Co, 16th Edition 2005
4. Heat and Thermodynamics – D.S. Mathur, SultanChand& Sons, 5th Edition 2014.
5. Optics and Spectroscopy –R.Murugeshan, S.Chand and co., New Delhi, 6th Edition 2008.
6. A textbook of Optics – Subramanyam and Brijlal, S. Chand and co. New Delhi, 22nd Edition 2004.

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	S	M	S	M		
CO2		S	S	L	S	
CO3	S	M	M	L	S	
CO4	S	M	M	L	S	
CO5	S	S	S	L	S	

S – STRONG, M – MEDIUM, L - LOW

Passed in the BOS Meeting held on 18-03-2020

II SEMESTER

S.No.	Subject Code	Subject Title	Hrs./ week	Exam (Hrs.)	CA	SE	Total	Credits
1	21UACT21/ H21/S21	Tamil/Hindi/Sanskrit	6	3	25	75	100	3
2	21UACE21	English	6	3	25	75	100	3
3	21UPSC21	Core 2:Properties of Matter and Sound	5	3	25	75	100	5
4	21UPSS21	Skill 2: C Programming	2	3	25	75	100	2
5	21UPSA21	Allied II :Ancillary	4	3	25	75	100	4
7	21UPSCP1	Core :Major Practical 1	3	3	40	60	100	2
8	21UPSAP1	Allied :Ancillary Practical-I	2	3	40	60	100	2
6	21UACES1	Environmental Studies	2	3	25	75	100	2
		TOTAL	30	**TOTAL CREDITS**				23

COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UPSC21	PROPERTIES OF MATTER AND SOUND	CORE	5	–	–	5

L– Lecture T – Tutorial P – Practical

Year	Semester	Internal	External	Total
I	II	25	75	100

OBJECTIVE:

To expose students to the fundamentals of properties of Matter and Sound.

COURSE OUTCOME (COs):

On completion of the course, the students will be able to

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)
Co1	identify the materials suitable for construction of buildings, based on the moduli of elasticity.	K1,K2
Co2	get the knowledge on properties of liquids and its applications..	K1, K3
Co3	analyze the viscous properties of liquids and creating knowledge about how different liquids utilized in variousmechanism	K1, K4
Co4	realize the concept of sound in physics and design the different methods of producing and analyzing ultrasonic waves	K6, K4
Co5	understand the concepts of acoustic comfort and the theories used in building acoustics	K2, K5

K1- Knowledge (remembering), K2-Understanding, K3-Applying, K4- Analyzing,K5-Evaluating, K6 – Creating

PROPERTIES OF MATTER AND SOUND

Unit - I: Elasticity

Elasticity –- Hooke's law – Elastic moduli – Poisson's ratio – Beams – bending of beams – Expression for bending moment –Cantilever- Theory of uniform and non – uniform bending - Determination of young's modulus -Koenig's method – Torsion of a body – Expression for couple per unit twist – Work done in twisting a wire – Torsional oscillations of a body - Rigidity modulus by dynamic torsion method((Torsional pendulum) and static torsion method.

Unit - II: Surface Tension

Surface tension – definition – Molecular forces – Explanation of surface tension on kinetic theory – Surface energy – work done in increasing the area of a surface – Excess pressure inside a curved liquid surface – Excess pressure inside a spherical and cylindrical drops and bubbles-drop weight method- - angle of contact- Quincke's method-variation of surface tension with temperature-experimental determination-Jaegar's method.

Unit - III: Viscosity

Viscosity – Co efficient of viscosity – Streamlined and turbulent motion – critical velocity – Rate of flow of liquid in a capillary tube – Poiseuille's formula –viscosity of highly viscous liquid-terminal velocity-stoke's method-Ostwald Viscometer--viscosity of gas-Mayer's formula-Rankine 's method

Unit - IV: Sound

Simple Harmonic Motion –Composition of two S.H.M in a straight line-at right angles-Lissajous's figures- Free, Damped, Forced vibrations - Resonance -application.

Laws of transverse vibration of strings - Sonometer-Determination of AC frequency using sonometer - Determination of frequency using Melde's apparatus-Decibels - Intensity levels - decibel-noise pollution.

Unit - V: Ultrasonics and Acoustics

Ultrasonics –Production – Piezoelectric crystal method – Magnetostriction method – Properties and Applications -Acoustics of building – Reverberation- Sabine's Reverberation formula (No derivation) - Factors affecting acoustics of building- Sound distribution in an auditorium- Requisites for good acoustics.

