Lesson Plan

Name of Faculty **: Suman**
Discipline   **: Applied Science**
Year   **: I**
Subject   **: Applied Physics**
Lesson Plan Duration: Oct 2021 to Jun 2022
Work Load (Lecture/ Practical) per week (In hours): Lecture – 2, Tut-2, Practical – 4

APPLIED PHYSICS – I (180013)

Week	**Theory** Lecture Day	Topic (Including Assignment / Test)	Practical Day	Practical Topic
1	1	Basic about Physics and broad area	1	General Introduction and Familiarization with Lab apparatus
	2	Physical quantities, Basic concept , Types of Physical quantities		
2	3	Units - fundamental and derived units, systems of units (FPS, CGS and SI units)	2	To find diameter of solid cylinder using a vernier calliper
	4	Dimensions and dimensional formulae of physical quantities (distance, displacement, area, volume, velocity, acceleration		
3	5	Dimensional formulae of physical quantities (momentum, force, impulse, work, power, energy, surface tension, stress, strain)	3	Revision and Viva Voce
	6	Principle of homogeneity of dimensions, Dimensional equations, Applications of dimensional equations; checking of correctness of equation,		
4	7	Conversion from one system of units to other for force, work	4	To find internal diameter and depth of a beaker using a vernier calliper and
	8	Limitations of dimensional analysis		
5	9	Assignment 1	5	Revision and Viva Voce
	10	Scalar and vector quantities – examples, representation of vector		
6	11	Addition of Vectors, Triangle and Parallelogram law (Statement only), Scalar and Vector Product(statement and formula only)	6	To find the diameter of wire using screw gauge
	12	Definition of Distance, displacement, speed, velocity, acceleration, Force and its units, concept of Resolution of force		
7	13	Newton's laws of motion(Statement and examples)	7	To find thickness of paper using screw gauge.
	14	Momentum, Conservation of linear momentum (statement), Impulse and its examples		
8	15	Circular motion, definition of angular displacement, angular velocity, angular acceleration, frequency, time period. Relation between linear and angular velocity	8	Revision and Viva Voce
	16	Centripetal and centrifugal forces(definition and formula only)		
9	17	Application of centripetal force such as Banking of roads	9	To determine the thickness of glass strip using a spherometer
	18	Banking of roads (derivation of angle of banking)		
10	19	Sessional Test 1	10	To determine radius of curvature of a given spherical surface by a
	20	Work (Definition, Symbol, Formula and SI units)		
11	21	Energy (Definition and its SI units), Examples of transformation of energy	11	Revision and Viva Voce
	22	Energy and its units: Kinetic energy & Potential Energy with examples and their derivation		
12	23	Law of conservation of mechanical energy for freely falling bodies, examples of transformation of energy.	12	To verify parallelogram law of forces
	24	Power (definition,formula and units), Numerical Problem		
13	25	Rotational motion with examples, Definition of torque	13	To determine the atmospheric pressure at a place using Fortin's Barometer
	26	Defination of angular momentum and their examples, Conservation of angular momentum (quantitative) and its examples		
14	27	Moment of inertia and its physical significance, radius of gyration (definition, derivation and formula).	14	Revision and Viva Voce
	28	Assignment 2		
15	29	Definition of Elasticity, Deforming force, Restoring force, example of Elastic and plastic body, Definition and types of stress and strain,	15	To determine force constant of spring using Hooke's law
	30	Hooke's law, different types of module of elasticity.		
16	31	Pressure: definition, its units, Pascal Law, Gauge pressure, absolute pressure	16	Revision and Viva Voce
	32	Surface tension: definition, its units, Applications of surface tension, effect of temperature on Surface tension		
17	33	Viscosity: definition, units, effect of temperature on viscosity	17	Measuring room temperature with the help of thermometer and its
	34	Fluid motion, stream line and turbulent flow		
18	35	Sessional Test 2	18	Revision and Viva Voce
	36	Heat & Temp 9on the basis of kinetic theory) , Difference between heat and temperature		
19	37	Modes of transfer of heat (Conduction, convection and radiation with examples). Properties of heat radiation	19	To find the time period of a simple pendulum
	38	Different scales of temperature and their relationship		
20	39	Wave motion, transverse and longitudinal wave motion with examples,	20	To determine and verify the time period of Cantilever
	40	Terms used in wave motion like displacement, amplitude, time period, frequency, wavelength, wave velocity,		
21	41	Relationship among wave velocity, frequency and wave length	21	Revision and Viva Voce
	42	Simple Harmonic Motion (SHM): definition,examples		

