PG AND DEPARTMENT OF PHYSICS

ODD SEMESTER

TEACHING PLAN

2021-2022

A. GENERAL INFORMATION:

Name of the Faculty : Dr. R. Priscilla

Department : Physics

Programme : B.Sc

Programme Code : BSP

Name of the Paper : ALLIED PHYSICS - I

Lecture Hours / Practical Hours : 60 Hours

B. ABOUT THE COURSE:

Course Objectives	Course outcomes	Teaching Methodology
• The aim of this paper is to expose the students to the fundamentals of Physics properties. • To provide a broad introduction about the concepts of elastic behaviors of materials. • To make the students understand the basic principles of mechanics. • Give a qualitative account of how simple harmonic motions and Acoustics of buildings. • To make the students understand the foundational Principles of thermal physics.	• Understanding Explain how this information is physical understanding of these systems. • Apply Physical laws to make simple calculations to understand the observed properties. • A broad qualitative knowledge of Physics. • An ability to do some simple experiments based on those physical processes • An understanding of some of the physical concepts.	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

C. PLAN OF THE WORK

Unit/ Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content Hrs - 12, Assessment Hrs -3 Total – 15 Hrs	• Hooke's law Stress Strain diagram Factors affecting elasticity • Different moduli of elasticity • Relation between the elastic moduli • Poisson's ratio • Experimental determination of Young's modulus using pin and microscope method (Non-uniform bending and Uniform bending) • Torsional oscillations of a body • Torsion Pendulum Determination of Rigidity modulus Moment of inertia.	09.08.2021 to 28.08.2021	2 hrs 2 hrs 2 hrs 2 hrs 2 hrs 2 hrs 3 hrs	Nil	Nil
Unit II Content Hrs - 12, Assessment Hrs -3 Total – 15 Hrs	• Centre of Gravity • Centre of gravity of Solid Cone, Solid and hollow hemisphere • Stability of floating bodies • law of floatation • Metacentre -Condition for stability	31.08.2021 to 14.09.2021	2 hrs 2 hrs 2 hrs 3 hrs 3 hrs	Nil	Nil

	• Determination of Metacentric height of a ship		3 hrs		
Unit III Content Hrs - 12, Assessment Hrs -3 Total – 15 Hrs	• Simple Harmonic motion • composition of two simple harmonic motions along a straight line • Simple harmonic motions at right angles to each other. • Acoustics of buildings • reverberation reverberation time • Sabine's formula • Factors affecting acoustics of buildings- conditions for good acoustics.	15.09.2021 to 01.10.2021	2 hrs 3 hrs 2 hrs 2 hrs 2 hrs 2 hrs 2 hrs	Nil	Nil
Unit IV Content Hrs - 12, Assessment Hrs -3 Total – 15 Hrs	• Surface tension-Definition - S.I Unit-Dimensions • Experimental determination of Surface tension of water drop weight method • Viscosity- Units and dimensions • Streamline flow and Turbulent flow • Critical velocity- Co-efficient of viscosity • Experimental determination of co-efficient of viscosity.	04.10.2021 to 01.11.2021	2 hrs 2 hrs 2 hrs 3 hrs 3 hrs 3 hrs	Nil	Nil

Unit V Content Hrs - 12, Assessment Hrs -3 Total – 15 Hrs	• Newton's law of cooling- • Verification of specific heat capacity of a liquid by cooling- • Bomb calorimeter. • Conduction: Co-efficient of thermal conductivity-Good and bad conductor- • Lee's disc method for bad conductor, • Stefan's law -Solar constant-Angstrom Pyrohelio meter-Temperature of the sun	19.11.2021 to 01.12.2021	2 hrs 3 hrs 2 hrs 3 hrs 2 hrs 3 hrs	Nil	Nil

D. ACTIVITIES

ACTIVITIES NAME	DETAILS
Test	Monthly Test- Unit-I (September)
	CIA / Mid Semester – Unit-I - Unit-III (October)
Assignment	Assignment I –Unit –I and Unit –II (October)
	Assignment II – Unit –III and Unit – IV (November)
Seminar	Unit –IV (December)
Quiz	Two Mark Quiz Test - Unit I – Unit – IV (December)
Tutor Ward Meeting	Monthly once
Mentor Mentee Meeting	Every Saturday

PRINCIPAL

Principal
A.D.M. College For Women
Autonomous, Nagapattinam.

TEACHING PLAN

A. GENERAL INFORMATION

Name of the Faculty : Dr. N. Lavanya
Department : Physics
Programme : B.Sc
Programme Code : BSP
Name of the Paper : ALLIED PHYSICS - I
Lecture Hours / Practical Hours : 60 Hours

B. ABOUT THE COURSE

Course Objectives	Course outcomes	Teaching Methodology
• The aim of this paper is to expose the students to the fundamentals of Physics properties. • To provide a broad introduction about the concepts of elastic behaviors of materials. • To make the students understand the basic principles of mechanics. • Give a qualitative account of how simple harmonic motions and Acoustics of buildings. • To make the students understand the foundational Principles of thermal physics.	• Explain how this information is physical understanding of these systems. • Apply Physical laws to make simple calculations to understand the observed properties. • A broad qualitative knowledge of Physics. • An ability to do some simple experiments based on those physical processes • An understanding of some of the physical concepts.	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

