



**DEPARTMENT: MATHEMATICS AND SCIENCE**  
**BHUBANANANDA ORISSA SCHOOL OF ENGINEERING,**  
**CUTTACK**

## **LESSON PLAN**

**By**

**MISS MONALISA PARIDA**

**ACADEMIC SESSION: -2023**

**SEMESTER: -2<sup>nd</sup> SEMESTER**

**SUBJECT: -ENGINEERING PHYSICS (THEORY)**

**SECTION- I**

<b>Discipline: ETC and Applied Branch</b>	<b>Semester: 2<sup>nd</sup>Semester</b>	<b>Name of the Teaching Faculty: Monalisa Parida</b>
<b>Subject: Engineering Physics</b>	<b>No. of Days/ per week class allotted: 04 periods/per week (Mon ,Tue,We'd,Fri):- (4periods each)</b>	<b>Semester From: - Date: 20 / 03 / 2023 to24/ 06/2023</b> <b>No of Weeks: - 15</b>
<b>Week</b>	<b>Class Dates</b>	<b>Theory Topics</b>
<b>1<sup>st</sup></b>	20.03.23	Introduction, Syllabus discussion and previous years related study discussion
	21.03.23	UNIT 1- UNIT AND DIMENSIONS 1.1 Physical quantities(Definition) 1.2 Definition of fundamental and derived units, system of units(FPS,CGS,MKS and SI units) 1.3 Definition of dimensions and Dimensional Formulae of physical quantities
	22.03.23	1.4 Dimensional equations and principle of homogeneity 1.5 Checking the dimensional correctness of Physical relations.
	24.03.23	UNIT-2 SCALARS AND VECTORS 2.1 Scalar and Vector quantities (definition and concept), Representation of a Vector – examples, types of vectors.
<b>2<sup>nd</sup></b>	27.03.23	<b>2.2 Triangle and Parallelogram law of vector Addition (Statement only). Simple Numerical.</b> <b>2.3 Resolution of Vectors – Simple Numerical on Horizontal and Vertical components.</b>

	28.03.23	<b>2.4 Vector multiplication (scalar product and vector product of vectors)</b>
2nd	29.03.23	<b>CLASS TEST – 01</b>
	31.03.23	<b>UNIT-03 KINEMATICS</b> <b>3.1 Concept of rest and Motion</b> <b>3.2 Displacement, Speed, Velocity, Acceleration and Force (Definition, formula, dimensions and SI units)</b>
3rd	03.04.23	<b>3.3 Equation of Motion under Gravity (upward and downward motion)</b> <b>3.4 Circular motion: Angular displacement, Angular velocity and Angular acceleration (definition, formula and SI units)</b>
	4.04.23	<b>3.5 Relation between - (i) Linear and Angular Velocity, (ii) Linear and Angular acceleration</b> <b>3.6 Define Projectile, Examples of Projectile</b> <b>3.7 Expression for Equation of Trajectory. Time of flight, Maximum Height and Horizontal Range for a projectile fired at an angle, condition for maximum Horizontal Range.</b>
4th	05.03.23 10.04.23	<b>CLASS TEST-02</b> <b>UNIT 4 – WORK AND FRICTION</b> <b>4.1 Work – Definition, Formula &amp; SI units.</b> <b>4.2 Friction – Definition &amp; Concept.</b>
4th	11.04.23	4.3 Types of friction (static, dynamic), Limiting Friction (Definition with Concept) 4.4 Laws of Limiting Friction (Only statement, No Experimental Verification).
4th	12.04.23	4.5 Coefficient of Friction – Definition & Formula, Simple Numericals 4.6 Methods to reduce friction
5th	17.04.23	<b>CLASS TEST – 03</b>
5th	18.04.23	<b>UNIT -5 GRAVITATION</b> 5.1 Newton's Laws of Gravitation -statement and

		<p>explanation</p> <p>5.2 Universal Gravitation Constant (G)-Definition unit and Dimensions</p>
	19.04.23	<p>5.3 Acceleration due to gravity (g)- Definition and Concept</p> <p>5.4 Definition of mass and weight</p> <p>5.5 Relation between g and G</p>
	21.04.23	<p>5.6 Variation of g with altitude and depth(No derivation - Only formula)</p> <p>5.7 Keplers Laws of Planetary Motion(statement only)</p>
6th	24.04.23	<p>CLASS TEST-04</p> <p>UNIT-6 OSCILLATION AND WAVES</p>
	25.04.23	<p>6.1 Simple Harmonic Motion (SHM)-Definition and Examples</p> <p>6.2 Expression (Formula/Equation) for displacement, velocity, acceleration of a body /particle in SHM</p> <p>6.3 Wave motion- Definition and Concept</p>
	26.04.23	<p>6.4 Transverse and Longitudinal wave motion - Definition , Examples and Comparison.</p> <p>6.5 Definition of Different Wave Parameters (Amplitude, Wavelength, Frequency,Time Period)</p> <p>6.6 Derivation of Relation between Velocity, Frequency and Wavelength of a Wave</p> <p>6.7 Ultrasonics- Definition , Properties , Application</p> <p>CLASS TEST -05</p>
6th	28.04.23	<p>UNIT -07 HEAT AND THERMODYNAMICS</p> <p>7.1 Heat and Temperature -Definition and Difference</p>
7th	01.05.23	<p>7.2 Units of Heat (FPS,CGS,MKS, and SI)</p> <p>7.3 Specific Heat( Concept, definition,unit, dimensions and simple numerical)</p>

