

**E.M. GOPALAKRISHNA KONE YADAVA WOMEN'S COLLEGE**  
An Autonomous Institution -Affiliated to Madurai Kamaraj University  
Re-accredited (3<sup>rd</sup> Cycle) with Grade A<sup>+</sup> & CGPA 3.51 by NAAC



# LESSON PLAN 2022-2023

DEPARTMENT OF **PHYSICS**

**(UG – Even Semester)**



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**LESSON PLAN**  
**2022-2023**

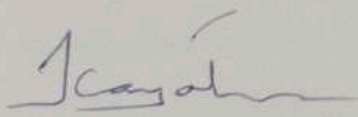
Class : I B.Sc Physics  
Sub. Code : 22OUPH21

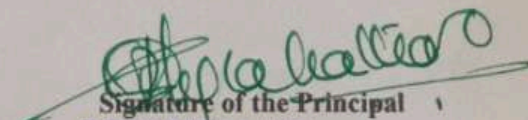
Semester : II

Title of the Paper: Heat and Thermodynamics

Total Hours: 60 Hours

Month	Unit	Description of the Syllabus	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
December	I	Calorimetry Definitions – Newton's law of cooling-Specific heat of liquid by Joule's electrical method –Two Specific heats( $C_p$ & $C_v$ ) of a gas(Mayer's relation) – Specific heat of a gas at constant volume by Joly's Differential Steam Calorimeter-Specific heat of a gas at constant pressure by Regnault's method- Dulong and Petit's law.	12	Chalk & Talk	E. Chinn Monica
January	II	<b>Transmission of Heat and Radiation</b> Introduction – Coefficient of thermal conductivity- Lee's disc method for bad conductors-Spherical shell method (Radial flow of heat)- Cylindrical flow of heat - Thermal Radiation – Applications of heat radiation - Blackbody-Black body in practice-Stefan-Boltzmann law-Wien's Displacement law- Rayleigh-Jeans law-Planck's Radiation law-Planck's Quantum Postulates-Experimental verification of Stefan's law.	12	Chalk & Talk	E. Chinn Monica M.A. Ph
February	III	<b>Low Temperature physics</b> Introduction-Liquefaction of air Linde's Process-Principle of Cascaded cooling Liquefaction of oxygen-Liquefaction of Hydrogen- Liquefaction of Helium (k. Onne's method)-Helium I & Helium II	12	Chalk & Talk	M.A. Ph
March	IV	<b>Kinetic Theory of Gas</b> Kinetic model (Postulates of kinetic theory of gases)-Degrees of freedom - Maxwell's law of equipartition of energy- Specific heats of Mono –Di and polyatomic gas-Adiabatic Expansion of an Ideal gas-Mean free path.	12	Chalk & Talk	E. Chinn Monica
April	V	<b>Thermodynamics</b> First Law of Thermodynamics- Adiabatic process-Isothermal process-Carnot's Ideal heat engine - Second Law of thermodynamics- change in entropy – Change in Entropy in adiabatic process- change of entropy in reversible cycle- change of entropy in irreversible process-Relation of thermodynamical Potentials with their variables(Maxwell's equations).	12	Chalk & Talk	M.A. Ph

  
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**2022-2023**

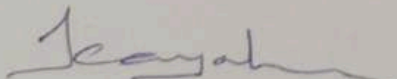
Class : I B.Sc Physics  
Sub. Code : 22OUPHSE21

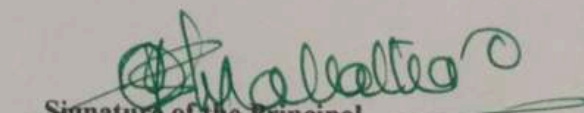
Title of the Paper: Basic Instrumentation Skill