C. PLAN OF THE WORK

Unit/ Modules	Topic to be covered	Proposed date	Lecture Hrs	Practical Hrs	Remarks
Unit I Content- 12 Hrs Assessment -3 Hrs Total – 15 Hrs	• Hooke's law Stress Strain diagram Factors affecting elasticity • Different moduli of elasticity • Relation between the elastic moduli • Poisson's ratio • Experimental determination of Young's modulus using pin and microscope method (Non-uniform bending and Uniform bending) • Torsional oscillations of a body • Torsion pendulum Determination of rigidity modulus Moment of inertia.	09.08.2021 to 28.08.2021	2 hrs 2 hrs 2 hrs 2 hrs 2 hrs 2 hrs 3 hrs	Nil	Nil
Unit II Content- 12 Hrs, Assessment -3 Hrs Total – 15 Hrs	• Centre of Gravity • Centre of gravity of Solid Cone, Solid and hollow hemisphere • Stability of floating bodies • law of floatation • Metacentre -Condition for	31.08.2021	2 hrs 2 hrs 2 hrs 3 hrs 3 hrs	Nil	Nil

	stability • Determination of Metacentric height of a ship.	to 14.09.2021	3 hrs		
Unit III Content- 12 Hrs, Assessment -3 Hrs Total – 15 Hrs	• Simple Harmonic motion • composition of two simple harmonic motions along a straight line • Simple harmonic motions at right angles to each other. • Acoustics of buildings • reverberation reverberation time • Sabine's formula • Factors affecting acoustics of buildings- conditions for good acoustics.	15.09.2021 to 01.10.2021	2 hrs 3 hrs 2 hrs 2 hrs 2 hrs 2 hrs 2 hrs	Nil	Nil
Unit IV Content- 12 Hrs, Assessment -3 Hrs Total – 15 Hrs	• Surface tension- Definition - S.I Unit- Dimensions • Experimental determination of Surface tension of water drop weight method • Viscosity- Units and dimensions • Streamline flow and Turbulent flow • Critical velocity- Co-	04.10.2021 to 01.11.2021	2 hrs 2 hrs 2 hrs 3 hrs 3 hrs	Nil	Nil

	efficient of viscosity • Experimental determination of co-efficient of viscosity.		3 hrs		
Unit V Content- 12 Hrs, Assessment -3 Hrs Total – 15 Hrs	• Newton's law of cooling- • Verification of specific heat capacity of a liquid by cooling- • Bomb calorimeter. • Conduction**:** Co-efficient of thermal conductivity-Good and bad conductor- • Lee's disc method for bad conductor, • Stefan's law -Solar constant • Angstrom Pyrohelio meter-Temperature of the sun	19.11.2021 to 01.12.2021	2 hrs 2 hrs 2 hrs 2 hrs 2 hrs 2 hrs 3 hrs	Nil	Nil

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (September)
	CIA / Mid Semester – Unit-I - Unit-III (October)
Assignment	Assignment I –Unit –I and Unit –II (October) Assignment II – Unit –III and Unit – IV (November)
Seminar	Unit –IV (December)
Quiz	Two Mark Quiz Test - Unit I – Unit – IV (December)
Tutor Ward Meeting	Monthly once
Mentor Mentee Meeting	Every Saturday

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TEACHING PLAN

A. GENERAL INFORMATION

Name of the Faculty : Dr. N. Lavanya

Department : Physics

Programme : B.Sc

Programme Code : BSP

Name of the Paper : PROPERTIES OF MATTER AND ACOUSTICS

Lecture Hours / Practical Hours : 90 Hours

B. ABOUT THE COURSE

Course Objectives	Course outcomes	Teaching Methodology
• To Know the elastic behavior of substance • To Examine how bending moment various at the cut position of the beam for various loading condition • To learn about the fluid property of the surface tension whenever there is an interfacial between a liquid, solid or a gas. • To measure the viscosity of a sample liquid. • To learn the basic principles of Acoustics.	• To learn how to measure elasticity by various methods • To demonstrate a basic understanding of bending of beams, depression and Elevation of Cantilever. • Define surface tension as a physical Property and the units that are used to measure it. • Learn about the formula for viscosity, fluid flow and measurement of viscosity using lab experiments. • Experience when our ears are excited by vibration in the gas that surrounds us and production, detection and medical applications of Ultrasonic waves.	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

C. PLAN OF THE WORK

Unit/ Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Hooke's law Stress-Strain diagram • Factors affecting elasticity- • Different moduli of elasticity • Relation between the elastic moduli – Poisson's ratio • Expression for poisson's ratio in terms of elastic constant- • Twisting couple on a cylinder • Determination of rigidity modulus by static torsion • Work done in twisting a wire Torsional oscillations of a bodyTorsion pendulum	20.09.2021 to 07.10.2021	2 hrs 2 hrs 2 hrs 2 hrs 3 hrs 2 hrs 2 hrs 3 hrs	Nil	Nil
	• Bending of beams- Expression for bending moment		2 hrs		

Unit II Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Cantilever– Expression for depression of the loaded end of a cantilever • Young's modulus by measuring the tilt in a loaded cantilever • Oscillation of a cantilever - Non-uniform bending • Expression for depression • Uniform bending Expression for elevation • Experimental determination of Young's modulus using pin and microscope method (Non-uniform bending – Uniform bending) • Determination of Young's modulus by Koenig's method.	08.10.2021 to 29.10.2021	2 hrs 2 hrs 2 hrs 3 hrs 2 hrs 3 hrs 2hrs	Nil	Nil
	• Definition – Molecular forces • Explanation of surface tension on kinetic theory		2 hrs 2 hrs		

Unit III Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Surface energy Work done on increasing the area of a surface • Angle of contact - Neumann's triangle- • Excess pressure inside a liquid drop and soap bubble • Excess pressure inside a curved liquid surface • Force between two plates separated by a thin layer of a liquid • Experimental determination of surface tension - Jaegar's method • Drop- weight method • Capillary rise method - Variation of surface tension with temperature.	30.10.2021 to 25.11.2021	2 hrs 2 hrs 2 hrs 2 hrs 1 hr 2 hrs 1 hr 2 hrs	Nil	Nil
	• Newton's law of viscous flow • Streamlined and turbulent motion • Reynold's number Poiseuille's formula		2 hrs 2 hrs 2 hrs		

