

## Lesson Plan

**Name of Faculty:** Mr. RAJESH UPPAL

**Discipline:** Applied Sciences

**Year:** First

**Subject:** Applied Physics (Theory & Practical)

**Lesson Plan Duration:** 36 weeks (from 30.07.18 2018 to 30.04.19)

**Work Load (Lecture/Practical) per week (in hours):** Lecture-02, Tutorial-01, Practical- 02

Week	Theory		Practical	
	Lecture/Tutorial Day	Topic (Including Assignments/Test)	Practical Day	Topic
1 <sup>st</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Definition of Physics, Physical Quantities; Fundamental &amp; Derived Quantities</li> </ul>	01	To find the diameter of Solid Cylinder using a Vernier Calliper.
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Units; Fundamental &amp; Derived Units</li> <li>System of units (FPS, CGS and SI units)</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li><b>Discussion on Units</b></li> </ul>		
2 <sup>nd</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Dimensional Formulae</li> <li>SI units of physical quantities</li> </ul>	02	To find internal diameter and depth of beaker using Vernier Caliper and hence find its volume
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Principle of homogeneity of dimensions</li> <li>Dimensional Equations</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li><b>Discussion on Principle of homogeneity of dimensions</b></li> </ul>		
3 <sup>rd</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Applications of Dimensional Analysis</li> <li>Checking correctness of equation</li> </ul>	03	To find the diameter of wire using screw gauge.
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Conversion of numerical value from one system of unit into another. (force, work)</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li><b>Recap of Units &amp; Dimensions &amp; Assignment I on Units &amp; Dimensions</b></li> </ul>		
4 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Scalar and Vector Quantities</li> <li>Addition of vectors</li> </ul>	04	To find thickness of paper using screw gauge.
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Triangle and Parallelogram law (Statements &amp; formula Only)</li> <li>Scalar &amp; Vector Product(Statements &amp; formula Only)</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li><b>Discussion on Scalars &amp; Vectors</b></li> </ul>		
5 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Definition of Distance, Displacement, Speed, Velocity, Acceleration</li> </ul>	05	To find the thickness of glass strip using a spherometer
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Force and its units</li> <li>Resolution of Force</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li><b>Discussion on Resolution of Force</b></li> </ul>		
6 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Newton's law of motion (Statement and examples)</li> </ul>	06	To determine radius of curvature of given spherical surface by a Spherometer.
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Momentum</li> <li>Conservation of linear momentum (Statement Only)</li> <li>Impulse</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li><b>Discussion on Conservation of linear momentum</b></li> </ul>		

7 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Circular Motion, Definition of Angular Displacement, Angular Velocity, Linear Acceleration and Angular Acceleration</li> </ul>	07	To verify Parallelogram law of forces
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Definition of Time Period &amp; Frequency</li> <li>Relation between linear and angular velocity</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li><b>Discussion on Circular Motion</b></li> </ul>		
8 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Centripetal and Centrifugal forces (Definition &amp; Formula)</li> </ul>	08	To determine atmospheric pressure at a place using Fortin's Barometer
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Banking of Roads with derivation</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li><b>Recap &amp; Assignment II based on Force and Motion</b></li> </ul>		
9 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Revision of First Internal Assessment Exam</li> </ul>	09	To determine force constant of spring using Hooke's law
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Revision of First Internal Assessment Exam</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li><b>Problems based on Units &amp; Dimensions and Force &amp; Motion</b></li> </ul>		
10 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Work ( Definition, Symbol, Formula and SI units)</li> <li>Energy (Definition &amp; SI units)</li> </ul>	10	Measuring room temperature with the help of thermometer and its conversion in different scales.
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Examples of transformation of energy</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li><b>Discussion on energy transformation</b></li> </ul>		
11 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Kinetic Energy (Formula, Examples &amp; Derivation)</li> </ul>	11	To find time period of simple pendulum.
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Potential Energy (Formula, Examples &amp; Derivation)</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li><b>Problems based on K.E. &amp; P.E.</b></li> </ul>		
12 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Principle of conservation of Mechanical energy for freely falling bodies ( Derivation)</li> </ul>	12	To determine and verify the time period of Cantilever.
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Power its definition, formula and units</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li><b>Simple numerical problems based on formula of power</b></li> </ul>		
13 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Rotational Motion with examples</li> </ul>	13	To verify Ohm's Law by plotting a graph between voltage and current.
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Definition of Torque &amp; Angular Momentum with examples</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li><b>Problems based on Torque &amp; Angular Momentum</b></li> </ul>		
14 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Conservation of Angular Momentum and its examples</li> </ul>	14	To verify law of resistance in series combination.
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>MOI &amp; its physical significance</li> <li>Radius of Gyration (Definition &amp; derivation and formula)</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li><b>Recap &amp; Assignment based on Work, Power &amp; Energy; Rotational Motion.</b></li> </ul>		
15 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Definition of Elasticity, Deforming force, Restoring force, examples of elastic and plastic bodies</li> </ul>	15	To verify law of resistance in parallel combination.
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Definition of stress with its types</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li></li> </ul>		
16 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Definition of strain with its types</li> </ul>	16	To find resistance of Galvanometer by half deflection method.
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Hooke's law</li> <li>Modulus of Elasticity (Young's ,</li> </ul>		