BOOKS FOR STUDY:

1. Elements of properties of matter – D.S. Mathur – S. Chand & Co., 2004.
2. Properties of matter – R. Murugesan – S. Chand & Co., 2004.
3. Properties of matter – Brijlal and Subramanian S. Chand & Co., 2006.
4. D.R.Khanna and R.S. Bedi, Textbook of Sound, Atmaram and sons (1969)
5. N.Subrahmanyam and BrijLal, A Text Book of Sound,Vikas Publishing

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	M	L	M		S	M
CO2	M				M	
CO3	S	L	M		S	
CO4	M		L	L	S	M
CO5	S		M	L	M	L

S – STRONG,M – MEDIUM, L - LOW

Passed in the BOS Meeting held on 18-03-2020

COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UPSS21	PROGRAMMING IN C	SKILL	2	–	–	2

L– Lecture T – Tutorial P – Practical

Year	Semester	Internal	External	Total
I	II	25	75	100

COURSE DESCRIPTION:

This course introduces elementary knowledge in the fields of data communication and programming in c. This course covers the principles of data communication, signals, basic transmission process, error detection and correction, network concepts and basics in the programming language.

COURSE OBJECTIVE:

The primary objective of this course is to provide an overview of various concepts of data communication and computer networks and the fundamentals of C Programming. Emphasize the role of c programming in solving problems.

COURSE OUTCOMES (COs):

On successful completion of the course, students will be able to

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)
Co1	**understand** the basic concepts of C tokens	**K1, K2**
Co2	**explain** the 'C' expressions and operators .	**K1, K2**
Co3	**understand** the fundamentals of control statements in C programming	**K1, K2**
Co4	**elaborate** the decision making instruction using branching and looping. **Implement** simple problems using C language.	**K1, K2, K3**
Co5	**apply** concepts of an array to handle a group of data and**implement** simple problems using C language.	**K1, K2, K3**

K1- Knowledge (remembering), K2-Understanding, K3-Applying, K4- Analyzing, K5-Evaluating,K6- Creating

PROGRAMMING IN C

Unit - I: Introduction to Programming in C

Introduction – character set –C tokens- identifiers and keywords-constants and variables - data types –declaration of variables (primary type declaration)

Unit - II: Expressions and Operators:

Operators and expressions – Arithmetic, Relational, Logical and Assignment, Increment and Decrement, Conditional operators – Arithmetic expressions – Data input and output.

Unit - III: Decision making instruction

Branching – Decision making – Control statements - Simple if statement, if-else statement, else if ladder, switch statement, conditional statement, GOTO statement

Unit - IV: Looping and Simple programs

Looping- while loop, do-while loop, for loop – Simple programs- To find volume of a sphere, area of the triangle and circle – To find the factorial of a number – To evaluate sinx – To find roots of a quadratic equation.

Unit - V: Arrays

Arrays– Declaration-Initialization of one dimensional, two dimensional and multidimensional Simple programs to multiply, add and subtraction of two matrices – To arrange the given set of numbers in ascending and descending order – To find the arithmetic mean, geometric mean and harmonic mean

TEXTBOOK:

1. Balagurusamy.E, (2008)," Programming in ANSI C", Second Edition, Tata McGraw Hill.

REFERENCES:

1. KamthaneAshok.N, (2013), "Programming in C", 2nd Edition, Pearson Education.
2. Yashvant P. Kanetkar, (2008), "Let us C", 8th Edition, Infinity science press.
State Integrated Board of Studies – Physics UG

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1			M	M	S	S
CO2	M			S	L	S
CO3		M				S
CO4	M	M		M		S
CO5				M		S

S – STRONG, M – MEDIUM, L - LOW

COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UPSA21/ 21UPSA41	ELECTRICITY, ELECTRONICS, ATOMIC AND NUCLEAR PHYSICS	ALLIED	4	–	–	4

L– Lecture T – Tutorial P – Practical

Year	Semester	Internal	External	Total
I	II	25	75	100

COURSE DESCRIPTION:

This course helps the students to understand the concept of basic concepts of electricity and electronics, the effect of the magnetic field due to the passage of current and to acquire the basics of atomic and nuclear physics.

COURSE OBJECTIVES:

- To understand the fundamental laws of electricity and magnetism.
- To gain knowledge about the effect of magnetic field due to the passage of current.
- To gain the basic idea about semiconductor diodes transistors and logic gates.
- To acquire knowledge atomic models, nuclear fission and fusion.

COURSE OUTCOMES (COs):

On successful completion of the course, the students will be able to

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)
Co1	gain the knowledge of different laws of electrostatics which helps to solve problems	KI, K6
Co2	understand the concepts and laws of current electricity and demonstrate the experiment to determine the resistivity of the material of wire and calibrate voltmeter and ammeter.	K1, K2, K4
Co3	distinguish moving coil galvanometers dead beat ballistic and demonstrate the experiments for voltage and current sensitiveness	K2, K4
Co4	understand the basics of diodes and transistors and solve the problems in the binary number system and analyze the logic circuits	K1. K3, K4
Co5	acquire the basic knowledge in atomic and nuclear physics	K1

K1- Knowledge (remembering), K2-Understanding, K3-Applying, K4- Analyzing, K5-Evaluating, K6 – Creating

ELECTRICITY, ELECTRONICS, ATOMIC AND NUCLEAR PHYSICS

UNIT - I: ELECTROSTATICS

Coulomb's law- Electric field and flux-Gauss law-applications of gauss law- Field due to a charged sphere- Electric potential –Relation between electric field and electric potential.
Capacitors- Principle of a capacitor - Capacitance of a spherical capacitor- Energy stored in a capacitor.

