

KUMARI VIDYAVATI ANAND D.A.V College for Women, Karnal

Lesson Plan for the Even Semester (January to May,2025)

Name of the Teacher– Ms. Vandana and Dr. Richa khokhra

Class- B.SC. 2ND Year/ 4th semester

Subject- Waves and Optics

Paper-B23-PHY-401

9 Feb, 2025	Sunday
3 rd Week 10Feb -15 Feb	Unit 1: Interference Interference by Division of wave front: Young's double slit experiment, Coherence, conditions of Interference, Fresnel's biprism and its applications to determination of wavelength of sodium light and thickness of a mica sheet
12 Feb, 2025 16 Feb, 2025	Guru RavidasJayanti Sunday
4 th Week 17 Feb-22 Feb	Phase change on reflection Interference by division of amplitude: Interference by division of Amplitude, thin films, plane parallel film Interference due to transmitted light and reflected light, wedge shaped film .
23 Feb, 2025	Sunday
5 th Week 24 Feb- 28 Feb	Newton's rings Unit 2: Diffraction Fresnel diffraction: Huygens- Fresnel theory, Fresnel assumptions rectilinear propagation of light, diffraction at a straight edge, rectangular slit and diffraction at a circular aperture
26 Feb, 2025	MahaShivratri

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March,2025 1 st Week 1 March, 2025	
2 March,2025	Sunday
2 nd Week 3 March– 8 March	Diffraction due to a narrow slit, diffraction due to a narrow wire. Fraunhofer diffraction: Single slit diffraction, double slit diffraction , plane transmission grating spectrum ,dispersive power of grating, limit of resolution, Rayleigh's criterion, resolving power of telescope and a grating.
3 rd Week 9 March - 16 March	Holi Vacations
4 th Week 17 March–22 March	POLARIZATION Polarization: Polarisation by reflection, refraction and scattering, Malus Law, Phenomenon of double refraction, Huygens's wave theory of double refraction (Normal and oblique incidence),
23 March,2025	Sunday, ShaheediDiwas/ Martyrdom Day of Bhagat Singh, Rajguru&Sukhdev
5 th Week 24 March–29 March	Analysis of polarized Light. Nicol prism, Quarter wave plate and half wave plate, production and detection of (i) Plane polarized light (ii) Circularly polarized light and (iii) Elliptically polarized light.
30 March,2025	Sunday
6 th Week 31 March, 2025	Id-ul- Fitr

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April,2025 1 st Week 1April –5April	Optical activity, Fresnel's theory of optical rotation, Specific rotation, Polarimeters (half shade and Biquartz)
6April,2024	Sunday, Ram Navmi
2 nd Week 7April-12April	Lasers: Basic concept of absorption and emission of radiations, amplification and population inversion; Main components of lasers: (i) Active Medium (ii) Pumping (iii) Optical Resonator;
10 April, 2025 13April,2025 14April,2025	MahavirJayanti Sunday, Vaisakhi Dr. B.R.AmbedkarJayanti
3 rd Week 15April -19April	Properties of laserbeam: Monochromaticity, Directionality, Intensity, Coherence (Spatial &Temporal coherence); Metastable state, Excitation mechanism
20April,2025	Sunday
4 th Week 21April -28April	Sessional Exams
27 April, 2025 29 April, 2025 30 April, 2025	Sunday ParshuramJayanti AkshyaTritya

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May,2025 1 st Week 1 May -3 May	Types of Lasers (He-Ne Laser & Ruby Laser), Applications of Lasers
4May ,2025	Sunday
2 nd Week 5May–10 May	Fibre optics: Optical fibres and their properties, Principal of light propagation through optical fibre
11May,2025	Sunday
3 rd Week 12May-17May	Acceptance angle and numerical aperature, numericals, CLASS TEST
18May ,2025	Sunday
4 th Week 19 May - 24 May	Types of optical fibres: single mode fibres and multimode fibres , Advantages and disadvantages of optical fibres
25May ,2025	Sunday
5 th Week 26 May - 31 May	Applications of optical fibres,Fibre optic sensors: Fibre Bragg Grating
29May ,2025	MaharanaPartapJayanti
1 June,2025 Onwards	UniversityExaminations

KUMARI VIDYAVATI ANAND D.A.V College for Women, Karnal

Lesson Plan for the Even Semester (January to May,2025)