Unit IV Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	for the flow of a liquid through a horizontal capillary tube • Experimental determination of co-efficient of a liquid by Poiseuille's method • Ostwald's viscometer Terminal velocity and Stokes' formula • Viscosity of gases Meyer's formula - Rankine's method – • Variation of viscosity with temperature and pressure - Lubrication. • Equation of continuity of flow – Euler's equation for unidirectional flow – • Bernoulli's theorem – Filter pump and Wings of aeroplane Torricelli's theorem - Pitot tube.	26.11.2021 to 20.12.2021	2 hrs 3 hrs 2 hrs 2 hrs 2 hrs 1 hr	Nil	Nil
	• Newton's Formula for velocity of sound		2 hrs		

Unit V Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Effect of Temperature, Pressure, Humidity, Density of medium and Wind • Musical Sound and Noise – Speech- • Characteristics of Musical sound Intensity of sound – • Measurement of intensity of sound :Decibel and Phon-Bel. • Reverberation Sabine's Reverberation formula • Factors Affecting theAcoustics of Buildings – Sound distribution in an Auditorium Requisites for good acoustics • Ultrasonic Production and detection – Medical applications of Ultrasonic waves.	22.12.2021 to 31.12.2021	2 hrs 2 hrs 2 hrs 3 hrs 2 hrs 2 hrs 3 hrs	Nil	Nil

D. ACTIVITIES

Activities Name	**Details**
Test	Monthly Test- Unit-I (October) CIA / Mid Semester – Unit-I - Unit-III (December)
Assignment	Assignment I –Unit –I and Unit –II (October) Assignment II – Unit –III and Unit – IV (November)
Seminar	Unit –IV (December)
Quiz	Two Mark Quiz Test - Unit I – Unit – IV (December)
Tutor Ward Meeting	Monthly once
Mentor Mentee Meeting	Every Saturday

PRINCIPAL

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TEACHERS PLAN

A. GENERAL INFORMATION

Name of the Faculty : Mrs. S. Aruljothi
Department : Physics
Programme : B.Sc
Programme Code : BSP
Name of the Paper : Electronics
Lecture Hours / Practical Hours : 90 Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
• To enable the students to understand all aspects of electronics in a lucid and comprehensive manner. • This course is familiarize the students about the transistor, operational amplifier and Digital electronics Circuit • Acquire the fundamental knowledge and application of the semiconductor Device • Knowledge of the basic principles ofelectronic circuits operation Performance Analysis of electronic circuit • Fundamental of analog and digitalintegrated circuit • Design methodologies using practicalintegrated circuit	• Explain the theoretical principles essential for understanding the operation of electronic circuit • Measure the characteristics of electronic circuit and present experiment result • Analyze electrical circuit and calculate the main parameters • Develop Design and create simple analogue and digital electronics circuit • Understand the fundamentals and area of application for the integratedcircuit • Know about the multistage amplifier using BJT and FET various configuration	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing modelsto the students to make them understand.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit l Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Semiconductor • Intrinsic and extrinsic semi -conductors • PN junction diode Biasing • V-I Characteristics • Rectifiers Half wave fullwave and Bridge rectifiers • Break down mechanisms Zener diode characteristics of Zener diode • Zener diode as voltage regulator • Bipolar junction transistor Basic configurations • Relation between α and β • Characteristic curves of transistor CB, CE mode • DC load line • DC bias and stabilization – fixed bias	20.09.2021 to 07.10.2021	2 hrs 1hrs 2 hrs 2 hrs 1 hr 1 hr 1 hr 2 hrs 2 hrs 2 hrs 1 hr 1hr	Nil	Nil

Unit II Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Single stage CE amplifier • Analysis of hybrid equivalent circuit • Power amplifiers Efficiency of class A,B & C Power amplifier • General theory of feedback • Properties of negative feedback • Criterion for oscillations Hartley oscillator • Colpitt's oscillator.	08.10.2021 to 29.10.2021	2 hrs 3hrs 3hrs 3 hrs 3 hrs 2hrs 2hrs	Nil	Nil
Unit III Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• NIT III Operational amplifier • Operational amplifier Characteristics • Inverting amplifier • Non-inverting amplifier • Voltage follower Adder Subtractor • Integrator and Differentiatorcircuits • Log & antilog amplifiers Op-amp as Comparator • Filters-low, bandpass, highpass filters • A/Dconversion Successiveapproximation method • D/A conversion • R-2R ladder network.	30.10.2021 to 25.11.2021	2 hrs 1hrs 2 hrs 2 hrs 1 hr 2 hrs 2 hrs 2 hrs 2 hr 2 hr	Nil	Nil

Unit IV Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• **Number Systems, Logic Gates and Boolean Algebra** Introduction to decimal, binary, octal, hexadecimal number systems • Inter conversions– 1's and 2'scomplements • Logic gates, Symbols and theirtruth tables • AND, OR, NOT, NAND, NOR, XOR, and XNOR • Universality of NAND and NOR gates. • Boolean algebra • De-Morgan's theorems • Reducing Boolean expressions using Boolean laws • SOP forms of expressions(minterms) • Karnaughmap simplification(Four variables).	26.11.2021 to 20.12.2021	2 hrs 1hrs 2 hrs 2 hrs 1 hr 2 hrs 2 hrs 2 hrs 2 hr 2 hr	Nil	Nil