UNIT - II: CURRENT ELECTRICITY

Kirchoff's laws – Application of Kirchhoff's laws to Wheatstone's network- Carey foster's bridge- Determination of resistivity and temperature coefficient of resistance - Potentiometer - Principle- Calibration of ammeter - Calibration of low range voltmeter.

UNIT - III: MAGNETIC EFFECT OF ELECTRIC CURRENT

Force on a current-carrying conductor in a magnetic field- Torque on a current loop in a uniform magnetic field – Mirror galvanometer-current and voltage sensitiveness of a moving coil galvanometer - Moving coil Ballistic galvanometer – Correction for damping – Difference between Dead beat and Ballistic galvanometer- Measurement of charge sensitiveness.

UNIT - IV: ELECTRONICS

PN junction diode – Forward and reverse biasing - VI Characteristics of a junction diode- Bridge rectifier using junction diodes –Transistor-Transistor Characteristics (CE mode only)Number system – Decimal – Binary – conversion of decimal to binary – Conversion of binary to decimal – Binary addition – Binary subtraction – Boolean algebra – De Morgan's theorem – Basic logic gates (AND, OR, NOT) – NAND and NOR as universal gates.

UNIT - V: ATOMIC AND NUCLEAR PHYSICS

Bohr's atom model – radius energy – Atomic excitation – Ionization potential – Frank and Hertz Method – Nucleus – Nuclear properties – Mass defect – Binding energy.
Nuclear fusion and Nuclear fission – X-rays – Production – Properties –Derivation of Bragg's law – Uses in industrial and medical fields.

BOOKS FOR STUDY AND REFERENCE:

1. Electricity and Electronics – R. Murugesan, First edition, 2011.
2. Electricity and Magnetism – R. Murugesan, S. Chand & co, 2001.
3. Modern Physics – R. Murugesan, S. Chand & co, 1998.
4. Basic Electronics – B.L. Theraja, S. Chand & co, 2003.

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	M	M	M	S	S	M
CO2	M	M	M	S	M	M
CO3	M	M	S	M	M	
CO4	M	M	S	M	S	M
CO5	M	L	L	M	M	S

S – STRONG, M – MEDIUM, L - LOW

Passed in the BOS Meeting held on 18-03-2020

COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UPSCP1	MAJOR PRACTICAL	CORE PRACTICAL I	--	–	3	2

L– Lecture T – Tutorial P – Practical

Year	Semester	Internal	External	Total
I	II	40	60	100

LIST OF EXPERIMENTS

Any Fourteen experiments:

1. Young's Modulus of Elasticity by Uniform Bending (Pin & Microscope)
2. Young's Modulus of Elasticity by Non-Uniform Bending (Optic Lever)
3. Young's Modulus of Elasticity by Cantilever (Pin & Microscope)
4. Young's Modulus of Elasticity by Cantilever (Dynamic Method)
5. Determination of Rigidity Modulus of Elasticity by using Torsion Pendulum
6. Moment of Inertia of circular disc by Torsion Pendulum
7. Determination of Co-efficient of viscosity of liquid by Stokes method
8. Surface Tension of water by Drop Weight method.
9. Determination of acceleration due to gravity by using compound pendulum.
10. Melde's String – Determination of frequency of tuning fork
11. AC frequency by Sonometer
12. Co-efficient of Viscosity of water by Poiseullie's Method
13. Verification of Laws of Transverse vibrations
14. q,n,σ – Searl's Method.
15. Determination of wavelength of Laser
16. Determination of Particle size by Laser.

COURSE CODE	COURSE TITLE	CATEGORY	L	T	P	CREDITS
21UPSAP1	PRACTICAL	ALLIED PRACTICAL I	--	–	2	2

L– Lecture T – Tutorial P – Practical

Year	Semester	Internal	External	Total
I	II	40	60	100

LIST OF EXPERIMENTS

Any Fourteen experiments:

1. Young's Modulus of Elasticity by Uniform Bending (Pin & Microscope)
2. Young's Modulus of Elasticity by Non-Uniform Bending (Optic Lever)
3. Calibration of Low range Voltmeter by Potentiometer
4. Calibration of Ammeter by Potentiometer
5. Determination of Thermal Conductivity of bad conductor by Lee's disc method
6. Grating N and λ by Normal incidence method
7. Refractive index of the Prism using spectrometer.
8. LCR Series Circuit - Determination of resonant frequency and L of the coil
9. Static characteristics of semiconducting diode
10. Bridge Rectifier
11. Construction of Logic gates OR, AND and NOT using discrete components
12. Air-Wedge – Determination of thickness of the given material.
13. Newton's Rings – Radius of Curvature
14. Carey-Foster's Bridge – Resistance and Resistivity
15. Comparison of Capacities of the given two capacitors.
16. Comparison of emfs of the given two cells.