Name of the Teacher – Ms.Priya Kamboj

Class- B.sc Ist year

Subject- Electricity, Magnetism and Electromagnetic theory

Paper- B23-PHY-201

9 Feb, 2025	Sunday
3 rd Week 10Feb -15 Feb	UNIT-I Vector Background and Electric Field : Gradient of a scalar and its physical significance, Line, Surface and Volume integrals of a vector and their physical significance,
12 Feb, 2025 16 Feb, 2025	Guru Ravidas Jayanti Sunday
4 th Week 17 Feb-22 Feb	Flux of a vector field, Electrostatic Potential, Potential as line integral of field, potential difference Derivation of electric field E from potential as gradient.
23 Feb, 2025	Sunday
5 th Week 24 Feb- 28 Feb	Divergence and curl of a vector and their physical significance, Gauss's divergence theorem, Stoke's theorem. Conservative nature of Electrostatic Field.
26 Feb, 2025	MahaShivratri

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Class- B.sc Ist year

Subject- Electricity, Magnetism and Electromagnetic theory

Paper- B23-PHY-201

March,2025 1 st Week 1 March, 2025	Derivation of Laplace and Poisson equations. Electric flux, Gauss's Law,
2 March,2025	Sunday
2 nd Week 3 March– 8 March	Differential form of Gauss's law and applications of Gauss's law. Mechanical force of charged surface, Energy per unit volume UNIT-II Magnetic Field: Bio-Savart law and its simple applications: straight wire and circular loop, Current Loop as a Magnetic Dipole and its Dipole Moment
3 rd Week 9 March - 16 March	Holi Vacations
4 th Week 17 March–22 March	Ampere's Circuital Law and its applications to (1) Solenoid and (2) Toroid, properties of B: curl and divergence, Magnetic Properties of Matter: Force on a dipole in an external field, Electric currents in Atoms, Electron spin and Magnetic moment, types of magnetic materials, Magnetization vector (M), Magnetic Intensity (H), Magnetic Susceptibility and permeability, Relation between B, H and M, Electronic theory of dia and paramagnetism
23 March,2025	Sunday, ShaheediDiwas/ Martyrdom Day of Bhagat Singh, Rajguru&Sukhdev
5 th Week 24 March–29 March	Domain theory of ferromagnetism (Langevin's theory), Cycle of Magnetization- B-H curve and hysteresis loop: Energy dissipation, Hysteresis loss and importance of Hysteresis Curve CLASS TEST
30 March,2025	Sunday
6 th Week 31 March, 2025	Id-ul- Fitr

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Class- B.sc Ist year

Subject- Electricity, Magnetism and Electromagnetic theory

Paper- B23-PHY-201

April,2025 1 st Week 1April –5April	UNIT-III Time varying electromagnetic fields: Electromagnetic induction, Faraday's laws of induction and Lenz's Law, Self-inductance, Mutual inductance, Energy stored in a Magnetic field,
6April,2024	Sunday, Ram Navmi
2 nd Week 7April-12April	Derivation of Maxwell's equations, Displacement current, Maxwell's equations in differential and integral form and their physical significance.
10 April, 2025 13April,2025 14April,2025	Mahavir Jayanti Sunday, Vaisakhi Dr. B.R.Ambedkar Jayanti
3 rd Week 15April -19April	Electromagnetic Waves: Electromagnetic waves, Transverse nature of electromagnetic wave, energy transported by electromagnetic waves, Poynting vector, Poynting theorem. Propagation of Plane electromagnetic waves in free space & Dielectrics
20April,2025	Sunday
4 th Week 21April -28April	Sessional Exams
27 April, 2025 29 April, 2025 30 April, 2025	Sunday Parshuram Jayanti Akshya Tritya

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Paper- B23-PHY-201

May,2025 1 st Week 1 May -3 May	UNIT- IV DC current Circuits: Electric current and current density, Electrical conductivity and Ohm's law (Review), Kirchhoff's laws for D.C. networks,
4May ,2025	Sunday
2 nd Week 5May–10 May	Network theorems: Thevenin's theorem, Norton theorem, Superposition theorem. CLASS TEST
11May,2025	Sunday
3 rd Week 12May-17May	Alternating Current Circuits: A resonance circuit, Phasor, Complex Reactance and Impedance, Analysis for RL, RC and LC Circuits, Series LCR
18May ,2025	Sunday
4 th Week 19 May - 24 May	Circuit: (1) Resonance, (2) Power Dissipation (3) Quality Factor and (4) Band Width,
25May ,2025	Sunday
5 th Week 26 May - 31 May	Parallel LCR Circuit. REVISION
29May ,2025	MaharanaPartapJayanti
1 June,2025 Onwards	UniversityExaminations

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Lesson Plan for the Even Semester (January to April, 2025)

Name of the Teacher – Ms. Vandana
Class- B.Sc. - Third Year (6th Semester)
Subject- Atomic and Molecular Spectroscopy
Paper- PH- 602