Semester : II

Total Hours : 30 Hours

Month	Unit	Description of the Syllabus	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
Dec	I	<b>Ammeter, Voltmeter, Ohmmeter</b> -Ammeter - DC voltmeter -Digital voltmeter-Ohmmeter-Series type ohmmeter - shunt type ohmmeter.	6	Chalk & Talk	P. R.
January	II	<b>Multimeter</b> -Digital multimeter - Measurement of resistance - measurement of inductance-measurement of capacitance - measurement of Q	6	Chalk & Talk	P. R.
February	III	<b>Transducer</b> Introduction-Capacitive transducer-Inductive transducer-Linear variable differential transducers-Oscillation transducers-Potentiometric transducer-Resistance thermometer.	6	Chalk & Talk	P. R. S.
March	IV	<b>Cathode ray oscilloscope</b> -CRO - Vertical and horizontal voltage amplifiers- Power supply circuits- Cathode ray tube - Special Oscilloscopes- Applications of CRO.	6	Chalk & Talk	S.
April	V	<b>Measuring Instruments</b> - Frequency meter -Time meter- Energy meter -Power meter -Watt meter - Electro-dynamometer Watt meter.	6	Chalk & Talk	S.

  
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**2022-2023**

Class : I B.Sc Physics


Sub. Code : 22OUPHSE22

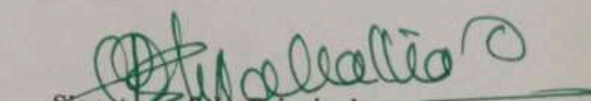
Title of the Paper: Renewable Energy And Energy Harvesting

Semester : II

Total Hours : 60 Hours

Month	Unit	Description of the Syllabus	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
Dec	I	<b>Solar Energy</b> Introduction -The Sun - The Earth - Sun Earth radiation spectrum-Solar Collectors - Flat plate collector - solar water heater - Solar cooker - Box type solar cooker - Paraboloidal dish type solar cooker - Solar PV systems - Classification - Stand-alone solar PV system- Grid interactive solar PV system.	6	Chalk & Talk	B. Subha
January	II	<b>Wind Energy Harvesting</b> Origin of Winds -Major application of wind power Wind Turbine siting - Horizontal axis wind turbine (HAWT) - Vertical axis wind turbine (VAWT) - Effects of wind speed and grid condition.	6	Chalk & Talk	B. Subha
February	III	<b>Ocean energy:</b> Introduction - Tidal energy- Origin and nature of tidal energy - Limitations of tidal energy - Tidal energy technology - Tidal range power.	6	Chalk & Talk	K Sri Isuvarini
March	IV	<b>Biomass energy:</b> Introduction - Photosynthesis process- Biofuels - Biomass resources - Biomass conversion technologies - classification of Biogas plants.	6	Chalk & Talk	K Sri Isuvarini
April	V	<b>Geothermal energy:</b> Introduction - Applications- origin and distribution of geothermal energy - Types of geothermal resources - Geothermal energy in india.	6	Chalk & Talk	k.s. Isuvarini B. Subha

  
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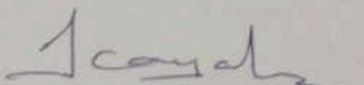
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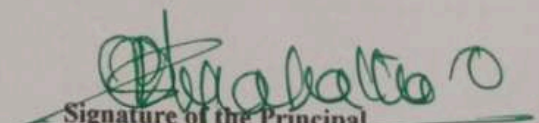
Class : I B.Sc Physics  
Sub. Code : 22OUPHID2

Title of the Paper: Astrophysics

Semester : II  
Total Hours : 30 Hours

Month	Unit	Description of the Syllabus	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
December	I	<b>History of astronomy</b> Acient Astronomy – Surya sidhanta – Modern Astronomy – Tycho Brahe – John Kepler – Galileo – Sir Isaac Newton – Edmund Halley – M.Leavitt.	6	Chalk & Talk	E. Cheri's Monica
January	II	<b>The earth</b> The zones of earth- shape of the earth- radius of the earth- rotation of earth-Foucault's pendulum experiment-gyroscope experiment.	6	Chalk & Talk	E. Cheri's Monica
February	III	<b>The moon</b> Introduction- phases of moon- successive phases of moon- lunar librations- summer and winter full moons-path of the moon with respect to the sun- Surface structure of the moon- The tides.	6	Chalk & Talk	E. Cheri's Monica
March	IV	<b>The stellar universe</b> Introduction- Stellar motion- Solar motion- Constellation- The milky way-survey of constellations-winter constellations-spring constellations-summer constellations-autumn constellations	6	Chalk & Talk	E. Cheri's Monica
April	V	<b>Stars</b> Introduction- Distance of stars- Magnitude of stars-Absolute magnitudes- The colour and size of the stars- Star clusters.	6	Chalk & Talk	E. Cheri's Monica