Unit V Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• **Combinational and Sequential Digital Systems** • Half and full adders • Half and full subtractors • Decoder(2:4 line) Encoder(4:2 line) • Multiplexer(4:1line) Demultiplexer (1:4 line) • Flip flop RS – clocked RS • T and D flip flops JK and master slave flip flops • Counters Fourbit asynchronous ripple counter • Mod-10counter Synchronouscounter • Ring counterShift registers • SISO and SIPO shift registers.	22.12.2021 to 31.12.2021	2 hrs 1 hr 2 hrs 2 hrs 1 hr 2 hrs 2 hrs 2 hrs 2 hrs 1 hr 1 hr	Nil	Nil

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (October) CIA / Mid Semester – Unit-I - Unit-III (December)
Assignment	Assignment I –Unit –I and Unit –II (October) Assignment II – Unit –III and Unit – IV (November)
Seminar	Unit –IV (December)
Quiz	Two Mark Quiz Test - Unit I – Unit – IV (December)
Tutorial Ward Meeting	Every Saturday

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TEACHING PLAN

A. GENERAL INFORMATION

Name of the Faculty	: S.Aruljothi
Department	: Physics
Programme	: M.Sc
Programme Code	: PSP
Name of the Paper	: Statistical mechanics
Lecture Hours / Practical Hours	: 90 Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
• Explain statistical physics and the thermodynamics as logical consequences of the postulates of statistical mechanics. • Apply the principles of statistical mechanics to selected problems • Carps the basis of ensembles approach in statistical mechanics to range of situations • To learn the fundamental difference between classical and quantum statistics and learn about quantum statistical distribution law	Students will have achieved the ability to: • Find the connection between statistics and thermodynamics. • Differentiate between different ensemble theories used to explain thrbehavior of the systems. • Differentiate between classical statistics and quantum statistics. • Explain the statistical behavior of ideal Bose andFermi systems.	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing modelsto the students to make them understand.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Thermo dynamical laws andtheir consequences • Entropy Changes in entropy inreversible processes • Principle of increase ofentropy • Thermodynamic functions-Enthalpy • Helmholtz and Gibbs functions • Phase transitions • Clausius-Clayperon equation • Van der Wall equation ofstate.	20.09.2021 to 07.10.2021	2hrs 2hrs 2hrs 2hrs 2 hrs 2hr 3 hrs 3 hrs	Nil	Nil
Unit II Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Boltzman transport equationand its validity • Boltzmann's H-theorem - • Relation between H-functionand entropy • Maxwell--Boltzmann distribution • Mean free path Conservationlaws • Transport	08.10.2021 to 29.10.2021	3hrs 3hrs 2hrs 2hrs 2 hrs 3hr	Nil	Nil

	phenomenaViscosity of gases • Thermal conductivity Diffusion process.		3 hrs		
Unit III Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Classical Statistical Mechanics • Review of probability theory • Macro and micro states • Phase space • Statistical ensembles • Density function • Liouville's theorem - • Maxwell-Boltzmann distribution law • Micro canonical ensemble • Ideal gasEntropy • Partition function Equipartition theorem • Canonical and grand canonical ensembles.	30.10.2021 to 25.11.2021	2hrs 2hrs 2 hrs 2 hrs 2 hrs 1 hrs 2 hrs 1 hr 1 hr 1 hr 1 hr 1 hr	Nil	Nil
Unit IV Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Basic conceptsIdeal quantumgas • Bose--Einstein statis tics • Photon statistics • Fermi-Dirac statistics • Sackur-Tetrode equationEquation of state	26.11.2021 to 20.12.2021	2hrs 2hrs 2hrs 3 hrs 3 hrs	Nil	Nil

	• Bose-Einstein condensation • Comparison of classical andquantum statistics.		3 hrs 3 hrs		
Unit V Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Applications of • Quantumstatistical Mechanics • Ideal Bose System: • Photons Black body and Planck radiation • Specific heatof solids • Liquid helium. • Ideal Fermi System: • Properties Degeneracy • Electron gas -- • Pauli paramagnetism. • Ferromagnetism: • Ising and Heisenberg models.	22.12.2021 to 31.12.2021	2hrs 2hrs 2 hrs 2 hrs 2 hrs 1hrs 2 hrs 1 hr 1 hr 1 hr 1 hr 1 hr	Nil	Nil

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (October)
Assignment	CIA / Mid Semester – Unit-I - Unit-III (December)
Seminar	Assignment I –Unit –I and Unit –II (October) Assignment II – Unit –III and Unit – IV (November)
Quiz	Unit –IV (December)
Tutorial Ward	Two Mark Quiz Test - Unit I – Unit – IV (December)
Meeting	Every Saturday

PRINCIPAL

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TEACHERS PLAN

A. GENERAL INFORMATION

Name of the Faculty : Ms. R.Rubashri,
Department : Physics
Programme : B.Sc
Programme Code : BSP
Name of the Paper : OPTICS
Lecture Hours / Practical Hours : 75 Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
• The main objective of this subject is to aware the students about various phenomenon of waves and optics. • First unit of deals with the Fourier analysis and Fourier transformation. • The second deals with the matrix method in order to explain various phenomenon. • The third unit describe the Phenomenon like interference phenomenon. • To understand geometrical optics as the small wavelength limit of wave optics and the relationship between rays and wave fronts. • To understand the effect of thin transmissive components on optical waves.	• On completion of the course the learner will be able • Understand the physics behind various phenomenons in wave and optics. • Understand various phenomenons and the cause or origin of them. • Explain the relationship in between various optical phenomenons with the Fourier series and matrix. • Understand various natural phenomenons which is happening in their surroundings. • Explain the relationship in between various optical phenomenons.	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
UNIT I Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• Spherical aberration • Spherical aberration of a thin and thick lens • Methods of reducing Spherical aberration Coma • Aplanatic surface • Astigmatism • Curvature of the field • Meniscus lens • Distortion • Chromatic aberration • Chromatic aberration in a lens • Circle of least Chromatic aberration • Achromatic lenses.	20.09.2021 to 07.10.2021	2 hrs 2 hrs 2 hrs 1 hr 1 hr 1 hrs 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr	Nil	Nil
UNIT II Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• Air wedge • Newton's rings • Haidinger's fringes • Brewster's fringes • Michelson Interferometer and its applications • Fabry- Perot		2 hrs 2 hrs 2 hrs 1 hr 1 hr 1 hr	Nil	Nil