January, 2025 1 st Week 1 Jan – 4 Jan	Unit – I: Historical background of atomic spectroscopy Introduction of early observations, emission and absorption spectra, atomic spectra, wave number, spectrum of Hydrogen atom in Balmer series
5 Jan, 2025 6 Jan, 2025	Sunday Shri Guru Gobind Singh Ji Jayanti
2 nd Week 6 Jan – 11 Jan	Bohr atomic model (Bohr's postulates) spectra of Hydrogen atom, explanation of spectral series in Hydrogen atom, un-quantized states and continuous spectra, spectral series in absorption spectra,
12 Jan, 2025	Sunday
3 rd Week 13 Jan – 18 Jan	effect of nuclear motion on line spectra (correction of finite nuclear mass), variation in Rydberg constant due to finite mass, shortcomings of Bohr's theory, Wilson Sommerfeld quantization rule, de-Broglie interpretation of Bohr quantization law, Bohr's corresponding principle,
19 Jan, 2025	Sunday
January, 2025 4 th Week 20 Jan – 25 Jan	Sommerfeld's extension of Bohr's model, Sommerfeld relativistic correction, Shortcomings of Bohr-Sommerfeld theory
26 Jan, 2025	Sunday, Republic Day
5 th Week 27 Jan – 31 Jan	Vector atom model; space quantization, electron spin, coupling of orbital and spin angular momentum, Spectroscopic terms and their notation, quantum numbers associated with vector atom model, transition probability and selection rules. Class Test

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Name of the Teacher – Ms. Vandana
Class- B.Sc. - Third Year (6th Semester)
Subject- Atomic and Molecular Spectroscopy
Paper- PH- 602

2 Feb, 2025	Sunday, BasantPanchmi
2 nd Week 3 Feb – 8 Aug	Unit –II: Vector Atom Model (single valance electron) Orbital magnetic dipole moment (Bohr megnaton), behavior of magnetic dipole in external magnetic field; Larmors’ precession and theorem.
9 Feb, 2025	Sunday
3 rd Week 10Feb -15 Feb	Penetrating and Non-penetrating orbits, Penetrating orbits on the classical model; Quantum defect, Spin orbit interaction energy of the single valance electron. Class Test
12 Feb, 2025 16 Feb, 2025	Guru RavidasJayanti Sunday
4 th Week 17 Feb-22 Feb	Spin orbit interaction for penetrating and non-penetrating orbits. quantum mechanical relativity correction, Hydrogen fine spectra, Main features of Alkali Spectra and their theoretical interpretation
23 Feb, 2025	Sunday
5 th Week 24 Feb- 28 Feb	Term series and limits, Rydeburg-Ritze combination principle. Absorption spectra of Alkali atoms. observed doublet fine structure in the spectra of alkali metals and its Interpretation, Intensity rules for doublets, comparison of Alkali spectra and Hydrogen spectrum
26 Feb,2025	MahaShivratri

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Subject- Atomic and Molecular Spectroscopy
Paper- PH- 602

2 March,2025	Sunday
2 nd Week 3 March– 8 March	UNIT-III: Vector Atom model (two valance electrons) Essential features of spectra of Alkaline-earth elements, Vector model for two valance electron atom: application of spectra. Coupling Schemes;LS or Russell – Saunders Coupling Scheme, JJ coupling scheme
3 rd Week 9 March - 16 March	Holi Vacations
4 th Week 17 March–22 March	Interaction energy in L-S coupling (sp, pd configuration), Lande interval rule, Pauli principal
23 March,2025	Sunday, ShaheediDiwas/Martyrdom Day of Bhagat Singh, Rajguru& Sukhdev
5 th Week 24 March–29 March	Sessional Exams
30 March,2025	Sunday
6 th Week 31 March, 2025	Id-ul- Fitr

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Paper- PH- 602

April,2025 1 st Week 1April –5April	Periodic classification of the elements. Interaction energy in JJ Coupling (sp, pd configuration), equivalent and non-equivalent electrons, Two valance electron system-spectral terms of non-equivalent and equivalent electrons. Comparison of spectral terms in L-S And J-J coupling. Hyperfine structure of spectral lines and its origin; isotope effect, nuclear spin
6April,2024	Sunday
2 nd Week 7April-12April	Unit –IV: Atom in External Field Zeeman Effect (normal and Anomalous),Experimental set-up for studying Zeeman effect, Explanation of normal Zeeman effect(classical and quantum mechanical) Explanation of anomalous Zeeman effect(Lande g-factor), Zeeman pattern of D1 and D2 lines of Na atom
10 April, 2025 13April,2025 14April,2025	MahavirJayanti Sunday Dr. B.R.AmbedkarJayanti
3 rd Week 15April -19April	Paschen-Back effect of a single valence electron system. Weak field Stark effect of Hydrogen atom.
20April,2025	Sunday
4 th Week 21April -26April	Molecular Physics: General Considerations, Electronic States of Diatomic Molecules, Rotational Spectra (Far IR and Microwave Region), Vibrational Spectra (IR Region)
27April,2025	Sunday
5 th Week 28April, 2025	Rotator Model of Diatomic Molecule, Raman Effect, Electronic Spectra. Revision
29 April, 2025 30 April, 2025	ParshuramJayanti AkshyaTritya