  
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**2022-2023**

Class : II B.Sc Physics

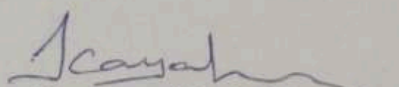
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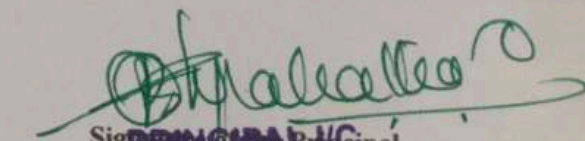
Title of the Paper: Optics

Semester : IV

Total Hours : 60 Hours

Month	Unit	Description of the Syllabus	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
December	I	<b>Geometrical optics:</b> Introduction-Dispersion-Angular and Chromatic Dispersions-Deviation without Dispersion-Dispersion without Deviation-Aberration-First order theory-Third order theory-Spherical aberration-Chromatic Aberration-Chromatic Aberration in a Lens-Objective and Eyepiece-Huygens Eyepiece-Ramsden Eyepiece-Comparison of Ramsden Eyepiece with Huygens Eyepiece.	12	Chalk & Talk	S. Amey Nisha Bibi
January	II	<b>Interference:</b> Introduction-Light waves-Superposition of waves-Interference -Young's double slit experiment-Wavefront division-Coherence-Condition for interference-Thin Film- Newton's rings- Condition for Bright and Dark rings - Michelson's interferometer (Construction and Working).	12	Chalk & Talk	S. Amey Nisha Bibi
February	III	<b>Diffraction:</b> Introduction-Huygens-Fresnel theory-Fresnel's assumptions-Rectilinear propagation of light-Fresnel and Fraunhofer types of Diffraction- Fraunhofer diffraction at a single slit- Fraunhofer Diffraction at a circular aperture.	12	Chalk & Talk	K. Sri Iswari
March	IV	<b>Polarization:</b> Introduction-Polarization-Unpolarized and polarized light-Natural light is unpolarized light-Types of polarization-Plane Polarized -Brewster's law-Polarizer and Analyser(only)-Malus's law, Huygen's explanation of Double refraction-Nicol prism-Effect of polarizer on light of different polarizations.	12	Chalk & Talk	K. Sri Iswari
April	V	<b>Lasers:</b> Introduction - Attenuation of light in an optical medium-Thermal equilibrium-Interaction of light with matter-Einstein coefficients and their relations-Light amplification-Meeting the three requirements- Types of lasers-Ruby laser-Laser Beam Characteristics-Applications..	12	Chalk & Talk	S. Amey Nisha Bibi K. Sri Iswari

