Govt. College Mangali- Lesson Plan B.Sc. I, **Odd Sem 2025-26 (Dept. of Physics)**

Academic Calender- Odd Sem 2025-26	
Teaching-I	14.07.2025 to 18.10.2025
Vacations(Diwali)	19.10.2025 to 26.10.2025
Teaching-II	27.10.2025 to 21.11.2025
End Semester Examinations (Major Test)(for UTD and Affiliated Colleges)	22.11.2025 to 20.12.2025
Winter Vacations (for Affiliated Colleges)	21.12.2025 to 31.12.2025

Name of Teacher: Dr. Manjeet Singh	**Class:** B. Sc. I Sem	**Session:** 2025-26
Subject: Physics	**Nomenclature of Paper:** Mechanics	**Paper Code:** C24PHY101T&P

Week	**July 25/Duration**	**Topic-** Unit-I
1	14 July-19 July	Rigid body, Moment of Inertia, Radius of Gyration, Theorems of perpendicular and parallel axis (with proof), Moment of Inertia of ring, Disc,
2	21 July-26 July	Moment of Inertia of Angular Disc, Solid cylinder, Solid sphere, Hollow sphere, PRACTICAL-1
3	28 July-31 July	Torque, Rotational Kinetic Energy, Angular momentum, Law of conservation of angular momentum, rolling motion PRACTICAL-2
Week	**Aug 25/Duration**	**Topic-** Unit-I & II
1	04 Aug -09 Aug	Condition for pure rolling, acceleration of body rolling down an inclined plane, Fly wheel, Moment of Inertia of an irregular body. Assignment & Test of UNIT-1
2	11 Aug -16 Aug	Deforming force, Elastic limit, stress, strain and their types, Hooke's law, Modulus of rigidity, Relation between shear angle and angle of twist, elastic energy stored/volume in an elastic body, PRACTICAL-3
3	18 Aug -23 Aug	Elongation produced in heavy rod due to its own weight and elastic potential energy stored in it, Tension in rotating rod, Poisson's ratio and its limiting value, Elastic Constants, and their relations. PRACTICAL-4
4	25 Aug -30 Aug	Torque required for twisting cylinder, bending of beam, bending moment and its magnitude, determination of elastic constants for material of wire by Searle's method. Assignment & Test of UNIT-2
Week	**Sept 25/Duration**	**Topic-** Unit-III
1	01 Sept -06 Sept	Law of gravitation, Gravitational potential energy, Inertial and gravitational mass, Potential and field due to spherical shell and solid sphere, PRACTICAL-5
2	08 Sept -13 Sept	Motion of a particle under a central force field, Two-body problem and its reduction to one-body problem and its solution, PRACTICAL-6
3	15 Sept -20 Sept	Differential Equation of motion with central force and its solution, PRACTICAL-7
4	22 Sept -27 Sept	Concept of power Law Potentials, Kepler's Laws of Planetary motion. Assignment & Test of UNIT-3
Week	**Oct 25/Duration**	**Topic-** UNIT-IV
1	01 Oct -04 Oct	Michelson's Morley experiment and its outcomes, Postulates of special theory of relativity, Lorentz Transformations, PRACTICAL-8
2	06 Oct -11 Oct	Simultaneity and order of events, Lorentz contraction, Time dilation, Relativistic transformation of velocity, relativistic addition of velocities, PRACTICAL-9
3	13 Oct -18 Oct	Variation of mass-energy equivalence, relativistic Doppler effect, Relativistic kinematics, transformation of energy and momentum, Transformation of force. Assignment & Test of UNIT-3
4	27 Oct -31 Oct	Revision of UNIT-1 PRACTICAL-10
Week	**Nov 25/Duration**	**Revision**
1	03 Nov -08 Nov	Revision of UNIT-2
2	10 Nov -15 Nov	Revision of UNIT-3
3	17 Nov -21 Nov	Revision of UNIT-4

Govt. College Mangali- Lesson Plan B.Sc. II, **Odd Sem 2025-26 (Dept. of Physics)**

Academic Calender- Odd Sem 2025-26	
Teaching-I	14.07.2025 to 18.10.2025
Vacations(Diwali)	19.10.2025 to 26.10.2025
Teaching-II	27.10.2025 to 21.11.2025
End Semester Examinations (Major Test)(for UTD and Affiliated Colleges)	22.11.2025 to 20.12.2025
Winter Vacations (for Affiliated Colleges)	21.12.2025 to 31.12.2025

Name of Teacher: Dr. Manjeet Singh **Class:** B. Sc. III Sem **Session:** 2025-26
Subject: Physics **Nomenclature of Paper:** Thermodynamics and Statistical Physics **Paper Code:** C24PHY301T&P

