

LESSON PLAN FOR ACADEMIC SESSION 2023-24

Discipline: Physics	Semester: 1st Branch: Mechanical	Name of the Teaching Faculty: Abhilash Padhy
Subject: Engg. Physics (Th 2A)	No. of Days/per week class allotted: 04	Semester From date: 16/08/2023 To Date: 11/12/2023 No. of Weeks: 17
Week	Class Day/ Period	Topics to be covered
1st (16-19) Aug.	1st	Introduction to Physics and Physical quantities, fundamental and derived units, System of Units (M.K.S. , C.G.S. , F.P.S. , S.I.),
	2nd	Definition of dimension and Dimensional formulae of physical quantities,
2nd (21-26) Aug.	1st	Dimensional Equations and Principle of Homogeneity, Checking the dimensional correctness of physical relations
	2nd	Definition and concept of scalar and vector quantities, examples and types of vector.
	3rd	Triangle and parallelogram law of vector addition, Simple Numericals, Resolution of vectors,
	4th	vector multiplication(scalar and vector product)
3rd (28th Aug.- 2nd Sept.)	1st	Concept of rest and motion, displacement,speed,velocity,acceleration,force (Definition, formula, dimension & SI units)
	2nd	Equations of motion under gravity(upward and downward motion)
	3rd	Definition and example of projectile, Time of flight, maximum height, horizontal range, for projectile fired at an angle
	4th	Equation of trajectory for projectile fired at an angle, condition for maximum horizontal range
4th (4-9) Sept.	1st	Circular motion: Angular displacement, Angular velocity, Angular acceleration
	2nd	Relation between linear velocity and angular velocity, relation between linear and angular acceleration
	3rd	Definition, formula and SI unit of work
	4th	Deinition and concept of friction, types of friction(static and dynamic)
5th (11-16) Sept.	1st	Definition of limiting friction, Laws of limiting friction,
	2nd	Definition and Concept of Coefficient of friction, Simple numericals, Methods of reducing friction
	3rd	Newton's laws of gravitation- Statement and Explanation,
	4th	Definition, Unit and Dimension of Universal gravitational constant (G)
6th (18-23) Sept.	1st	Definition and Concept of Acceleration due to gravity(g), Definition of mass and weight,
	2nd	Relation between g and G, Variation of g with altitude and depth (Explanation)
	3rd	Kepler's laws of planetary motion
	4th	Simple Harmonic Motion (SHM)- Definition and Examples
7th (25-30) Sept.	1st	Monthly Assessment 1
	2nd	Expression for displacement, velocity, acceleration of a body in SHM
	3rd	Definition & Concept of Wave motion.
	4th	Definition and Examples of Transverse and Longitudinal wave motion & Comparison between them.

8th (3-7) Oct.	1st	Definition of different wave parameters(amplitude, wavelength,frequency, timeperiod), Derivation of relation between velocity,frequency and wavelength of a wave.
	2nd	Ultrasonics- definition, properties and applications
9th (9-14) Oct.	1st	Heat and Temperature- definition,cocept,units, Difference between Heat and Temperature
	2nd	Definition, concept, unit and dimension of Specific heat
	3rd	Concept of change of state, latent heat
	4th	Simple numericals
10th (16-20) Oct.	1st	Definition and concept of thermal expansion, expansion of solids,
	2nd	Coefficient of linear,superficial and cubical expansion, relation between alpha, beta, gamma
	3rd	cocept and relation of work and heat, joules mechanical equivalent of heat,first law of thermodynamics
	4th	Definition and laws of reflection and refraction, definition and concept of refractive index, simple numericals
11th (30th Oct.- 4th Nov.)	1st	Critical angle and total internal reflection, Refraction through prism(ray diagram and formula)
	2nd	Fibre optics: definition, properties and applications
	3rd	Difinition and concept of Electrostatics, Statement and explanation of Coloumb's law
	4th	Definition of unit charge, absolute and relative pemittivity
12th (6-11) Nov.	1st	Monthly Assessment 2
	2nd	Definition, Formula and SI unit of Electric field, Electric field intensity
	3rd	Definition, Formula & SI Units of Electric Potential and Electric Potential Difference
	4th	Capacitance,series and parallel combination of capacitors, simple numericals
13th (13-18) Nov.	1st	Magnet, properties of magnet, Coloumb's laws in magnetism, Unit pole
	2nd	Magnetic field and magnetic field intensity, magnetic lines of force, magnetic flux and magnetic flux density
	3rd	Definition, formula and SI units of Electric current.
	4th	Ohm's law and it's applications
14th (20-25) Nov.	1st	Series and parallel combination of resistors, Simple numericals.
	2nd	Kirchhoff's Laws (Statement & Explanation with diagram)
	3rd	Application of kirchoff's law to wheatstonebridge, balanced WB and condition for balance
	4th	Definition and concept of electromagnetism,
15th (28th Nov.-2nd Dec.)	1st	force acting on a current carrying conductor placed in uniform magnetic field, Fleming's left hand rule
	2nd	Faraday's laws of electromagnetic induction, Lenz's law
16th (4-9) Dec.	1st	Fleming's right hand rule, Comparision between Fleming's left hand rule and Fleming's right hand rule
	2nd	Laser and Laser beam(concept and Definition),Population inversion and Optical pumping, properties and applications of laser,
	3rd	Wireless transmission: ground waves, sky waves, space waves
	4th	Monthly Assessment 3
17th (11-16) Dec.	1st	Brief Revision of the Course
	2nd	Brief Revision of the Course