  
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Class : III B.Sc Physics

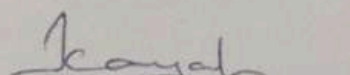
Sub. Code : 17P61

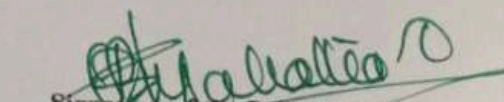
Title of the Paper: Solid state physics

Semester : VI

Total Hours : 60 Hours

Month	Unit	Description of the Syllabus	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
December	I	<b>Interatomic force &amp; bonding in solids:</b> <b>Interatomic force:</b> Introduction - Force between atoms-Cohesion of Atoms and Cohesive energy - calculation of Cohesive energy. <b>Bonding in solids:</b> Ionic Bonding -Bond energy of NaCl Molecule-Calculation of Lattice energy of Ionic crystal-The Born -Haber cycle -Properties of Ionic solids - Examples of Ionic solids -Covalent bond -Metallic bond -Hydrogen bond.	12	Chalk & Talk	S. Priyanka
January	II	<b>Crystal physics:</b> Introduction -Lattice points and space lattice - Unit cells and Lattice parameters-Crystal systems-Metallic crystal structures for SC, BCC, & FCC structures - Other cubic crystal structure - Miller Indices & important features of Miller Indices. <b>X-ray diffraction &amp; diffraction method:</b> Bragg's law - Derivation of Bragg's equation.	12	Chalk & Talk	S. Priyanka
February	III	<b>Magnetism in solids:</b> Magnetic Terminology -Types of Magnetism - Dia magnetism -(Langevin's classical theory)- Paramagnetism -(Langevin's classical theory)-Ferro magnetism-Weiss theory-concepts of Domains and Hysteresis- Anti Ferro magnetism-Ferri magnetism.	12	Chalk & Talk	S. Amey Nisha Bibi
March	IV	<b>Super conductivity:</b> Introduction -Electrical Resistivity -Perfect Diamagnetism or Meissner Effect - Super currents and Critical Temperature -Type-I -Type-II Superconductors.	12	Chalk & Talk	S. Amey Nisha Bibi
April	V	<b>Semi conductors:</b> Introduction -Pure or Intrinsic Semiconductors - Impurity or Extrinsic Semiconductor -Drift velocity, Mobility and conductivity of intrinsic semiconductors-Carrier concentration and Fermi level for intrinsic semiconductors.	12	Chalk & Talk	S. Priyanka S. Amey Nisha Bibi

  
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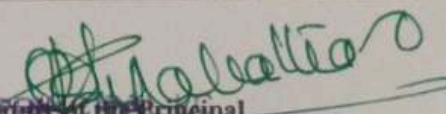
Class : III B.Sc Physics  
Sub. Code : 17P62  
Title of the Paper: Spectroscopy

Semester : VI

Total Hours : 60 Hours

Month	Unit	Description of the Syllabus	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
December	I	<b>Spectra of atoms</b> Angular Momentum of Many Electron Atoms - Normal Zeeman effect-Anomalous Zeeman Effect-Paschen-Bach Effect-Influence of Nuclear Spin-Hyperfine Structure-Stark Effect-Rydberg Atoms-Lamb Shift-Characteristic X-Ray Spectra-Moseley's Law.	12	Chalk & Talk	E. Chock Monica M.A.
January	II	<b>Rotation of molecules</b> Classification of molecules - Interaction of radiation with rotating molecule - Rotational spectra of rigid Diatomic molecule - Isotope effect in Rotational spectra - Intensity of Rotational lines - Non-rigid rotator - Vibrational excitation effect - Linear polyatomic molecules - Symmetric top molecules - Asymmetric top molecules.	12	Chalk & Talk	E. Chock Monica
February	III	<b>IR spectroscopy-diatomic molecule</b> Introduction-Vibrational Energy of a Diatomic Molecule -Infrared Selection rules-Vibrating Diatomic Molecule-Diatomic Vibrating Rotator-Asymmetry of Rotation-Vibration Band- rotation - Vibration spectra of polyatomic molecules.	12	Chalk & Talk	M.A.
March	IV	<b>Raman spectroscopy</b> Introduction- Theory of Raman Scattering-Rotational Raman Spectra- Vibrational Raman Spectra-Mutual Exclusion Principle -Industrial Applications-Raman Microscopy.	12	Chalk & Talk	E. Chock Monica
April	V	<b>Electronic spectra of Diatomic molecules</b> Introduction -Vibrational Coarse Structure-Franck-Condon Principle- Intensity of Vibrational Electronic Spectra- Rotational Fine Structure of Electronic-Vibration Spectra- Photoelectron Spectroscopy.	12	Chalk & Talk	M.A.