Week	**July 25/Duration**	**Topic-** Unit-I
1	14 July-19 July	Thermodynamics systems, variables and equation of state, thermal equilibrium, Zeroth law of thermodynamics; Concept of heat, work and its sign(work done by the system on the system), First law of thermodynamics- its significance and limitations, PRACTICAL-1
2	21 July-26 July	Different types of process-isochoric process, isobaric process, adiabatic process, isothermal process, cyclic process, Reversible and irreversible process, First law and cyclic process; Second law of thermodynamics and its significance, PRACTICAL-2
3	28 July-31 July	Carnot theorem; Absolute scale of temperature, Absolute Zero, Joule's free expansion, Joule Thomson effect, Entropy, calculations of entropy of reversible and irreversible process, PRACTICAL-3
Week	**Aug 25/Duration**	**Topic-** Unit-I & II
1	04 Aug -09 Aug	T-S diagram, entropy of a perfect gas, Nernst heat law (third law of thermodynamics). Assignment & Test of Unit-1
2	11 Aug -16 Aug	Derivation of Clausius-Clapeyron and Clausius latent heat equations and their significance, PRACTICAL-3
3	18 Aug -23 Aug	phase diagram and triple point of a substance, Thermodynamics functions: Internal energy (U), Helmholtz function (F), Enthalpy (H), Gibbs function (G) and the relations between them, PRACTICAL-4
4	25 Aug -30 Aug	Derivation of Maxwell thermodynamics relations from thermodynamics functions, Application of Maxwell relations: relations between two specific heats of gas. Assignment & Test of Unit-2
Week	**Sept 25/Duration**	**Topic-** Unit-III
1	01 Sept -06 Sept	Distribution of N (for N= 2, 3, 4) distinguishable and indistinguishable particles in two boxes of equal size, microstates and microstate's, PRACTICAL-5
2	08 Sept -13 Sept	Thermodynamically probability, constraints and accessible states, statistical fluctuations, PRACTICAL-6
3	15 Sept -20 Sept	General distribution of distinguishable particles in compartments of different size, postulates of statistical mechanics PRACTICAL-7
4	22 Sept -27 Sept	PRACTICAL- 8, 9. Assignment & Test of Unit-3
Week	**Oct 25/Duration**	**Topic-** UNIT-IV
1	01 Oct -04 Oct	Classical statistics, basic approach to these statistics, Maxwell-Boltzmann statistics applied to an ideal gas in equilibrium-energy and speed distribution law, PRACTICAL-10
2	06 Oct -11 Oct	Most probable speed, average and r.m.s. speed., Need of Quantum statistics- classical versus quantum statistics, PRACTICAL-11
3	13 Oct -18 Oct	Bose-Einstein energy distribution Law, Fermi Dirac energy distribution Law. PRACTICAL-12
4	27 Oct -31 Oct	PRACTICAL- 13, 14. Assignment & Test of Unit-4
Week	**Nov 25/Duration**	**Revision**
1	03 Nov -08 Nov	Revision of UNIT-1
2	10 Nov -15 Nov	Revision of UNIT-2&3
3	17 Nov -21 Nov	Revision of UNIT-4

Govt. College Mangali- Lesson Plan B.Sc. III, **Odd Sem 2025-26 (Dept. of Physics)**

Academic Calender- Odd Sem 2025-26	
Teaching-I	14.07.2025 to 18.10.2025
Vacations(Diwali)	19.10.2025 to 26.10.2025
Teaching-II	27.10.2025 to 21.11.2025
End Semester Examinations (Major Test)(for UTD and Affiliated Colleges)	22.11.2025 to 20.12.2025
Winter Vacations (for Affiliated Colleges)	21.12.2025 to 31.12.2025

Name of Teacher: Dr. Manjeet Singh **Class:** B. Sc. III Sem **Session:** 2025-26
Subject: Physics **Nomenclature of Paper:** Elements of Modern Physics **Paper Code:** CPL-501 & LAB-V

Week	**July 25/Duration**	**Topic-** Unit-I
1	14 July-19 July	Properties of Thermal Radiation, Spectral Distribution of Blackbody Radiation, Kirchhoff's Law, Stefan-Boltzmann Law and Wien's Distribution and Displacement law, Rayleigh-Jean's Law, PRACTICAL-1
2	21 July-26 July	Ultraviolet Catastrophe, Planck's Quantum Postulates, Planck's Law of Blackbody Radiation: Experimental Verification. PRACTICAL-2
3	28 July-31 July	Photo-electric effect and Compton scattering; Pair production and annihilation, Bremsstrahlung effect, Cherenkov radiation, Production of X-rays. PRACTICAL-3, Assignment & Test of Unit-1
Week	**Aug 25/Duration**	**Topic-** Unit- II
1	04 Aug -09 Aug	Drawbacks of Rutherford model, Bohr atomic model; Bohr's quantization rule and atomic stability; Calculation of energy levels for hydrogen like atoms and their spectra, Effect of nuclear mass on spectra. PRACTICAL-4
2	11 Aug -16 Aug	Correspondence principle, De Broglie wavelength and matter waves; Wave-particle duality; Frank-Hertz, Davison. PRACTICAL-5
3	18 Aug -23 Aug	Germer experiment, phase velocity, group velocity and their relations. PRACTICAL-6
4	25 Aug -30 Aug	PRACTICAL-7&8. Assignment & Test of Unit-2
Week	**Sept 25/Duration**	**Topic-** Unit-III
1	01 Sept -06 Sept	Estimating minimum energy of a confined particle using uncertainty principle; Energy-time uncertainty principle,
2	08 Sept -13 Sept	Properties of wave-function, Physical Interpretation of wave-function. Momentum and Energy operators, Stationary states, Physical interpretation of a wave function, probabilities and normalization,
3	15 Sept -20 Sept	Schrodinger Equation, Particle in1-dimention infinite potential well.
4	22 Sept -27 Sept	Assignment & Test of Unit-3
Week	**Oct 25/Duration**	**Topic-** UNIT-IV
1	01 Oct -04 Oct	Absorption and emission of radiation (qualitative only); Basic features of LASER, Population inversion;
2	06 Oct -11 Oct	Resonance cavity; laser pumping; threshold condition for laser emission; Einstein's Co-efficient, 3 level and 4 level system,
3	13 Oct -18 Oct	Basic principle and working of He-Ne LASER and Ruby LASER, Applications of LASER
4	27 Oct -31 Oct	Assignment & Test of Unit-4
Week	**Nov 25/Duration**	**Revision**
1	03 Nov -08 Nov	Revision of UNIT-1
2	10 Nov -15 Nov	Revision of UNIT-2&3
3	17 Nov -21 Nov	Revision of UNIT-4

