

Govt. College Mangali- Lesson Plan Even Sem 2025-26 (Dept. of Physics)

Academic Calender- Even Sem 2025-26	
Teaching-I	01.01.2026 to 28.02.2026
Vacations(Holi)	01.03.2026 to 08.03.2026
Teaching-II	09.03.2026 to 04.05.2026
End Semester Examinations (Major Test)(for UTD and Affiliated Colleges)	05.05.2026 onwards
Summer Vacations (for Affiliated Colleges)	27.05.2026 to 07.07.2026

Name of Teacher: Dr. Manjeet Singh		Class: B. Sc. IV th Sem	Session: 2025-26
Subject: Physics		Nomenclature of Paper: Optics	Paper Code: C24PHY401T
Week	Jan 26/Duration	Topic- Unit-I	
1	01 Jan-04 Jan	Interference: Division of amplitude and division of wave front	
2	05 Jan-11 Jan	Young's Double Slit experiment, Fresnel's Biprism	
3	12 Jan-18 Jan	Phase change on reflection: Stokes' treatment	
4	19 Jan-25 Jan	Interference in Thin Films: parallel and wedge-shaped films	
5	26 Jan-31 Jan	Newton's Rings: measurement of wavelength and refractive index (for reflected wave).	
Week	Feb26/Duration	Topic- Unit-II	
1	01 Feb-08 Feb	Diffraction: Fresnel Diffraction: Fresnel's Assumptions, Fresnel's Half-Period Zones for Plane Wave, Rectilinear Propagation of Light	
2	09 Feb-15 Feb	Theory of a Zone Plate and its application, Multiple Foci of a Zone Plate, Fraunhofer diffraction: Single slit	
3	16 Feb-22 Feb	Double slit multiple slits and 'n' multiple slits, Diffraction grating (Only Qualitative)	
4	23 Feb-28 Feb	Resolving power of Grating, Rayleigh Criteria of the limit of resolution and Resolving Power of a telescope.	
Week	March26/Duration	Topic- Unit-III	
1	09 March-15 March	Polarization: Polarization by reflection, refraction and scattering, Malus Law, Phenomenon of double refraction, Analysis of polarized Light. Nicol prism	
2	16 March-22 March	Quarter wave plate and half wave plate, production and detection of (i) Plane polarized light (ii) Circularly polarized light and (iii) Elliptically polarized light	
3	23 March- 31 March	Optical activity, Fresnel's theory of optical rotation, Specific rotation. Assignment and Test	
Week	April26/Duration	Topic- UNIT-IV	
1	01 April -05 April	Fiber Optics: Optical Fibers - Construction and working, ..	
2	06 April -12 April	Critical angle of propagation, Acceptance angle	
3	13 April -19 April	Numerical Aperture, Modes of propagation	
4	20 April-26 April	Types of optical fibers, Attenuation.	
5	27 April-04 May	Advantages and applications of Optical Fiber. Assignment and Test	

Manjeet Singh

Name of Teacher: Dr. Manjeet Singh Class: B. Sc. VI th Sem Session: 2025-26		
Subject: Physics Nomenclature of Paper: Solid State Physics Paper Code: CPL 601		
Week	Jan 26/Duration	Topic- Unit-I
1	01 Jan-04 Jan	Crystal Structure I: Crystalline and glassy forms, liquid crystals, crystal structure, periodicity, lattice and basis
2	05 Jan-11 Jan	Crystal translational vectors and axes. Unit cell and Primitive Cell,
3	12 Jan-18 Jan	Wigner Seitz primitive Cell, symmetry operations for a two dimensional crystal, Bravais lattices in two and three dimensions.
4	19 Jan-25 Jan	Crystal planes and Miller indices, Inter-planer spacing, Crystal structures of Zinc Sulphide, Silicon, Sodium Chloride and Diamond.
5	26 Jan-31 Jan	Assignment and Test
Week	Feb26/Duration	Topic- Unit-II
1	01 Feb-08 Feb	Crystal Structure II: X-ray diffraction, Bragg's Law and experimental X-ray diffraction methods.
2	09 Feb-15 Feb	K-space and reciprocal lattice and its physical significance, reciprocal lattice vectors, reciprocal lattice to a simple cubic lattice, b.c.c. and f.c.c
3	16 Feb-22 Feb	Lattice vibrations: Phonon concept, Vibration of monoatomic and diatomic lattice, Acoustical and optical modes
4	23 Feb-28 Feb	Dispersion relation for phonons, Dulong and Petit's Law, Einstein and Debye theories of specific heat of solids, Debye T ³ law Assignment and Test
Week	March26/Duration	Topic- Unit-III
1	09 March-15 March	Band Theory: Free electron gas models, Nearly free electron model, Bloch function, Kronig Penny model
2	16 March-22 March	Velocity and Effective mass of electron, Distinction between metals, semiconductors and insulators, Hall Effect
3	23 March- 31 March	Magnetic Properties of Matter: Dia-, Para-, Ferromagnetic Materials, Classical Langevin Theory of dia - and Paramagnetic Domains, Curie's law. Assignment and Test
Week	April26/Duration	Topic- Unit-IV
1	01 April -05 April	Super Conductivity: Historical introduction
2	06 April -12 April	Survey of superconductivity, Super conducting systems
3	13 April -19 April	High T _c Super conductors, Isotopic Effect, Critical Magnetic Field, Meissner Effect
4	20 April-26 April	London Theory and Penetration Depth, Classification of Superconductors (type I and Type II)
5	27 April-04 May	BCS Theory of Superconductivity, Flux quantization, Josephson Effect (AC and DC), Practical Applications of superconductivity and their limitations. Assignment and Test