  
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Semester : VI

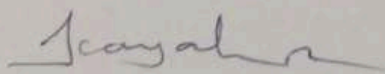
Class : III B.Sc Physics

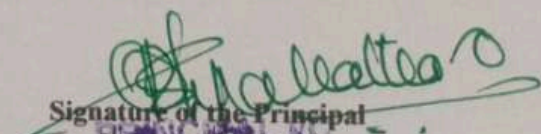
Sub. Code : 17PE6A

Title of the Paper: Theoretical Physics

Total Hours : 60 Hours

Month	Unit	Description of the Syllabus	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
December	I	Classical Mechanics Conservative Forces-Conservation theorem for energy of a particle-Mechanics of a system of particles-Degrees of Freedom – Constraints- Types of Constraints -Generalized coordinates- Transformation Equations - D'Alembert's Principles-Lagrangian Functions-Lagrange's Equation of Motion - Derivation of Lagrange's Equation of Motion -Application of Lagrange's Equation- Simple Pendulum – Compound Pendulum - The Atwood's Machine - The Hamiltonian Function H - Hamiltonian equation with derivation.	12	Chalk & Talk	S. Manoj
January	II	Statistical Mechanics Microscopic and Macroscopic descriptions-Ensembles-Degenerate and Non degenerate Ensembles-Phase space-Micro and Macro states- Thermodynamic probability- Boltzmann's theorem on entropy and probability –Derive the Boltzmann relation connecting entropy and Probability-Fundamental postulates of statistical mechanics- Statistical equilibrium. Maxwell-Boltzmann distribution law-Application of Maxwell-Boltzmann distribution law to an ideal gas-Maxwell-Boltzmann velocity distribution law.	12	Chalk & Talk	S. Manoj
February	III	Quantum Statistics Introduction-Quantum statistics of identical particles - Bose-Einstein distribution law-Application of B.E Statistics-Planck's law of radiation-deduction-Wien's and Rayleigh-Jean's law-Fermi Dirac Distribution Law – Application of Fermi Dirac Statistics-Comparision of three statistis.	12	Chalk & Talk	S. Manoj K. Sri Suman
March	IV	Wave Mechanics Introduction- The De-Broglie wavelength- Davisson and Germer's Experiment- G.P.Thomson's experiment- Wave velocity of De-Broglie waves- Group velocity of De- Broglie waves- Expression for Group velocity- Relation between group velocity and wave velocity-Heisenberg's Uncertainty principle	12	Chalk & Talk	K. Sri Suman
April	V	Relativity Frames of reference-Galilean transformation equation-Michelson Morley experiment-Postulates of Special theory of Relativity-Lorentz transformation equations-Derivation of the Lorentz transformation equations - Einstein's Mass- Energy Relation- Relation between the total energy, rest energy and the Momentum.	12	Chalk & Talk	K. Sri Suman

  
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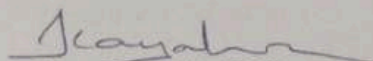
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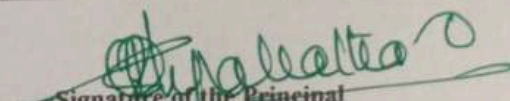
Title of the Paper: Introduction to Microcontrollers 8051

Semester : VI

Total Hours : 30 Hours

Month	Unit	Description of the Syllabus	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
December	I	<b>Introduction to Microcontrollers</b> Introduction - Microcontrollers and Microprocessors- History of Microcontrollers and Microprocessors - Embedded Versus External Memory Devices- 8-bit and 16-bit Microcontrollers-CISC and RISC and Processors- Harvard and Von Neumann Architectures- Commercial Microcontroller Devices .	6	Chalk & Talk	S.priyanka
January	II	<b>8051 Microcontrollers</b> Introduction- MCS -51 Architecture -Registers in MCS-51- General-purpose or working Registers - Stack pointer and program counter - Special Function Registers (SFR).	6	Chalk & Talk	S.priyanka
February	III	<b>8051 Pin Description, Connections, I/O Ports and Memory Organization</b> 8051 Pin Description-8051 Connections -8051 Parallel I/O Ports-Memory Organization.	6	Chalk & Talk	S.priyanka
March	IV	<b>MCS-51 Addressing Modes and Instructions</b> 8051 Addressing Modes- MCS-51 Instruction Set-8051 Instructions and Simple Programs-Using Stack Pointer	6	Chalk & Talk	S.priyanka
April	V	<b>8051 Assembly Language Programming Tools</b> 8051 Assembly Language Programming - 8051 assembler - 8051 programming Template - Development Systems and Tools - Software Simulators of 8051.	6	Chalk & Talk	S.priyanka