Govt. College Mangali- Lesson Plan B.Sc. III, **Odd Sem 2025-26 (Dept. of Physics)**

Academic Calender- Odd Sem 2025-26	
Teaching-I	14.07.2025 to 18.10.2025
Vacations(Diwali)	19.10.2025 to 26.10.2025
Teaching-II	27.10.2025 to 21.11.2025
End Semester Examinations (Major Test)(for UTD and Affiliated Colleges)	22.11.2025 to 20.12.2025
Winter Vacations (for Affiliated Colleges)	21.12.2025 to 31.12.2025

Name of Teacher: Dr. Manjeet Singh	**Class:** B. Sc. III Sem	**Session:** 2025-26
Subject: Physics	**Nomenclature of Paper:** Nuclear Physics	**Paper Code:** CPL-502 & LAB-VI
Week	**July 25/Duration**	**Topic-** Unit-I
1	14 July-19 July	Nuclear composition (p-e and p-n hypotheses), Nuclear properties; Nuclear mass, size, spin, parity, magnetic dipole moment, PRACTICAL-1
2	21 July-26 July	Quadruple moment (shape concept) and binding energy, nuclear binding energy curve. PRACTICAL-2
3	28 July-31 July	Law of Radioactive Decay, Half-life, Radioactive Series, α-decay: Range of α-particles, Geiger-Nuttal law and α-particle Spectra, PRACTICAL-3,
Week	**Aug 25/Duration**	**Topic-** Unit- I & II
1	04 Aug -09 Aug	β-decay, Energy Spectra and Neutrino Hypothesis, γ-decay : Origin of γ-rays. PRACTICAL-4, Assignment & Test of Unit-1
2	11 Aug -16 Aug	Similarity between nuclear matter and liquid drop, Liquid Drop Model, Semi-classical Mass formula, Limitations of liquid drop model, PRACTICAL-5
3	18 Aug -23 Aug	Magic number, Experimental signature of shell structure in nuclei, Nuclear Shell Model (qualitative only) and its application, PRACTICAL-6
4	25 Aug -30 Aug	Meson Theory of Nuclear Forces. Assignment & Test of Unit-2
Week	**Sept 25/Duration**	**Topic-** Unit-III
1	01 Sept -06 Sept	Interaction of heavy charged particles (proton, Alpha particles etc.); Energy loss of heavy charged particle (Discussion of Bethe formula), Range of alpha particles. Interaction of light charged particle (Beta-particle),
2	08 Sept -13 Sept	Interaction of Gamma Ray; Passage of Gamma radiations through matter (Photoelectric, Compton and pair production effect), PRACTICAL-6
3	15 Sept -20 Sept	Absorption of Gamma rays (Mass attenuation coefficient), Types of nuclear reactions, Concept of reaction cross-section, Concept of Compound and Direct Reactions.
4	22 Sept -27 Sept	Assignment & Test of Unit-3
Week	**Oct 25/Duration**	**Topic-** UNIT-IV
1	01 Oct -04 Oct	Gas filled counters; Ionization chamber, proportional counter, G.M. Counter (detailed study), PRACTICAL-7
2	06 Oct -11 Oct	Basic principle of scintillation counter and semiconductor detectors. PRACTICAL-8
3	13 Oct -18 Oct	General aspects of reactor design, Nuclear fission reactor (Principle, construction, working and use)
4	27 Oct -31 Oct	Particle Accelerator facilities in India, Linear Accelerator, Cyclotron, Synchrotron Assignment & Test of Unit-4
Week	**Nov 25/Duration**	**Revision**
1	03 Nov -08 Nov	Revision of UNIT-1
2	10 Nov -15 Nov	Revision of UNIT-2&3
3	17 Nov -21 Nov	Revision of UNIT-4