Manjeet Singh

Name of Teacher: Dr. Manjeet Singh Class: B. Sc. VI th Sem Session: 2025-26		
Subject: Physics Nomenclature of Paper: Quantum Mechanics Paper Code: CPL 602		
Week	Jan 26/Duration	Topic- Unit-I
1	01 Jan-04 Jan	Basics of Quantum Mechanics: Wave function and its physical significance, Properties of wave-function,
2	05 Jan-11 Jan	Orthogonality and Normalization of wave function, Time dependent Schrodinger wave equation, Time Independent Schrodinger Equation
3	12 Jan-18 Jan	Momentum and Energy operators; Hermitian Operators- Eigenvalue and Eigen functions, Commutator relations of various operators,
4	19 Jan-25 Jan	Stationary states; Probabilities and normalization, Probability current densities and its relation to wavefunction
5	26 Jan-31 Jan	Expectation Values of Dynamical quantities, Particle in 1-dimension Infinite Square Well (Energy levels and general Wavefunction) Assignment and Test
Week	Feb26/Duration	Topic- Unit-II
1	01 Feb-08 Feb	Application of Schrodinger Wave Equation: Solution of Schrodinger Equation for the Finite Potential Well,
2	09 Feb-15 Feb	1-Dimension Harmonic Oscillator problem - Algebraic and Analytical solutions, Free particle and concept of group velocity,
3	16 Feb-22 Feb	Tunneling through finite potential barrier - Examples of alpha decay and tunnel diodes (qualitative only)
4	23 Feb-28 Feb	Generalized uncertainty principles for Position-Momentum and Energy Assignment and Test
Week	March26/Duration	Topic- Unit-III
1	09 March-15 March	Larmor's precession, Spectroscopic terms and their notation, Selection rule, Orbital magnetic dipole moment (Bohr magneton),
2	16 March-22 March	Coupling scheme; LS or Russel-Saunders Coupling scheme
3	23 March- 31 March	JJ coupling scheme, Pauli principal, Hyperfine structure of spectral lines and its origin, isotopic effect, Atom in external magnetic field; Normal Zeeman effect Assignment and Test
Week	April26/Duration	Topic- Unit-IV
1	01 April -05 April	Rotational spectra of diatomic molecules as rigid rotator, energy levels,
2	06 April -12 April	Rotational spectra of diatomic molecules as non-rigid rotator, Intensity of rotational lines
3	13 April -19 April	Vibrational spectra
4	20 April-26 April	Vibrational-Rotational, Raman and electronic spectra of molecules: Vibrational energy of diatomic molecules
5	27 April-04 May	Molecules as Harmonic Oscillator, Assignment and Test