  
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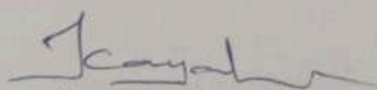
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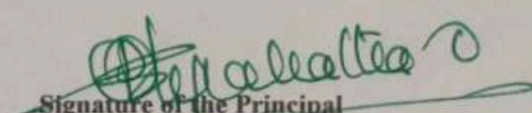
Title of the Paper: Value Education

Semester : VI

Total Hours : 30 Hours

Month	Unit	Description of the Syllabus	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
December	I	Value Education – Need and Importance – Objectives – Types of Values-Nature and concept of Moral education – Value Education Vs Moral Education.	6	Chalk & Talk	B.Subha
January	II	Values of Home –Role of Women in Decision Making – Parental Care-Care of the Aged –Family Conflicts and Resolutions-Gender Justice-Social Justice- Social Integration- Socio Political Awareness.	6	Chalk & Talk	M.A. Th
February	III	Character Formation towards Positive Personality – Truthfulness, Sacrifice, Sincerity, Self control, Altruism, Tolerance, Confidence, Honesty and Courage.	6	Chalk & Talk	B.Subha
March	IV	Karma Yoga in Hinduism –Love and Justice in Christianity –Brotherhood in Islam, Compassion in Buddhism –Ahimsa in Jainism and Courage in Sikhism – Need for Religious Harmony.	6	Chalk & Talk	M.A. Th
April	V	Human rights –Fundamental Rights –Human Rights Act 1993 (Amended 2006)- Consumer Protection Act 1986 – Right to Information Act 2005 –Right to Education Act 2009-Protective Laws for Women –Dowry Prohibition Act 1961 (Amended 1986)And Domestic Violence Act 2005-Constitutional Values- Liberty- Democracy – International Peace.	6	Chalk & Talk	B.Subha M.A. Th

  
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**LESSON PLAN**  
**2022-2023**

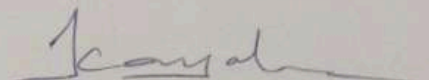
Class : I B.Sc Mathematics  
 Sub. Code : 22OUMAGEPH2

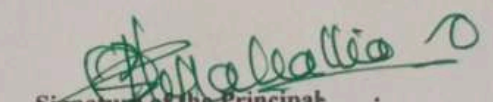
Semester : II

Title of the Paper: Physics-II Thermal physics

Total Hours : 60 Hours

Month	Unit	Description of the Syllabus	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
December	I	<b>Thermal expansion:</b> Linear expansion of solids- Linear expansivity of crystals-Determination of $\alpha$ by Air Wedge method- Expansion of anisotropic solids-Thermostat-Bimetallic thermostat -Isothermal change-Adiabatic change-Equation for the adiabatic change of a perfect gas-The two specific heat capacities of a gas-Difference between the two specific heat capacities-Joly's differential steam calorimeter for finding $C_v$ -Regnault's method to find $C_p$ .	12	Chalk & Talk	S. Anney Nisha Bala
January	II	<b>Conduction, Convection:</b> Introduction-Lee's disc method of determining the thermal conductivity of bad conductor-Analogy between heat flow and electric current-Wiedemann -Franz law- Convection -Convection in the atmosphere- Lapse rate- Green house effect- Atmospheric pollution.	12	Chalk & Talk	S. Anney Nisha Bala
February	III	<b>Radiation:</b> Introduction-Stefan's law -Determination of Stefan's constant by filament heating method -Solar constant -Determination of solar constant by water flow Pyrheliometer-Temperature of the sun - Solar spectrum-Energy distribution in black body spectrum- Statement of Planck's law of radiation-Wien's law -Rayleigh Jean's law.	12	Chalk & Talk	S. Anney Nisha Bala MHA
March	IV	<b>Kinetic theory of gases:</b> Postulates of the kinetic theory of gases- Expression for the pressure of a gas-Mean free path-Transport phenomena-Expression for the coefficient of Diffusion and viscosity-Expression for the coefficient of thermal conductivity -Degrees of freedom-Boltzmann's law of equipartition of energy-Atomicity of gases.	12	Chalk & Talk	MHA
April	V	<b>Thermodynamics:</b> Heat engine-Expression for the efficiency of a Carnot's engine- Carnot's theorem -Second law of thermodynamics-Entropy-Changes of entropy in Carnot's cycle-Change of entropy in conversion of ice into steam -Joule Kelvin effect- Porous Plug experiment-Theory of Porous Plug experiment-Superconductivity.	12	Chalk & Talk	MHA