	Interferometer • Interference filter • Stationary waves in light Colour photography (qualitatively) • Holography • Construction and reconstruction of a hologram • Applications.	08.10.2021 to 29.10.2021	1 hr 1 hr 1 hr 1 hr 2 hrs		
UNIT III Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• Fresnel's diffraction • Diffraction at a (1) circular aperture (2) Straight edge (3) narrow wire • Fraunhofer diffraction at a single slit • Double slit • Missing orders in a Double slit • Diffraction pattern Grating (theory) • Oblique incidence • Overlapping of spectral lines - Resolving power • Rayleigh's criterion of resolution • Resolving power of a Telescope and	30.10.2021 to 25.11.2021	2 hrs 2 hrs 2 hrs 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr	Nil	Nil

	Grating • Dispersive power and resolving power of a grating.		2 hrs		
UNIT IV Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• Nicol prism • Nicol prism as an analyzer and polarizer • Huygens's explanation of Double refraction in uniaxial crystals • Double Image polarizing prisms • Elliptical and Circularly polarized light • Production and detection • Quarter wave and half wave plates • Babinets compensator • Optical activity • Fresnel's explanation of optical activity • Laurent's Half shade polarimeter.	26.11.2021 to 20.12.2021	2 hrs 2 hrs 2 hrs 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 2 hrs	Nil	Nil

UNIT V Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• Microscopes • Simple Microscope (Magnifying glass) • Compound Microscope • Ultra-Microscope • Eyepieces - Huygen's Eyepiece • Ramsden's Eye piese • Comparison of Eyepieces Telescope • Refracting astronomical telescope • Abbe Refractometer • Pulfrich refractometer • Prism binoculars.	22.12.2021 to 31.12.2021	2 hrs 2 hrs 2 hrs 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 2 hrs	Nil	Nil

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (October)
	CIA / Mid Semester – Unit-I - Unit-III (December)
Assignment	Assignment I –Unit –I and Unit –II (October)
	Assignment II – Unit –III and Unit – IV (November)
Seminar	Unit –IV (December)
Quiz	Two Mark Quiz Test - Unit I – Unit – IV (December)
Tutorial Ward Meeting	Every Saturday

PRINCIPAL

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TEACHERS PLAN

A. GENERAL INFORMATION

Name of the Faculty	: Ms. R.Rubashri, Department of Physics
Department	: Physics
Programme	: M.Sc
Programme Code	: PSP
Name of the Paper	: Communication Physics
Lecture Hours / Practical Hours	: 75 Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
• Students will demonstrate an understanding of multiple theoretical perspectives and diverse intellectual traditions in communication. • Students will demonstrate an understanding of importance of free expression. • Students will competency in human relational interaction. • To understanding of professional and ethical responsibility. • An ability to communicate effectively.	• Demonstrate critical and innovative thinking • Display competence in oral, written and visual communication. • Show an understanding of opportunities in the field of communication. • Students will demonstrate an understanding of the impact of physics and science on society • Identify the applications in communications.	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit-I Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• Fundamental of EM Waves • Free Space propagation • surface wave propagation • sky wave propagation space wave propagation • Troposphere scatter propagation • structure of Atmosphere- • Virtual height-MUF • Lowest Usable Frequency • skip distance • Optimum length • Duct propagation.	20.09.2021 to 07.10.2021	2 hrs 2 hrs 2 hrs 1 hr 1 hr 2 hrs 1 hr 1 hr 1 hr 1 hr 1 hr	Nil	Nil
Unit-II Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• Introduction - Principle - AM • DSBSC, SSB, Techniques • VSB Techniques • Generation of Amplitude modulation	08.10.2021 to 29.10.2021	1hr 1hr 1hr 2hrs	Nil	Nil

	Signals • Generation of AM, • DSBC, • SSB,VSB • Introduction to PAM, • PCM, PPM, PWM • Introduction of communication system • Elements of Communication System- Information		2hrs 2hrs 1hr 2hrs 1hr 1hr 1hr		
Unit-III Content - 12 Hrs, Assessment -3 Hrs Total – 15 Hrs	• Transmitter, Channel, Receiver –Need for modulation • Theory of angle modulation techniques (FM, PM) • Comparison of Phase modulation and Frequency modulation • Characteristics of PM and FM – Practical issues in FM • (Noise and Frequency Modulation)	30.10.2021 to 25.11.2021	1hr 1hr 1hr 2hrs 2hrs 2hrs	Nil	Nil

	• Electromagnetic Radiation • Elementary doublet • Current and Voltage Distribution		1hr 2hrs 2 hrs 2 hrs		
Unit-IV Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• Resonant Antennas, • Radiation Pattern and length contraction • Antenna Resonance, • Band width, Beam width and Polarization • Grounded and ungrounded Antennas-Effect of Height Feed Point • Impedance Matching. • Electromagnetic Radiation • Elementary doublet • Current and Voltage	26.11.2021 to 20.12.2021	1hr 1hr 1hr 2hrs 2hrs 2hrs 1hr 2hrs 1hr 2 hrs	Nil	Nil
UNIT-V	• Grounded and		1hr	Nil	Nil

Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	ungrounded Antennas- • Effect of Height Feed Point • impedance Matching. • Introduction, coding • digital code • Error Detection and Correction • Characteristic of data Communication System • Transmission System • Network and control consideration • Network organization, network Protocols**)**	22.12.2021 to 31.12.2021	1hr 1hr 2hrs 2hrs 2hrs 1hr 2hrs 2 hrs 1hr		

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (October) CIA / Mid Semester – Unit-I - Unit-III (December)
Assignment	Assignment I –Unit –I and Unit –II (October) Assignment II – Unit –III and Unit – IV (November)
Seminar	Unit –IV (December)
Quiz	Two Mark Quiz Test - Unit I – Unit – IV (December)
Tutorial Ward Meeting	Every Saturday

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TEACHERS PLAN

A. GENERAL INFORMATION

Name of the Faculty	: Ms. R.Rubashri, Department of Physics
Department	: Physics
Programme	: II B.Sc Computer Science.
Programme Code	: BSP
Name of the Paper	: Applied Physics I
Lecture Hours / Practical Hours	: 75 Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
• Understand the number system is Boolean algebra, Boolean operations and functions and sum of products and product of sum representations. • Learned about the design of combinational logic circuits, Half adder and subtractor, then multiplexer, de-multiplexer and encoder etc. • Design of Flip-Flop SR, D, JK, T-Master- Slave and the flip-flop circuits. • Learned about the can design of register, shift register, ring counters and BCD counters. • Develop and analysis the asynchronous counter of the circuits	• To able to perform the different conversion of number systems familiar to basic logic gates AND, OR, NOT, XOR, XNOR. • Acquire the knowledge in Boolean algebra and basic functions by using the basic Boolean properties. • Able to design simple combinational logic using basic gates and its karnaugh map. • To discuss basic combinational and sequential components used to registers, adders, ALU, counters, multiplexer and RAM. • To understand that the design process for digital systems.	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• Introduction to decimal, binary, octal, hexadecimal number systems • Inter conversions Basic and derived logic gates, symbols and their truth tables – AND, OR NOT, NAND, NOR, XOR, and XNOR • Universality of NAND and NOR gates. Fundamental laws of Boolean Algebra • Simplification of logical expressions • Demorgan's theorem - verification- • Universal building block NAND & NOR • Three and Four variable Karnaugh map simplification (both SOP and POS)	20.09.2021 to 07.10.2021	2 hrs 2 hrs 1 hr 1 hr 2 hrs 2 hr 1 hr	Nil	Nil
Unit II Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• Half and full adders • Half and full subtractors • Multiplexer (4x1) • Demultiplexer(1x4) • Decoder • Encoder • BCD Binary Adder	08.10.2021 to 29.10.2021	2 hrs 3 hrs 2 hrs 2 hrs 2 hrs 2 hrs 2 hrs	Nil	Nil

Unit III Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• Flip flop • RS – clocked RS • T and D flip flops • JK and master slave flip flop Counters • Four bit asynchronous ripple counter • Mod-10 counter • Ring counter • Synchronous counter • Shift registers • Left and Right shift registers.	30.10.2021 to 25.11.2021	2 hrs 1 hr 1 hr 1 hr 1 hr 2 hrs 2 hrs 1 hr 1 hr 2 hrs	Nil	Nil
Unit IV Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• Bit- Byte memory • ROM • types of ROM, PROM, EPROM, • E^2PROM • RAM • Static Dynamic • Types of RAM • Storage Devices • Floppy • Hard Disk • Flash drive.	26.11.2021 to 20.12.2021	2 hrs 2 hrs 1 hr 1 hr 1 hr 2 hrs 1 hr 1 hr 1 hr 2 hrs 1 hr	Nil	Nil
Unit V Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• D/A Converter • Variable Resistor network • Binary Ladder D/A Converter • Accuracy and Resolution • A/D Converter Voltage	22.12.2021 to 31.12.2021	2 hrs 2 hrs 1 hr 2 hrs 2 hrs 2 hrs	Nil	Nil

	• Frequency Converters • A/D Converter using V to F Conversion.		2 hrs		

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (October) CIA / Mid Semester – Unit-I - Unit-III (December)
Assignment	Assignment I –Unit –I and Unit –II (October) Assignment II – Unit –III and Unit – IV (November)
Seminar	Unit –IV (December)
Quiz	Two Mark Quiz Test - Unit I – Unit – IV (December)
Tutorial Ward Meeting	Every Saturday

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TEACHERS PLAN

A. GENERAL INFORMATION

Name of the Faculty	: Dr. G. Swetha
Department	: Physics
Programme	: II B.Sc
Programme Code	: BSP
Name of the Paper	: Thermal Physics
Lecture Hours / Practical Hours	: 75 Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
• To understand the phenomena connected with heat as radiation, conduction, different thermal capacities of substances • To learn about the converse process of making heat to do mechanical work. • Students learn about the concepts of heat, work, and energy. • Student learns the different laws of thermodynamics. • To learn thermo-dynamical functions and there relations.	• Students will demonstrate a basic understanding of the concepts and underlying principles of classical physics. • Students will gain an appreciation of the quantitative methods used in Physics • Understand the concept of thermodynamics and there laws. • Understand the Heat Engine and there uses. • Describe the Thermodynamic function and there relations.	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
UNIT I Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• Specific heat of solids • Method of mixtures radation correction • Dulong and Petit's law - Quantum theory • Einstein's theory of specific heat – Debye's theory of specific heat • Specific heat of liquids • Newton's law of cooling • Specific heat of gases • Mayer's Relation • Quantization of various contributions to energy of diatomic molecules • Specific heat of diatomic gases.	20.09.2021 to 07.10.2021	2 hrs 2 hrs 1 hr 1 hr 1 hr 2 hrs 2 hrs 1 hr 1 hr 1 hr 1 hr	Nil	Nil
UNIT II Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• Coefficient of Thermal Conductivity • Rectilinear Flow of Heat along a Bar –	08.10.2021 to	2 hrs 2 hrs 1 hr	Nil	Nil

