

# Lesson Plan

Name of the Assistant/ Associate Professor... DR. PARAMJEET

Class and Section... B.Sc - I (2<sup>nd</sup> semester)

Subject... PHYSICS (Properties of Matter, KTG and Relativity)

Week	Date	Topics
1	01-01-2024 to 31-01-2024	Elasticity, Hooke's law with examples Elastic constant and their relations Poisson's Ratio, torsion of cylinder Twisting couple. Bending of beam cantilevers, centrally loaded beams.
2	01-02-2024 to 29-02-2024	Sessional Test and Assignments. Kinetic Theory of gases (Assumptions) law of equipartition of energy and its applications for specific heat of gas. Maxwell's distribution of speeds/velocities
3	01-03-2024 to 31-03-2024	Experimental verification of Maxwell's law of speed distribution Most-probable speed average speed R-M-S speed, mean-free path. Transport of energy and momentum - diffusion of gases. Brownian motion (Qualitative only)
4	01-04-2024 to 30-04-2024	Real gases, Van-der Waal's equation. Sessional Test and Assignment Reference systems and inertial frames. Galilean invariance and conservation laws. Newtonian relativity principle Michelson-Morley experiment. Lorentz transformations.
5	May 2024	Length contraction and time dilation velocity addition theorem. variation of mass with velocity Mass-energy equivalence. Revision, Numerical Practice.

# Lesson Plan

Name of the Assistant/ Associate Professor..... DR. PARAMJEET  
 Class and Section..... B.Sc - II (4<sup>th</sup> Semester)  
 Subject..... PHYSICS (Optics)

Week	Date	Topics
1	01-01-2024 to	Interference by division of Amplitude Colour of thin films, wedge shaped film. Newton rings, Michelson's Interferometer and it's applications i.e. (1) Standardisation
2	31-01-2024 01-02-2024 to	of a meter scale. Vernier Test (2) Determination of unknown wavelength Fresnel's half period zones, Zone plate Diffraction at a straight edge. Rectangular slit and circular aperture. Fraunhofer Diffraction.
3	29-02-2024 01-03-2024 to	1-slit diffraction, 2-slit diffraction N-slit diffraction + plane transmission grating spectrum. Vernier Test / Assignment Dispersive power of a grating. Limit of resolution. Rayleigh's criteria. Resolving power of telescope & a grating. Polarisation and Double Refraction.
4	31-03-2024 01-04-2024 to	Polarisation by reflection. " " scattering. Malus Law, Phenomenon of double refraction. Huygen's wave theory of double refraction. (Normal and oblique incidence) Analysis of polarized light, Nicol prism Quarter wave plate and half-wave plate.
5	30-04-2024 May-2024	Production and detection of (1) Plane polarized Light (2) Circularly " " (3) Elliptically " " Optical activity, Fresnel's theory of rotation Specific Rotation Polarimeters (Half shade and ...)

# Lesson Plan

Name of the Assistant/ Associate Professor... DR. PARAMJEET.....

Class and Section... B.Sc - III (6th Semester).....

Subject... PHYSICS (Atomic, Molecular and LASER physics).....

Week	Date	Topics
1	01-01-2024 to 31-01-2024	Vector Atom Model and Quantum No. penetrating and Non-penetrating orbits spectral lines in different series of alkali spectra, spin-orbit interaction and doublet term separations.
2	01-02-2024 to 29-02-2024	LS-coupling and jj-coupling and expression for interaction energies. Zeeman effect (Normal and Anomalous) Zeeman pattern of $D_1$ and $D_2$ lines in Na-atom Paschen-Back effect of a single valence electron system.
3	01-03-2024 to 31-03-2024	Weak field Stark effect of hydrogen atom. Discrete set of electronic energies of molecules; Quantisation of vibrational and rotational energies. Raman Effect (Quantitative) Selectional Test and assignment
4	01-04-2024 to 30-04-2024	Stokes and anti-stokes lines. Main features of a LASER Directionality, high intensity High degree of coherence/temporal and spatial coherence. Einstein's co-efficients and amplification Momentum transfer Lifetime of a level.
5	May 2024	Kinetics of optical absorption Threshold conditions for LASER emission. LASER-pumping. Selectional Test and assignment. He-Ne laser (construction & working) Ruby LASER, Applications of LASER. Revision.

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10/01/2024