Lesson Plan

Name- Dr Randhir Singh (Theory and Practical)

Discipline- Applied Science

Semester – 1st Year

Subject – Applied Physics

Duration – 33 weeks (August 2018 to May 2019)

Work load (per week):- lectures-02, Tutorial 01 and practicals-02

Week	Theory		Practical	
	Lect. day	Topic	Practical day	Topic
1st	1st	Introduction about physics Physical quantities Units - fundamental and derived units	1st	Introduction about lab
	2nd	Physical quantities Units - fundamental and derived units FPS, CGS and SI units		
	3rd	Dimensions and dimensional formulae of physical quantities	2nd	To find the diameter of solid cylinder using vernier calliper
	4th	Tutorial: Doubt session and problem solving		
2nd	1st	Dimensional formulae Distance, area, volume, velocity, acceleration, momentum, force etc.	1st	Revision & Checked practical note book
	2nd	Dim. Formula of work, power, energy, surface tension, stress, strain, moment of inertia		
	3rd	Principle of homogeneity of dimensions conversion from one system of units to other	2nd	Revision & Checked practical note book
	4th	Tutorial: Doubt session and problem solving		
3rd	1st	Limitations of dimensional analysis	1st	To find internal diameter and depth of a beaker using vernier caliper and hence find its volume.
	2nd	Revision of unit- 1 (Complete) and 1st assignment		
	3rd	Scalar and vector quantities – examples Addition of Vectors, Triangle and Parallelogram law	2nd	To find internal diameter and depth of a beaker using vernier caliper and hence find its volume.
	4th	Tutorial: Doubt session and problem solving		
4th	1st	Scalar and Vector Product, Definition of Distance , Displacement, Speed, Velocity, Acceleration, Force and Resolution of force	1st	Revision & Checked practical note book
	2nd	Newton's laws of motion and Conservation of linear momentum		
	3rd	Impulse and its examples and introduction to Circular motion,	2nd	Revision & Checked practical note book
	4th	Tutorial: Doubt session and problem solving		
5th	1st	Angular displacement, angular velocity, angular Acceleration and relation between linear and angular system.	1st	To find the diameter of wire using screw gauge.
	2nd	Centripetal and centrifugal forces		
	3rd	Banking of roads (application of centrifugal force)	2nd	To find the diameter of wire using screw gauge.
	4th	Tutorial: Doubt session and problem		

		solving		
6th	1st	class test of unit 1 and 2	1st	Revision & Checked practical note book
	2nd	Work, its units and types		
	3rd	Energy and its units: Kinetic energy and potential energy, Transformation of energy.	2nd	Revision & Checked practical note book
	4th	Energy conservation law in case of freely falling body		
7th	1st	Power (definition, formula and units), Simple numerical problem on power	1st	To determine the thickness of glass strip using a spherometer
	2nd	Rotational motion with examples		
	3rd	Definition of torque and angular momentum and their example	2nd	To determine the thickness of glass strip using a spherometer
	4th	Tutorial: Doubt session and problem solving		
8th	1st	Conservation of angular momentum	1st	Revision & Checked practical note book
	2nd	Moment of inertia and its physical significance		
	3rd	Radius of gyration (definition, Derivation and formula).	2nd	Revision & Checked practical note book
	4th	Tutorial: Doubt session and problem solving		
9th	1st	Re-revision of unit 3 and 4.	1st	To determine radius of curvature of a given spherical surface by a spherometer.
	2nd	2nd class test of unit 3 and 4		
	3rd	Definition of deforming force restoring force, elastic body & plastic body and types of stress and strain	2nd	To determine radius of curvature of a given spherical surface by a spherometer.
	4th	Hooke's law, Different types of module of elasticity.		
10th	1st	Pressure, Pascal's law	1st	Revision & Checked practical note book
	2nd	Surface tension: definition, its units, surface tension, effect of temperature on Surface tension		
	3rd	Viscosity: definition, units and effect of temp.	2nd	Revision & Checked practical note book
	4th	Tutorial: Doubt session and problem solving		
11th	1st	Fluid motion, stream line and turbulent flow.	1st	To verify parallelogram law of forces
	2nd	Revision of 5th unit		
	3rd	3rd class test	2nd	To verify parallelogram law of forces
	4th	Tutorial: Doubt session and problem solving		
12th	1st	Definition of heat and temperature, Difference between heat and temperature	1st	Revision & Checked practical note book
	2nd	Principles of measurement of temperature, Modes of transfer of heat		
	3rd	Conduction, convection and radiation Properties of heat radiation	2nd	Revision & Checked practical note book
	4th	Tutorial: Doubt session and problem solving		
13th	1st	Different scales of temperature and their relationship	1st	To determine the atmospheric pressure at a place using Fortin's Barometer
	2nd	Principles of measurement of temperature.		
	3rd	Revision of 6th unit	2nd	To determine the atmospheric pressure at a place using Fortin's Barometer
	4th	Tutorial: Doubt session and problem solving		