	• Thermal conductivity of good conductors • Lee's method for metals • Forbe'smethod to find K • Lee's disc method for Bad Conductors • Heat Flow Through a Compound wall • Accretion of Ice on Ponds • Wiedemann-Franz law • Practical applications of conduction of heat.	29.10.2021	2 hr 1 hr 2 hrs 2 hrs 1 hr 2 hrs 2 hrs 2 hrs		
UNIT III Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• Radiation – Stefan's law • Deduction of Newton's law from Stefan's law • Boltzmann's law • Block body radiation • Wein's law – Rayleigh-Jean's law Planck's law • Angstrom Pyrheliometer • Solar constant • Surface	30.10.2021 to 25.11.2021	1 hr 1 hr 1 hr 2 hr 2 hrs 2 hrs 1 hr 2 hrs	Nil	Nil

	temperature of sun • Sources of solar energy • Photo voltaic cell		2 hrs 1 hr		
UNIT IV Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• Joule – Thomson's effect • Porous plug experiment • Liquefaction of gases • Linde's method – Liguefaction of hydrogen • Adiabatic demagnetization • Liquefaction of He • Practical applications of low temperature • Refrigerating mechanism • Air conditioning mechanism	26.11.2021 to 20.12.2021	1 hr 1 hr 1 hr 2 hr 2 hrs 2 hrs 1 hr 1 hr 2 hrs	Nil	Nil
UNIT V Content- 12 Hrs, Assessment -3 Hrs Total – 15Hrs	• Zeroth law of thermodynamics • First law of thermodynamics • Heat engines • Reversible and irreversible process • Carnot's	22.12.2021 to 31.12.2021	1 hr 1 hr 1 hr 1 hr 2 hrs	Nil	Nil

	theorem • Second law of thermodynamics • Thermodynamic Scale of temperature • Entropy – Change of entropy in reversible and irreversible processes • Temperature – entropy diagram (T.S) – Law of increase of entropy • Maxwell's thermo dynamical relations • Clausius' Claypeyron's latent heat equations.		2 hrs 1 hr 1 hr 2 hrs 2 hrs 1 hr		

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (October) CIA / Mid Semester – Unit-I - Unit-III (December)
Assignment	Assignment I –Unit –I and Unit –II (October) Assignment II – Unit –III and Unit – IV (November)
Seminar	Unit –IV (December)
Quiz	Two Mark Quiz Test - Unit I – Unit – IV (December) Every Saturday
Tutorial Ward Meeting	

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TEACHERS PLAN

A. GENERAL INFORMATION

Name of the Faculty	: Dr. G. Swetha
Department	: Physics
Programme	: III B.Sc
Programme Code	: BSP
Name of the Paper	: Biomedical Instrumentation
Lecture Hours / Practical Hours	: 30 Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
• To understand the underlying physical principles of the biological phenomena • To gain the knowledge about the design and functioning of various biomedical instruments. • To introduce an fundamentals of transducers as applicable to physiology • To explore the human body parameter measurements setups • To make the students understand the basic concepts of forensic techniques.	• Study the function of bioelectric potentials and its importance and understand the different types of waveforms generated by organs. • Learn the fundamental knowledge of the electrodes to sense bio potentials. • Learn the basic concepts and interpretations of ECG and BP. • Understand the anatomy of the nervous system and its signal measurements (EMG, CAT). • Analyze and understand the applications of the imaging techniques transmission(x-ray and ultrasound)	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
UNIT I Content- 4 Hrs, Assessment -2 Hrs Total – 6 Hrs	• Different systems of human body skeletal system –circulatory system-respiratory system, digestive system excretory system –regulatory system, reproductive system • muscular system components of bio medical instrument system, Types of electrodes and transducers(basic ideas**).**	20.09.2021 to 07.10.2021	2 hrs 2 hrs	Nil	Nil
UNIT III Content- 4 Hrs, Assessment -2 Hrs Total – 6 Hrs	• Electromyography(EMG), Recording setup , Determination of conduction velocities in motor nerves • Electroretinography (ERG), Recording Techniques, Electrooculography (EOG), Records with high accuracy .	30.10.2021 to 25.11.2021	2 hrs 2 hrs	Nil	Nil

UNIT IV Content- 4 Hrs, Assessment -2 Hrs Total – 6 Hrs	• Introduction-pacemakers, types of pacemakers, methods of stimulation, External and Internal, pacemaker, Different modes of operation – ventricular synchronous – ventricular inhibited pacemaker (demand pave maker) • Defibrillators –types of defibrillators - external and internal defibrillators, heart lung machine, kidneymachine, dialysis -hemodialyser.	26.11.2021 to 20.12.2021	2 hrs 2hrs	Nil	Nil
UNIT V Content- 4 Hrs, Assessment -2 Hrs Total – 6 Hrs	• Digital thermometer X-RAY machine - block diagram radiography and fluoroscopy-application of X-RAY examination • elements of bio-telemetry system single channel telemetry system.	22.12.2021 to 31.12.2021	2 hrs 2 hrs	Nil	Nil