LESSON PLAN FOR ACADEMIC SESSION 2023-24

Discipline: Physics	Semester: 1st Branch: Mechanical (Group M1&M2)	Name of the Teaching Faculty: Abhilash Padhy
Subject: Engg. Physics Practical (Pr 2A)	No. of Days/per week class allotted: 04	Semester From date: 16/08/2023 To Date: 11/12/2023 No. of Weeks: 16
Week	Class Day/ Period	Topics to be covered
1st (16-19) Aug.	1st	Introductory Remarks on Course Structure, Laboratory Criteria, Identification of Various Lab Equipment
	2nd	
2nd (21-26) Aug.	1st	Explanation of the various parts and working principle of Vernier Calliper, concept of LC, VC, Zero error.
	2nd	Demonstration of Experiment 01 and 02 along with practice session.
	3rd	Conduction of Experiment 01 : Determination of the volume of a solid cylinder using Vernier Caliper, Assessment of Lab Performance, Lab Record and conduction of viva.
	4th	
3rd (28th Aug.- 2nd Sept.)	1st	Conduction of Experiment 01 : Determination of the volume of a solid cylinder using Vernier Caliper and Experiment 02 : Determination of the volume of a solid cylinder using Vernier Caliper, Assessment of Lab Performance, Lab Record and conduction of viva.
	2nd	
	3rd	Conduction of Experiment 01 : Determination of the volume of a solid cylinder using Vernier Caliper and Experiment 02 : Determination of the volume of a solid cylinder using Vernier Caliper, Assessment of Lab Performance, Lab Record and conduction of viva.
	4th	
4th (4-9) Sept.	1st	Explanation of the various parts and working principle of Screw gauge, concept of pitch, LC, I-F,PSR and CSR, Demonstration of Experiment 03 and 04 along with practice session.
	2nd	
	3rd	Conduction of Experiment 03 : Determination of the area of crosssection of a given wire using screw gauge, Assessment of Lab Performance, Lab Record and conduction of viva.
	4th	
5th (11-16) Sept.	1st	Conduction of Experiment 03 : Determination of the area of crosssection of a given wire using screw gauge and Experiment 04 :Determination of Volume of a glass lamina using screw gauge, Assessment of Lab Performance, Lab Record and conduction of viva.
	2nd	
	3rd	Conduction of Experiment 03 : Determination of the area of crosssection of a given wire using screw gauge and Experiment 04 :Determination of Volume of a glass lamina using screw gauge, Assessment of Lab Performance, Lab Record and conduction of viva.
	4th	
6th (18-23) Sept.	1st	Explanation of the various parts and working principle of Spherometer, concept of radius of curvature, Demonstration of Experiment 05 and 06 along with practice session.
	2nd	
7th (25-30) Sept.	1st	Conduction of Experiment 05 : Determination of Radius of curvature of a convex surface using spherometer, Assessment of Lab Performance, Lab Record and conduction of viva.
	2nd	
	3rd	Conduction of Experiment 05 : Determination of Radius of curvature of a convex surface using spherometer and Experiment 06 :Determination of Radius of curvature of a concave surface, using spherometer, Assessment of Lab Performance, Lab Record and conduction of viva.
	4th	
8th (3-7) Oct.	1st	Conduction of Experiment 05 : Determination of Radius of curvature of a convex surface using spherometer and Experiment 06 :Determination of Radius of curvature of a concave surface, using spherometer, Assessment of Lab Performance, Lab Record and conduction of viva.
	2nd	
	3rd	Explanation of simple oscillation, simple pendulum, time period of oscillation,Demonstration of Experiment 07 along with practice session.
	4th	
9th (9-14) Oct.	1st	Conduction of Experiment 07 : Determination of 'g' by using simple pendulum, Assessment of Lab Performance, Lab Record and conduction of viva.
	2nd	
	3rd	Makeup lab from Experiment 01 to Experiment 07
	4th	
10th (16-20) Oct.	1st	Explanation of the concept of magnetic field, lines of force, neutral point, Demonstration of Experiment 08 and 09 along with practice session.
	2nd	
	3rd	Conduction of Experiment 08 : Determination of the neutral point and drawing magnetic lines of force due to a bar magnet when its north pole is facing north., Assessment of Lab Performance, Lab Record and conduction of viva.
	4th	
11th (30th Oct.- 4th Nov.)	1st	Conduction of Experiment 08 : Determination of the neutral point and drawing magnetic lines of force due to a bar magnet when its north pole is facing north and Experiment 09 :Determination of the neutral point and drawing magnetic lines of force due to a bar magnet when its north pole is facing south, Assessment of Lab Performance, Lab Record and conduction of viva., Assessment of Lab Performance, Lab Record and conduction of viva.
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	3rd	Conduction of Experiment 08 : Determination of the neutral point and drawing magnetic lines of force due to a bar magnet when its north pole is facing north and Experiment 09 :Determination of the neutral point and drawing magnetic lines of force due to a bar magnet when its north pole is facing south, Assessment of Lab Performance, Lab Record and conduction of viva., Assessment of Lab Performance, Lab Record and conduction of viva.
	4th	