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Name of the Teacher– Dr. Richa khokhra

Class- B.Sc.-Third Year (6th Semester)

Subject- Solid State and Nano Physics

Paper- PH-601

January, 2025 1 st Week 1 Jan – 4 Jan	Unit I: Crystal Structure I Crystalline and glassy forms, liquid crystals, crystal structure, periodicity, lattice and basis, crystal translational vectors and axes.
5 Jan, 2025 6 Jan, 2025	Sunday Shri Guru Gobind Singh Ji Jayanti
2 nd Week 6 Jan – 11 Jan	Unit cell and Primitive Cell, Wigner Seitz primitive Cell, symmetry operations for a two dimensional crystal
12 Jan, 2025	Sunday
3 rd Week 13 Jan – 18 Jan	Bravais lattices in two and three dimensions. Crystal planes and Miller indices, Interplanar spacing, Crystal structures of Zinc Sulphide, Sodium Chloride and Diamond.
19 Jan, 2025	Sunday
January, 2025 4 th Week 20 Jan-25 Jan	Unit II: Crystal Structure II X-ray diffraction, Bragg's Law and experimental X-ray diffraction methods.
26 Jan, 2025	Sunday, Republic Day
5 th Week 27 Jan– 31 Jan	K-space and reciprocal lattice and its physical significance Reciprocal lattice vectors,

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Class- B.Sc.-Third Year (6th Semester)

Subject- Solid State and Nano Physics

Paper- PH-601

2 Feb, 2025	Sunday, BasantPanchmi
2 nd Week 3 Feb – 8 Feb	Reciprocal lattice to a simple cubic lattice, B.C.C and F.C.C.
9 Feb, 2025	Sunday
3 rd Week 10Feb -15 Feb	Unit III: Super conductivity Historical introduction, Survey of superconductivity,
12 Feb, 2025 16 Feb, 2025	Guru RavidasJayanti Sunday
4 th Week 17 Feb-22 Feb	Super conducting systems, High Tc Super conductors, Isotopic Effect, Critical Magnetic Field
23 Feb, 2025	Sunday
5 th Week 24 Feb- 28 Feb	Meissner Effect, London Theory and Pippards' equation, Classification of Superconductors (type I and Type II), BCS Theory of Superconductivity
26 Feb,2025	MahaShivratri

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Class- B.Sc.-Third Year (6th Semester)

Subject- Solid State and Nano Physics

Paper- PH-601

2 March,2025	Sunday
2 nd Week 3 March– 8 March	Flux quantization, Josephson Effect (AC and DC), Practical Applications of superconductivity and their limitations,
3 rd Week 9 March - 16 March	Holi Vacations
4 th Week 17 March–22 March	Power application of superconductors. Class Test
23 March,2025	Sunday, ShaheediDiwas/Martyrdom Day of Bhagat Singh, Rajguru& Sukhdev
5 th Week 24 March–29 March	Sessional Exams
30 March,2025	Sunday
6 th Week 31 March, 2025	Id-ul- Fitr

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Subject- Solid State and Nano Physics

Paper- PH-601

April,2025 1 st Week 1April –5April	Unit IV: Introduction to Nano Physics Definition, Length scale, Importance of Nano-scale and technology, History of Nantechnology
6April,2024	Sunday
2 nd Week 7April-12April	Benefits and challenges in molecular manufacturing. Molecular assembler concept,
10 April, 2025 13April,2025 14April,2025	MahavirJayanti Sunday Dr. B.R.AmbedkarJayanti
3 rd Week 15April -19April	Understanding advanced capabilities. Vision and objective of Nano-technology, Nanotechnology in different field, Automobile, Electronics, Nano-biotechnology, Materials, Medicine.
20April,2025	Sunday
4 th Week 21April -26April	Revision And Class Test
27April,2025	Sunday
5 th Week 28April, 2025	Revision And Class Test
29 April, 2025 30 April, 2025	ParshuramJayanti AkshyaTritya