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (October) CIA / Mid Semester – Unit-I - Unit-III (December)
Assignment	Assignment I –Unit –I and Unit –II (October) Assignment II – Unit –III and Unit – IV (November)
Seminar	Unit –IV (December)
Quiz	Two Mark Quiz Test - Unit I – Unit – IV (December)
Tutorial Ward Meeting	Every Saturday

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A. GENERAL INFORMATION

Name of the Faculty	: Dr. G. Swetha
Department	: Physics
Programme	: I M.Sc
Programme Code	: PSP
Name of the Paper	: Methods of Spectroscopy
Lecture Hours / Practical Hours	: 75 Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
• To applications in the determinations of atomic structure, chemical composition and Physical properties of materials. • To explain the absorption and emission spectra. • To justify the difference in intensity between stokes and antistokes line. • Explain NMR Spectroscopy knows how nuclear spins are affected by a magnetic field.	• Explain what it means to use Spectroscopic methods for qualitative and quantitative analysis. • Compare and contrast of atomic and molecular spectra. • Explain the difference between stokes and anti-stokes line in a Raman spectrum. • Understanding of Quantum theory and NMR spectroscopy. • The probability of transition between vibration levels of two electronic states determined by Frank-Condon principle.	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
UNIT I Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Hyperfine structure • Zeeman and Paschen • Back effect of one and two electron systems • Selection rules • Stark effect. • Rotation of diatomic molecules • Rotational spectra of polyatomic molecules • Spectrum of non-rigid rotator • Experimental technique • Polyatomic molecules • Linear, symmetric top and asymmetric top molecules.	20.09.2021 to 07.10.2021	1 hr 1 hr 2 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 2 hrs	Nil	Nil

UNIT II Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Vibrating diatomic molecule • Anharmonic oscillator • Diatomic vibrating rotator • Vibration-rotation spectrum of carbon monoxide • Influence of rotation on the spectrum of polyatomic molecules • Linear and symmetric top molecules.	08.10.2021 to 29.10.2021	2 hrs 2 hrs 2 hrs 3 hrs 3 hrs 1 hr 2 hrs	Nil	Nil
UNIT III Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Quantum theory of Raman effect • Pure rotational Raman spectra • Linear molecules Symmetric top molecules • Vibration Raman spectra • Rotational fine structure • Structural determination	30.10.2021 to 25.11.2021	2 hrs 2 hrs 2 hr 1 hr 1 hr 1 hr	Nil	Nil

	• Raman spectra Instrumentation • Raman effect and molecular structure • Raman activity of molecular vibrations.		2 hrs 2 hrs 2 hrs		

D. ACTIVITIES

Activities Name	**Details**
Test	Monthly Test- Unit-I (October) CIA / Mid Semester – Unit-I - Unit-III (December)
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TEACHERS PLAN

A. GENERAL INFORMATION

Name of the Faculty	: Dr. G. Swetha
Department	: Physics
Programme	: II M.Sc
Programme Code	: PSP
Name of the Paper	: SOLID STATE PHYSICS
Lecture Hours / Practical Hours	: 90 Hours

B. ABOUT THE COURSE

Course Objectives	• Course Outcomes	Teaching Methodology
• The course gives an introduction to solid state physics, and will enable the student to employ classical and quantum mechanical theories needed to understand the physical properties of solids. Emphasis is put on building models able to explain several different phenomena in the solid state. • Understand the influence of lattice vibrations on thermal behavior • Apply the free electron theory to solids to describe electronic behavior and Explain how a lattice vibrates at finite temperature, and how these vibrations determine the heat capacity and conduction. • Know the concept density of states in one, two and three dimensions.	• Students will develop range of communication and teaching skills. • How diffraction of electromagnetic waves on solid matter can be used to obtain lattice structure. • Know the concept of phonons, and how the dispersion relationship appears for different lattice structures. • Explain how a lattice vibrates at finite temperature, and how these vibrations determine the heat capacity and conduction. • Apply models to describe defects and diffusion.	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
UNIT I Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Vibration of monatomic lattices • Lattices with two atoms per primitive cell • Quantization of lattice vibrations • Phonon momentum • Inelastic scattering of neutrons by phonons • Lattice heat capacity • Einstein model • Density of modes in one-dimension and three dimension • Debye model of the lattice heat capacity • Thermal conductivity – Umklapp process.	20.09.2021 to 07.10.2021	2 hrs 2 hrs 2 hrs 2 hrs 2 hrs 1 hr 1 hr 1 hr 1 hr 2 hrs	Nil	Nil
UNIT II Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Energy levels and density of orbitals Fermi-Dirac distribution • Free electron gas in 3D • Heat capacity of electron gas • Electrical conductivity Motion in magnetic fields • Hall effect – Thermal	08.10.2021 to 29.10.2021	1 hrs 1 hr 1 hr 1 hr	Nil	Nil

	conductivity • Nearly conductivity of metals • Nearly free electron model – Electron ina periodic potential • Semiconductors • Band gap – Effective mass • Intrinsic carrier concentration.		1 hr 1 hr 1 hr 2 hrs 1 hr 1 hr		
UNIT III Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Langevin classical theory of dia- and para-magnetisms • Weiss theory –Quantum theory of paramagnetism • Paramagnetic susceptibility of conduction electrons • Hund's rules – Ferroelectric order • Curie point and the exchange integral • Temperature dependence of saturation magnetization • Magnons • Ferromagnetic order-Antiferromagnetic order	30.10.2021 to 25.11.2021	2 hrs 2 hrs 1 hr 2 hrs 2 hrs 1 hr 1 hr 1 hr	Nil	Nil

	• Ferromagnetic domains • Origin of domains • Coercive force and hysteresis..		1 hr 1 hr 1 hr		

D. ACTIVITIES

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