

LESSON PLAN

Name of Faculty		Anil Rewal & Saroop Chand
Department		Applied Science & Humanities
Semester		Second
Subject		Applied Physics-II
Lesson Plan for the Duration		22 Feb, 2023 to 15 June, 2023
Week	Theory	
1st (22-28 Feb 2023)	Topics	Wave motion and its applications: Wave motion, transverse and longitudinal waves with examples, definitions of wave velocity, frequency and wave length and their relationship, Sound and light waves and their properties, wave equation ($y = r \sin \omega t$) amplitude, phase, phase difference,
2nd (01-06 March 2023)	Topics	Principle of superposition of waves and beat formation. Simple Harmonic Motion (SHM): definition, expression for displacement, velocity, acceleration, time period, frequency etc.
3rd (07-14 March 2023)	Topics	Free, forced and resonant vibrations and their examples. Acoustics of buildings – reverberation, reverberation time, echo, noise, coefficient of absorption of sound, methods to control reverberation time and their applications.
4th (15-21 March 2023)	Topics	Ultrasonic waves – Introduction and properties, engineering and medical applications of ultrasonic. Optics: Basic optical laws- reflection and refraction, refractive index,
5th (22-27 March 2023)	Topics	Images and image formation by mirrors, lens and thin lenses, lens formula, power of lens, magnification. Total internal reflection, Critical angle and conditions for total internal reflection, applications of total internal reflection in optical fiber.
6th (28 March-05 April)	Topics	Optical Instruments- simple and compound microscope, astronomical telescope in normal adjustment and their magnifying powers.
7th (06 April-17 April 2023)	Topics	Electrostatics: Coulomb's law, unit of charge. Electric field, Electric lines of force and their properties. Electric flux, Electric potential and potential difference, Gauss's law.
8th (18-25 April 2023)	Topics	Capacitor and its working, Capacitance and its units. Capacitance of a parallel plate capacitor, Series and parallel combination of capacitors (related numerical), dielectric and its effect on capacitance, dielectric break down.
9th (26 April-02 May 2023)	Topics	Current Electricity: Electric Current and its units, Direct and alternating current. Resistance and its units, Specific resistance, Conductance, Specific conductance, Series and parallel combination of resistances. Factors affecting resistance of a wire, carbon resistances and colour coding.
10th (03-10 May, 2023)	Topics	Ohm's law and its verification, Kirchhoff's laws. Concept of terminal potential difference and Electro motive force (EMF) Heating effect of current, Electric power, Electric energy and its units (related numerical problems), Advantages of Electric Energy over other forms of energy.
11th (11-18 May 2023)	Topics	Electromagnetism: Types of magnetic materials: dia, para and ferromagnetic with their properties. Magnetic field and its units, magnetic intensity, magnetic lines of force, magnetic flux and units, magnetization.
12th (19-26 May 2023)	Topics	Lorentz force (force on moving charge in magnetic field), Force on current carrying conductor. Moving coil galvanometer; principle, construction and working, Conversion of a galvanometer into ammeter and voltmeter.
13th (27 May-02 June 2023)	Topics	Semiconductor Physics: Energy bands in solids, Types of materials (insulator, semi-conductor, conductor), intrinsic and extrinsic semiconductors. p-n junction, junction diode and V-I characteristics. Diode as rectifier – half wave and full wave rectifier (centre taped). Photocells, Solar cells; working principle and engineering applications.
14th (03-09 June 2023)	Topics	Modern Physics: Lasers: Energy levels, ionization and excitation potentials; spontaneous and stimulated emission; population inversion, pumping methods, optical feedback. Types of lasers; Ruby, He-Ne and semiconductor, laser characteristics, engineering and medical applications of lasers.
15th (12-15 June 2023)	Topics	Fiber Optics: Introduction to optical fibers, light propagation, acceptance angle and numerical aperture, fiber types, applications in; telecommunication, medical and sensors.

Anil Rewal
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Saroop Chand
Lecturer Physics