  
 Signature of the HOD

  
 Signature of the Principal  
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**MADURAI-625014.**





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**LESSON PLAN**  
**2022-2023**

Class : II B.Sc Maths  
 Sub. Code : 21AP4  
 Title of the Paper: Optics

Semester : IV

Total Hours : 60 Hours

Month	Unit	Description of the Syllabus	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
December	I	<b>Geometrical optics</b> Convex lens -Principal Focus and Focal Planes-Refraction through a thin lens- Definition of Cardinal points and Respective Planes-Dispersion through a Prism-Cauchy's Formula- Achromatic in Prisms- Dispersion without Deviation-Direct vision Spectroscope. <b>Aberrations in Lenses:</b> Spherical aberration in a lens-Chromatic aberration in a lens-Achromatic Combination of Lenses.	12	Chalk & Talk	E. Uthaisarashini
January	II	<b>Interference</b> Introduction-Theory of interference fringes-Fresnel's Biprism-Displacement of fringes-Colours of thin films-Newton's rings-Determination of wavelength of sodium light by Newton's rings -Determination of refractive index of a liquid by Newton's rings-Michelson's interferometer-Uses of Michelson's interferometer	12	Chalk & Talk	E. Uthaisarashini
February	III	<b>Diffraction</b> Introduction-Fresnel's explanation of rectilinear propagation of light-Zone plate-Diffraction at a circular aperture-Diffraction at a thin wire-Fraunhofer diffraction at a single slit-Fraunhofer diffraction at a double slit-Plane transmission diffraction grating-Dispersive power of a grating - Resolving power of telescope-Resolving power of prism-Resolving power of a plane diffraction grating	12	Chalk & Talk	S. Priyanka
March	IV	<b>Polarisation</b> Introduction-Polarisation by reflection-Pile of plates-Law of Malus-Double refraction- Huygen's theory of double refraction in uniaxial crystals-Huygen's construction for double refraction in uniaxial crystals-Quarter wave plate-Half wave plate-Specific Rotation-Laurent's half shade polarimeter-Determination of Specific Rotation of sugar Solution	12	Chalk & Talk	E. Uthaisarashini S. Priyanka
April	V	<b>Spectroscopy</b> Introduction-Infrared spectroscopy- Ultraviolet spectroscopy-Quartz Spectroscopy near U.V region-Application of Ultraviolet Spectroscopy-Rayleigh's scattering-Raman effects-Experimental study of Raman effect-Quantum theory of raman effect-Application of raman effect-Nuclear magnetic resonance.	12	Chalk & Talk	S. Priyanka

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**LESSON PLAN**  
**2022-2023**