		Bulk & Shear)		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• <b>Discussion on Modulus of Elasticity</b></li> </ul>		
17 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Pressure (Definition, Formula &amp; Units)</li> <li>• Pascals Law</li> </ul>	17	To verify law of reflection of light using mirror.
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Surface Tension definition &amp; its units</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• <b>Discussion on problems based on Pressure</b></li> </ul>		
18 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Application of Surface Tension</li> </ul>	18	To verify law of refraction of light using glass slab
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Effect of temperature on Surface Tension</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• <b>Discussion on problems based on Surface Tension</b></li> </ul>		
19 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Viscosity its definition &amp; units</li> <li>• Effect of temperature on viscosity</li> </ul>	19	To find focal length of a concave lens using convex lens.
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Fluid Motion</li> <li>• Streamline &amp; Turbulent Flow</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• <b>Recap of Properties of Matter</b></li> </ul>		
20 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Definition of heat and Temperature</li> <li>• Difference between heat and Temperature</li> </ul>	20	To study colour coding scheme of resistance
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Principles of measurement of temperature</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• <b>Modes of Transfer of Heat with Examples</b></li> </ul>		
21 <sup>st</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Properties of Heat Radiations</li> </ul>	21	Revision & Viva
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Different scales of Temperature Scales &amp; their relationship</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• Wave motion</li> <li>• Longitudinal &amp; Transverse wave motion with examples</li> </ul>		
22 <sup>nd</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Displacement, amplitude, time period, frequency, wavelength and wave velocity of wave</li> <li>• Velocity=Wavelength x Frequency (Derivation)</li> </ul>	22	Revision & Viva
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• S.H.M. (Definition &amp; Examples)</li> <li>• Cantilever (Definition and Formula of its Time Period)</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• Free, Forced and Resonant Vibrations with examples</li> </ul>		
23 <sup>rd</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Acoustics of buildings</li> <li>• Reverberation Time</li> <li>• Control of Reverberation Time</li> </ul>	23	Revision & Viva
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Echo</li> <li>• Noise</li> <li>• Co-efficient of Sound</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• Ultrasonics</li> <li>• Engg. Applications of Ultrasonics</li> </ul>		
24 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Reflection of Light</li> <li>• Refraction of Light</li> </ul>	24	Revision & Viva
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Refractive Index</li> <li>• Lens Formula</li> <li>• Power of lens</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• <b>Numerical on power of lens</b></li> </ul>		
25 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Microscope and Telescope (Definition)</li> </ul>	25	Revision & Viva

	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Uses of Microscope and Telescope</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• <b>Recap and Assignment III based on Heat &amp; Temp.; Wave Motion &amp; its Applications and Optics</b></li> </ul>		
26 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Electric Charge, unit of electric charge</li> <li>• Conservation of charge</li> </ul>	26	Revision & Viva
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Coulomb's Law of Electrostatics</li> <li>• Electric Field</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• Electric lines of force (Definition &amp; Properties)</li> </ul>		
27 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Electric field intensity due to point charge</li> </ul>	27	Revision & Viva
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Electric Flux</li> <li>• Gauss Law (Derivation)</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• Capacitor &amp; Capacitance</li> <li>• Series Combination of capacitors</li> </ul>		
28 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Parallel Combination of capacitors</li> </ul>	28	Revision & Viva
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Numerical based on Series and Parallel combination of capacitors</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• Electric current &amp; its unit</li> <li>• Direct &amp; Alternating Current</li> </ul>		
29 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Resistance and specific resistance</li> <li>• Conductance</li> </ul>	29	Revision & Viva
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Series combination of resistances</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• Parallel combination of resistances</li> </ul>		
30 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Ohm's law(Statement &amp; Formula)</li> <li>• Heating effect of current</li> </ul>	30	Revision & Viva
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Electric power &amp; its units</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• Kirchoff's Laws (Statement &amp; Formula)</li> </ul>		
31 <sup>st</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Introduction to Magnetism</li> <li>• Types of magnetic materials</li> </ul>	31	Revision & Viva
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Dia, para and ferromagnetic materials with examples</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• Magnetic field</li> <li>• Magnetic intensity</li> <li>• Magnetic lines of force</li> <li>• Magnetic flux and their units</li> </ul>		
32 <sup>nd</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Electromagnetic induction (Definition)</li> <li>• <b>Recap and Assignment IV based on Electrostatics, Current Electricity &amp; Electromagnetism</b></li> </ul>	32	Revision & Viva
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Definition of Energy Levels</li> <li>• Definition of Energy Bands</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• Types of materials (Insulator, Semiconductor &amp; Conductor)</li> </ul>		
33 <sup>rd</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Intrinsic &amp; Extrinsic Semiconductors</li> </ul>	33	Revision & Viva
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• p-n junction diode and its V-I characteristics</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• Diode as rectifier</li> <li>• Half wave rectifier</li> </ul>		
34 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Full wave rectifier (Centre tap only)</li> </ul>	34	Revision & Viva
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Semiconductor Transistor (Introduction &amp; Symbol)</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• Laser (Full form &amp; Its Principle)</li> <li>• Spontaneous Emission</li> </ul>		
35 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Stimulated Emission</li> </ul>	35	Revision & Viva

		<ul style="list-style-type: none"> <li>• Population Inversion</li> </ul>		
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Engg. &amp; Medical Applications of Lasers</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• Introduction of Fibre Optics</li> <li>• Applications of optical fibres in different fields</li> </ul>		
36 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>• Introduction to nanotechnology</li> <li>• Definition of nanomaterials with examples</li> </ul>	36	Revision & Viva
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>• Applications of Nanotechnology</li> </ul>		
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>• Recap and Assignment V based on Semiconductor Physics &amp; Modern Physics</li> </ul>		