Name of Faculty **: Suman**
Discipline   **: Applied Science**
Year   **: I**
Subject   **: Applied Physics**
Lesson Plan Duration: Oct 2021 to Jun 2022
Work Load (Lecture/ Practical) per week (In hours): Lecture – 2, Tut-2, Practical – 4)

APPLIED PHYSICS – I (180013)

Week	Lecture Day	Topic (Including Assignment / Test)	Practical Day	Topic
22	43	Cantilever (definition ,formula of time period (without derivation)	22	To verify ohm's laws by plotting a graph between voltage and current.
	44	Free, forced and resonant vibrations with examples		
23	45	Assignment III	23	Revision and Viva Voce
	46	Acoustics of buildings – reverberation, reverberation time, echo,		
24	47	Noise, coefficient of absorption of sound, methods to control reverberation time.	24	To verify laws of resistances in series combination.
	48	Ultrasonics: Introduction and their engineering applications (cold welding, drilling, SONAR)		
25	49	Reflection and refraction with laws, refractive index, Lens formula (no derivation), power of lens (related numerical problems).	25	To verify laws of resistance in parallel combination.
	50	Total internal reflection and its applications, Critical angle and conditions for total internal reflection		
26	51	Microscope, Telescope (definition), Uses of microscope and telescope.	26	Revision and Viva Voce
	52	Electric charge, Coulombs law, unit charge, conservation of charge		
27	53	Electric field, Electric lines of force (definition and properties), Electric field intensity due to a point charge.	27	To find resistance of galvanometer by half deflection method
	54	Electric flux, Gauss law (Statement and derivation)		
28	55	Capacitor and Capacitance (with formula and units), Series and parallel combination of capacitors	28	Revision and Viva Voce
	56	Simple numerical problems		
29	57	Electric Current and its Unit, Direct and alternating current,	29	To verify laws of reflection of light using mirror.
	58	Resistance and Specific Resistance (definition and units) Conductance,		
30	59	Series and Parallel combination of Resistances.	30	Revision and Viva Voce
	60	Ohm's law (statement and formula), Heating effect of current, Electric power,		
31	61	Kirchhoff's laws(statement and formula)	31	To verify laws of refraction using glass slab.
	62	Introduction to magnetism, Types of magnetic materials. Dia, para and ferromagnetic materials with examples.		
32	63	Magnetic field,magnetic intensity, Magnetic lines of force, magnetic flux and their units	32	Revision and Viva Voce
	64	Electromagnetic induction (definition)		
33	65	Assignment IV	33	To find the focal length of a concave lens, using a convex lens
	66	Energy bands, Types of materials (insulator, semi conductor, conductor),		
34	67	Intrinsic and extrinsic semiconductors, p-n junction diode and its V-I characteristics	34	To study colour coding scheme of resistance.
	68	Diode as rectifier: half wave and Full wave rectifier (centre tap only)		
35	69	Semiconductor transistor; pnp and npn (Introduction only).	35	Revision and Viva Voce
	70	Lasers: full form, principle, spontaneous emission, stimulated emission, population inversion, engineering and medical applications of lasers, Engineering		
36	71	Fibre optics: Introduction to optical fibers (definition , parts), Applications of optical fibers in different fields.	36	Revision and Viva Voce
	72	Introduction to nanotechnology (definition of nanomaterials with examples) and its applications.		