8th	02.05.23	7.4 Change of State (concept), Latent Heat (concept, definition, unit, dimension and simple numerical) 7.5 Thermal Expansion - Definition and Concept 7.6 Expansion of Solids (concept)
	03.05.23	7.7 Coefficient of linear, superficial and cubical expansion of solids - Definition and Units 7.8 Relation between Alpha, .....
	08.05.23	7.9 Work and Heat - concept and relation 7.10 Joules Mechanical Equivalent of Heat (Definition, Unit) 7.11 First Law of Thermodynamics (statement and concept only)
	09.05.23	CLASS TEST- 06
	10.05.23	UNIT- 08 OPTICS 8.1 Reflection & Refraction – Definition. 8.2 Laws of reflection and refraction (Statement only) 8.3 Refractive index – Definition, Formula & Simple numerical.
8th	12.05.23	8.4 Critical Angle and Total internal reflection – Concept, Definition & Explanation 8.5 Refraction through Prism (Ray Diagram & Formula only – NO derivation). 8.6 Fiber Optics – Definition, Properties & Applications
9th	15.05.23	CLASS TEST- 07
	16.05.23	UNIT 09 ELECTROSTATIC AND MAGNETOSTATIC 9.1 Electrostatics - Definition and Concept 9.2 Statement and Explanation of Coulombs law, Definition of unit charge

		9.3 Absolute and Relative Permittivity -Definition , Relation and Unit
	17.05.23	9.4 Electric Potential and Electric Potential difference ( Definition , formula and SI units) 9.5 Electric Field, Electric Field intensity (E) 9.6 Capacitance -Definition, formula and Unit
10th	22.05.23	9.7 Series and Parallel combination of Capacitors (No derivation,formula for effective/combined/total capacitance and Simple numericals) 9.8 Magnet, Properties of a magnet 9.9 Coulombs Laws in Magnetism -Statement and Explanation,Unit Pole(Definition)
	23.05.23	9.10 Magnetic field, Magnetic Field intensity (H)- Definition, formula and SI units) 9.11 Magnetic lines of Force(Definition and Properties) 9.12 Magnetic Flux and Magnetic Flux density(B)- Definition formula and unit
10th	24.05.23	CLAS TEST- 08 UNIT-10 CURRENT ELECTRICITY
	26.05.23	10.1 Electric Current -Definition,Formula and SI units 10.2 Ohms law and it's applications 10.3 Series and Parallel Combination of resistors (No derivation, Formula for effective/combined/total resistance and simple numericals)
11th	29.05.23	10.4 Kirchhoffs laws(statement and Explanation with diagram) 10.5 Application of Kirchhoffs law to Wheatstone bridge - Balanced condition of Wheatstone bridge

	30.05.23	CLASS TEST-09
	31.05.23	UNIT- 11 ELECTROMAGNETISM AND ELECTROMAGNETIC INDUCTION
		11.1 Electromagnetism -Definition and Concept
		11.2 Force acting on a current carrying conductor placed in a uniform magnetic field,Fleming's left hand rule
12th	02.06.23	11.3 Faradays laws of Electromagnetic Induction (statement only)
		11.4 Lenzs law(statement only)
13th	05.06.23	11.5 Fleming's Right Hand Rule
		11.6 Comparison between Fleming's Right Hand Rule and Fleming's left hand rule
	06.06.23	CLASS TEST -10
13th	07.06.23	UNIT -12 MODERN PHYSICS
		12.1 Laser and Laser beam (Concept and Definition)
	09.06.23	12.2 Principle of LASER (Population Inversion and Optical Pumping)
14th	12.06.23	12.3 Properties and Application of LASER
	13.06.23	12.4 Wireless Transmission -Ground Waves ,Sky Waves,Space Waves(Concept and Definition)
	16.06.23	CLASS TEST -11
15th	19.06.23	REVISION AND DOUBT CLEARING
	21.06.23	VST -01 ( For Semester Examination )
	23.06.23	VST- 02

**REFERENCE BOOK:**

TEXTBOOK OF ENGINEERING PHYSICS BY Dr.BISWAMBAR MOHANTY.

Signature