14th	1st	4th Class test	1st	Revision & Checked practical note book	
	2nd	Revision of 1st and 2nd unit			
	3rd	Class test	2nd	Revision & Checked practical note book	
	4th	Revision of 3rd and 4th unit			
15th	1st	Class test	1st	Re revision of experiments	
	2nd	Re revision of 5 units			
	3rd	Re revision of 6 units	2nd	Re revision of experiments	
	4th	Tutorial: Doubt session and problem solving			
16th	1st	Wave motion: Introduction to periodic motion, Transverse and longitudinal wave motion with examples	1st	To determine force constant of spring using Hooke's law	
	2nd	Term used in S.H.M like displacement, amplitude, time period, frequency, wavelength	1st	To determine force constant of spring using Hooke's law	
	3rd	Wave velocity, relationship among wave velocity, frequency and wave length			
	4th	Tutorial: Doubt session and problem solving	2nd	To determine force constant of spring using Hooke's law	
17th	1st	Simple Harmonic Motion (SHM): definition and examples	1st	Revision & Checking of practical note books	
	2nd	Cantilever: definition and formula of time period			
	3rd	Free, forced and resonant vibrations			
	4th	Tutorial: Doubt session and problem solving	2nd	Revision & Checking of practical note books	
18th	1st	Acoustics of buildings – reverberation, reverberation time	1st	Measuring room temperature with the help of thermometer and its conversion in different scale.	
	2nd	Echo, noise, coefficient of absorption of sound			
	3rd	Methods to control reverberation time			
	4th	Tutorial: Doubt session and problem solving			
			2nd	Measuring room temperature with the help of thermometer and its conversion in different scale.	
19th	1st	Ultrasonic (production methods)Applications to cold welding, drilling and SONAR	1st	Revision & Checking of practical note books	
	2nd	Optics: Reflection, refraction of light and refractive index			
	3rd	Lens formula(no derivation), power of lens and related numerical problems			
	4th	Tutorial: Doubt session and problem solving	2nd	Revision & Checking of practical note books	
20th	1st	Total internal reflection (TIR), critical angle and conditions for total internal reflection	1st	To find the time period of a simple pendulum	
	2nd	Applications of TIR			
	3rd	Microscope and Telescope (definition) Uses of microscope and telescope			
	4th	class test	2nd	To find the time period of a simple pendulum	

21st	1st	Electrostatics: Coulomb's law and electric charge and unit charge		
	2nd	Electric field and Electric lines of force (definition and properties)	1st	Revision & Checking of practical note books
	3rd	Electric Flux and Electric intensity due to a point charge		
	4th	Tutorial: Doubt session and problem solving	2nd	Revision & Checking of practical note books
22nd	1st	Electric potential (definition and formula)	1st	To determine and verify the time period of Cantilever
	2nd	Gauss' law (Statement and derivation) Series and parallel combination of capacitors		
	3rd	Capacitor and Capacitance (with formula and units) Numerical problems		
	4th	Tutorial: Doubt session and problem solving	2nd	To determine and verify the time period of Cantilever
23rd	1st	Revision of 7th and 8th units	1st	Revision & Checking of practical note books
	2nd	Current Electricity: Electric current and its units		
	3rd	Direct and alternating current		
	4th	Tutorial: Doubt session and problem solving	2nd	Revision & Checking of practical note books
24th	1st	Class test	1st	To verify ohm's laws by plotting a graph between voltage and current
	2nd	Ohm's law and resistance		
	3rd	Specific resistance (definition and units) and Conductance		
	4th	Tutorial: Doubt session and problem solving, Kirchhoff's laws (statement and formula)	2nd	To verify ohm's laws by plotting a graph between voltage and current
25th	1st	Series and parallel combination of resistances Numerical problems	1st	Revision & Checking of practical note books
	2nd	Electric power, Electric energy and its units		
	3rd	Heating effect of current Kirchhoff's law		
	4th	Tutorial: Doubt session and problem solving	2nd	To verify laws of resistances in series combination. To verify laws of resistance in parallel combination
26th	1st	Revision of 9th and 10th units	1st	To find resistance of galvanometer by half deflection method
	2nd	class test		
	3rd	Electromagnetism: Introduction to magnetism		
	4th	Tutorial: Doubt session and problem solving		
27th	1st	Magnetic field and magnetic intensity	2nd	To verify laws of reflection of light using mirror.
	2nd	Magnetic lines of force, magnetic flux and their units		
	3rd	Types of magnetic materials, Dia, para and ferromagnetic materials with examples		

	4th	Tutorial: Doubt session and problem solving		
28th	1st	Semiconductor physics: Definition of energy level and Energy bands and types of materials (insulator, semiconductor, conductor)	1st	Revision & Checking of practical note books
	2nd	Intrinsic and extrinsic semiconductors		
	3rd	p-n junction diode and its V-I characteristics		
	4th	Tutorial: Doubt session and problem solving	2nd	To verify laws of refraction using glass slab.
29th	1st	Diode as half wave rectifier Diode as full wave rectifier	1st	Revision & Checking of practical note books
	2nd	Semiconductor transistor: pnp and npn (Introduction only)		
	3rd	class test Applications of lasers		
	4th	Tutorial: Doubt session and problem solving	2nd	To find the focal length of a concave lens, using a convex lens
30th	1st	Modern Physics: Lasers: full form, characteristics	1st	To study colour coding scheme of resistance.
	2nd	Introduction to nanotechnology		
	3rd	Definition of nanomaterial's with examples, Applications of nanotechnology		
	4th	Tutorial: Doubt session and problem solving Revision of 6th and 7th units	2nd	Revision of experiments
31th	1st	Fiber optics: Introduction to optical fibers(definition and parts)	1st	Revision of experiments
	2nd	Applications of optical fibers in different fields		
	3rd	Class test		
	4th	Tutorial: Doubt session and problem solving	2nd	Revision & Checking of practical note books
32nd	1st	Revision of 11th unit	1st	Revision of experiments
	2nd	Revision of 12th unit		
	3rd	Tutorial: Doubt session and problem solving		
	4th	Class Test	2nd	Revision & Checking of practical note books
33rd	1st	Revision of 13th unit	1st	Revision of experiments
	2nd	Revision of 13th unit		
	3rd	Tutorial: Doubt session and problem solving		
	4th	Class Test	2nd	Revision & Checking of practical note books