Semester : IV

Class : II B.Sc Chemistry

Sub. Code : 21AP2

Title of the Paper: Physics – II Thermal Physics

Total Hours : 60 Hours

Month	Unit	Description of the Syllabus	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
December	I	<b>Thermal expansion:</b> Linear expansion of solids- Linear expansivity of crystals-Determination of $\alpha$ by Air Wedge method- Expansion of anisotropic solids- Solids of low expansivity & their uses-Anomalous expansion of water -Thermostat- Bimetallic thermostat -Isothermal change-Adiabatic change-Equation for the adiabatic change of a perfect gas-The two specific heat capacities of a gas-Difference between the two specific heat capacities-Joly's differential steam calorimeter for finding $C_v$ -Regnault's method to find $C_p$ .	12	Chalk & Talk	<i>K.A. [Signature]</i>
January	II	<b>Conduction, Convection:</b> Introduction-Lee's disc method of determining the thermal conductivity of bad conductor-Analogy between heat flow and electric current-Wiedemann -Franz law- Thermal conductivity of air-Lee's disc method-Convection - Convection in the atmosphere- .0-Stability of the atmosphere- Green house effect- Atmospheric pollution.	12	Chalk & Talk	<i>S. Ameej Nishe Bels [Signature]</i>
February	III	<b>Radiation:</b> Introduction-Stefan's law -Determination of Stefan's constant by filament heating method -Solar constant - Determination of solar constant by water flow Pyrheliometer- Temperature of the sun - Temperature of the sun using Wien's Displacement law-Solar spectrum-Energy distribution in black body spectrum- Statement of Planck's law of radiation-Wien's law - Rayleigh Jean's law.	12	Chalk & Talk	<i>S. Ameej Nishe Bels [Signature]</i>
March	IV	<b>Kinetic theory of gases:</b> Postulates of the kinetic theory of gases- Expression for the pressure of a gas-Mean free path-Transport phenomena-Expression for the coefficient of Diffusion & viscosity- Expression for the coefficient of thermal conductivity-Maxwell's law of distribution of molecular speeds-Degrees of freedom- Boltzmann's law of equipartition of energy-Atomicity of gases.	12	Chalk & Talk	<i>S. Ameej Nishe Bels [Signature]</i>
April	V	<b>Thermodynamics:</b> Heat engine-Expression for the efficiency of a Carnot's engine- Carnot's theorem -Second law of thermodynamics- Entropy-Changes of entropy in Carnot's cycle-Change of entropy in conversion of ice into steam -Joule Kelvin effect- Porous Plug experiment-Theory of Porous Plug experiment- Adiabatic diamagnetisation-Superconductivity.	12	Chalk & Talk	<i>[Signature]</i>

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Signature of the HOD

*[Signature]*  
Principal  
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**LESSON PLAN**

**2022-2023**

Class : III B.Sc Chemistry

Sub. Code : 21AP4

Title of the Paper: Optics

Semester : VI

Total Hours : 60 Hours

Month	Unit	Description of the Syllabus	Hours Allocated	Teaching Mode & Methods	Course Teacher Signature
December	I	<b>Geometrical optics</b> Convex lens -Principal Focus and Focal Planes-Refraction through a thin lens- Definition of Cardinal points and Respective Planes-Dispersion through a Prism-Cauchy's Formula- Achromatic in Prisms- Dispersion without Deviation-Direct vision Spectroscope. <b>Aberrations in Lenses:</b> Spherical aberration in a lens-Chromatic aberration in a lens-Achromatic Combination of Lenses.	12	Chalk & Talk	E. Chris Mon
January	II	<b>Interference</b> Introduction-Theory of interference fringes-Fresnel's Biprism-Displacement of fringes-Colours of thin films-Newton's rings-Determination of wavelength of sodium light by Newton's rings -Determination of refractive index of a liquid by Newton's rings-Michelson's interferometer-Uses of Michelson's interferometer	12	Chalk & Talk	E. Chris Mon
February	III	<b>Diffraction</b> Introduction-Fresnel's explanation of rectilinear propagation of light-Zone plate-Diffraction at a circular aperture-Diffraction at a thin wire-Fraunhofer diffraction at a single slit-Fraunhofer diffraction at a double slit-Plane transmission diffraction grating-Dispersive power of a grating - Resolving power of telescope-Resolving power of prism-Resolving power of a plane diffraction grating	12	Chalk & Talk	S. priyanka
March	IV	<b>Polarisation</b> Introduction-Polarisation by reflection-Pile of plates-Law of Malus-Double refraction- Huygen's theory of double refraction in uniaxial crystals-Huygen's construction for double refraction in uniaxial crystals-Quarter wave plate-Half wave plate-Specific Rotation-Laurent's half shade polarimeter-Determination of Specific Rotation of sugar Solution	12	Chalk & Talk	S. priyanka E. Chris Mon
April	V	<b>Spectroscopy</b> Introduction-Infrared spectroscopy- Ultraviolet spectroscopy-Quartz Spectroscopy near U.V region-Application of Ultraviolet Spectroscopy-Rayleigh's scattering-Raman effects-Experimental study of Raman effect-Quantum theory of raman effect-Application of raman effect-Nuclear magnetic resonance.	12	Chalk & Talk	S. priyanka

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