Manjeet Singh

Name of Teacher: Dr. Manjeet Singh Class: B. Sc. II nd Sem Session: 2025-26		
Subject: Physics Nomenclature of Paper: DSC-Electricity and Magnetism Paper Code: C24PHY201T		
Week	Jan 26/Duration	Topic- Unit-I
1	01 Jan-04 Jan	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, Flux of a vector field,
2	05 Jan-11 Jan	Divergence and curl of a vector and their physical significance, Gauss's divergence theorem, Stoke's theorem. Conservative nature of Electrostatic Field,
3	12 Jan-18 Jan	Electrostatic Potential, Potential as line integral of field, potential difference Derivation of electric field E from potential as gradient. Derivation of Laplace and Poisson equations.
4	19 Jan-25 Jan	Electric flux, Gauss's Law, Differential form of Gauss's law and applications of Gauss's law.
5	26 Jan-31 Jan	Assignment and Test
Week	Feb26/Duration	Topic- Unit-II
1	01 Feb-08 Feb	Magnetic Field: Biot-Savart law and its applications: straight wire and circular loop, Current Loop as a Magnetic Dipole and its Dipole Moment, Ampere's Circuital Law, and its applications to (1) Solenoid and (2) Toroid,
2	09 Feb-15 Feb	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),
3	16 Feb-22 Feb	Magnetic Susceptibility and permeability, Relation between B, H and M, Electronic theory of dia and paramagnetism,
4	23 Feb-28 Feb	Domain theory of ferromagnetism (Langevin's theory), B-H curve and hysteresis loop, importance of Hysteresis loop. Assignment and Test
Week	March26/Duration	Topic- Unit-III
1	09 March-15 March	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,
2	16 March-22 March	Derivation of Maxwell's equations, Displacement current, Maxwell's equations in differential and integral form and their physical significance. Electromagnetic Waves: Electromagnetic waves, Transverse nature of electromagnetic wave,
3	23 March- 31 March	Energy transported by electromagnetic waves, Poynting vector, Poynting's theorem. Propagation of Plane electromagnetic waves in free space & Dielectrics Assignment and Test
Week	April26/Duration	Topic- Unit-IV
1	01 April -05 April	DC current Circuits: Electric current and current density, Electrical conductivity, and Ohm's law, Kirchhoff's laws for D.C. networks,
2	06 April -12 April	Network theorems: Thevenin's theorem, Norton theorem, Superposition theorem.
3	13 April -19 April	Alternating Current Circuits: A resonance circuit, Phasor, Complex Reactance and Impedance
4	20 April-26 April	Analysis for RL, RC and LC Circuits, Series LCR Circuit: (1) Resonance, (2) Power Dissipation
5	27 April-04 May	(3) Quality Factor and (4) Band Width, Parallel LCR Circuit. Assignment and Test

Name of Teacher: Dr. Manjeet Singh	Class: B. Sc. II nd Sem	Session: 2025-26
Subject: Physics	Nomenclature of Paper: SEC-Instrumentation-II	Paper Code: C24SEC230T

Week	Jan 26/Duration	Topic- Unit-I
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1	01 Jan-04 Jan	Self-induction, Coefficient of self-induction of solenoid
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2	05 Jan-11 Jan	Mutual induction, Coefficient of mutual induction of solenoid
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3	12 Jan-18 Jan	B-H curve, Hysteresis loop
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4	19 Jan-25 Jan	Permanent magnets, Transformers.
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5	26 Jan-31 Jan	Efficiency of transformers, Losses in transformers. Assignment and Test
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Week	Feb26/Duration	Topic- Unit-II
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1	01 Feb-08 Feb	Introduction to semiconductors, Intrinsic and Extrinsic semiconductors
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2	09 Feb-15 Feb	n and p-type semiconductors
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3	16 Feb-22 Feb	p-n junction, Forward bias, Reverse bias
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4	23 Feb-28 Feb	Zener breakdown, Assignment and Test
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Week	March26/Duration	Topic- Unit-III
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1	09 March-15 March	Different types of diode, Half-wave Rectifier
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2	16 March-22 March	Full-wave rectifier
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3	23 March- 31 March	Zener diode as voltage regulator Assignment and Test
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Week	April26/Duration	Topic- Unit-IV
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1	01 April -05 April	Bipolar Junction Transistors: n-p-n and p-n-p
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2	06 April -12 April	Biasing of transistor in active, cut-off and saturation modes
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3	13 April -19 April	Circuit configuration and characteristics of Common Base
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4	20 April-26 April	Common Emitter, Common Collector
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5	27 April-04 May	Transistors, Current gains α and β . Assignment and Test
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