12th (6-11) Nov.	1st	Explanation of the concept of refraction through prism, angle of minimum deviation, Demonstration of Experiment 10 along with practice session.
	2nd	
	3rd	Conduction of Experiment 10 : Determination of the angle of minimum deviation for a prism, Assessment of Lab Performance, Lab Record and conduction of viva.
	4th	
13th (13-18) Nov.	1st	Conduction of Experiment 10 : Determination of the angle of minimum deviation for a prism and Experiment 11 : Determination of angle of prism, Assessment of Lab Performance, Lab Record and conduction of viva.
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	4th	
14th (20-25) Nov.	1st	Makeup lab from Experiment 01 to Experiment 11
	2nd	
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LESSON PLAN FOR ACADEMIC SESSION 2023-24

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	3rd	Newton's laws of gravitation- Statement and Explanation,
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6th (18-23) Sept.	1st	Definition and Concept of Acceleration due to gravity(g),Definition of mass and weight, Relation between g and G
	2nd	Variation of g with altitude and depth (Explanation)
7th (25-30) Sept.	1st	Monthly Assessment 1
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8th (3-7) Oct.	1st	Definition & Concept of Wave motion.
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	3rd	Definition of different wave parameters(amplitude, wavelength,frequency, timeperiod), Derivation of relation between velocity,frequency and wavelength of a wave.
	4th	Ultrasonics- definition, properties and applications

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	4th	Brief Revision of the Course

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	2nd	
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6th (18-23) Sept.	1st	Conduction of Experiment 03 : Determination of the area of crosssection of a given wire using screw gauge and Experiment 04 :Determination of Volume of a glass lamina using screw gauge, Assessment of Lab Performance, Lab Record and conduction of viva.
	2nd	
7th (25-30) Sept.	1st	Conduction of Experiment 03 : Determination of the area of crosssection of a given wire using screw gauge and Experiment 04 :Determination of Volume of a glass lamina using screw gauge, Assessment of Lab Performance, Lab Record and conduction of viva.
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	3rd	Explanation of the various parts and working principle of Spherometer, concept of radius of curvature, Demonstration of Experiment 05 and 06 along with practice session.
	4th	
8th (3-7) Oct.	1st	Conduction of Experiment 05 : Determination of Radius of curvature of a convex surface using spherometer, Assessment of Lab Performance, Lab Record and conduction of viva.
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11th (30th Oct.- 4th Nov.)	1st	Makeup lab from Experiment 01 to Experiment 07
	2nd	
	3rd	Explanation of the concept of magnetic field, lines of force, neutral point, Demonstration of Experiment 08 and 09 along with practice session.
	4th	

12th (6-11) Nov.	1st	Conduction of Experiment 08 : Determination of the neutral point and drawing magnetic lines of force due to a bar magnet when its north pole is facing north., Assessment of Lab Performance, Lab Record and conduction of viva.
	2nd	
	3rd	Conduction of Experiment 08 : Determination of the neutral point and drawing magnetic lines of force due to a bar magnet when its north pole is facing north and Experiment 09 :Determination of the neutral point and drawing magnetic lines of force due to a bar magnet when its north pole is facing south, Assessment of Lab Performance, Lab Record and conduction of viva., Assessment of Lab Performance, Lab Record and conduction of viva.
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	2nd	
	3rd	Explanation of the concept of refraction through prism, angle of minimum deviation,Demonstration of Experiment 10 along with practice session.
	4th	
14th (20-25) Nov.	1st	Conduction of Experiment 10 : Determination of the angle of minimum deviation for a prism, Assessment of Lab Performance, Lab Record and conduction of viva.
	2nd	
	3rd	Conduction of Experiment 10 : Determination of the angle of minimum deviation for a prism and Experiment 11 :Determination of angle of prism, Assessment of Lab Performance, Lab Record and conduction of viva.
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16th (4-9) Dec.	1st	Makeup lab from Experiment 01 to Experiment 11
	2nd	
	3rd	Makeup lab from Experiment 01 to Experiment 11
	4th	
17th 11th Dec.	1st	Makeup lab from Experiment 01 to Experiment 11
	2nd	