

# PADMASHREE KRUTARTHA ACHARYA INSTITUTE OF ENGINEERING & TECHNOLOGY, BARGARH



## LESSON PLAN Session-2022-2023

Discipline: Civil/Mechanical Engg. Semester: 2nd

Subject: Engg. Physics

Name of the Teaching Faculty: Dr. Niranjan Panda



PADMASHREE KRUTARTHA ACHARYA INSTITUTE OF  
ENGINEERING & TECHNOLOGY, BARGARH

LESSON PLAN

Discipline: Sec- A, B, C, D, E Engg. Semester: 1st & 2nd

Name of the Teaching Faculty : Dr Niranjan Panda

Subject: Engg. Physics No. Of Days/per week class allotted 04

Semester From Date : \_\_\_\_\_ To Date : \_\_\_\_\_ No. Of Weeks : 15

| Week | Class Day | Theory /Practical Topics   |
|------|-----------|--|
| 1    | 1         | Introduction to students in class and revising their 10th science                    |
|      | 2         | Dimension and Dimensional formula. Dimension of diff physical quantity.              |
|      | 3         | checking the correctness of a physical equations.                                    |
|      | 4         | Units and system of units. <del>and</del> Units of diff quantities.                  |
| 2    | 1         | scalar and vector quantity. Types of vectors and representation of a vector quantity |
|      | 2         | Triangle and parallelogram law of vector addition. Numericals of vector addition     |
|      | 3         | Resolution of vectors and Numerical problems.  |
|      | 4         | products of vectors. Dot product and cross product.                                  |
| 3    | 1         | Dot and cross product in terms of rectangular components.                            |
|      | 2         | concept of Rest and Motion. Displacement velocity and acceleration.                  |
|      | 3         | Gravity, gravitation, force and eq <sup>n</sup> of motion under gravity.             |
|      | 4         | Circular Motion and terms related to circular motion.                                |
| 4    | 1         | Relation between linear and angular velocity and acceleration.                       |
|      | 2         | projectile motion and Example of projectile Motion.                                  |
|      | 3         | projectile fired at an angle $\theta$ with horizontal and equations related to it.   |

  
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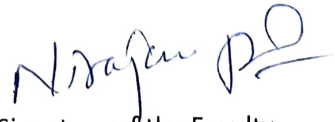
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|------|-----------|---|
|      | 4         | work, def <sup>n</sup> & formula & numericals related to this.                |
| 5    | 1         | friction. Types of friction   |
|      | 2         | sliding, rolling & limiting friction. laws of limiting friction.              |
|      | 3         | co-efficient of friction & numericals related to this.                        |
|      | 4         | Methods to reduce friction.   |
| 6    | 1         | Gravitation & gravity. Newton's law of gravitation.                           |
|      | 2         | universal law of gravitation & def <sup>n</sup> of G, unit & value of G.      |
|      | 3         | Acceleration due to gravity.  |
|      | 4         | Mass & weight & relation between g & G.                                       |
| 7    | 1         | Kepler's law of planetary motion & numericals.                                |
|      | 2         | Harmonic Motion & simple harmonic motion                                      |
|      | 3         | expression for displacement, velocity, acc <sup>n</sup> of a particle in SHM. |
|      | 4         | wave motion & types of wave motion relation between longitudinal & transverse |
| 8    | 1         | Different wave parameters & relation between them.                            |
|      | 2         | Relation between velocity, frequency & wave length                            |

  
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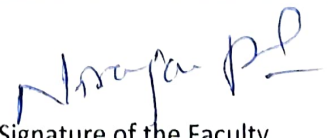
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| Week | Class Day | Theory /Practical Topics  |
|------|-----------|---|
|      | 3         | Ultrasonics, properties and applications  |
|      | 4         | concept of Heat and Temperature Difference                                      |
| 9    | 1         | Heat and specific heat of a body & $C_p$ and $C_v$ .                            |
|      | 2         | change of state and Latent heat of a body                                       |
|      | 3         | Thermal expansions & Co-efficient of thermal expansion. $\alpha, \beta, \gamma$ |
|      | 4         | Relation between $\alpha, \beta, \gamma$  |
| 10   | 1         | Work and Heat and relation between them. Joule's Law,                           |
|      | 2         | First law of thermodynamics & Numericals.                                       |
|      | 3         | Optics, light, reflection and refraction.                                       |
|      | 4         | Laws of reflection and laws of refraction                                       |
| 11   | 1         | Refractive index & Numericals. Critical angle, Total internal reflection        |
|      | 2         | Refraction through a prism & <del>concept</del>                                 |
|      | 3         | concept of fibre optics, properties & application.                              |
|      | 4         | Electrostatics & Electromagnetism.  |
| 12   | 1         | Coulomb's law of electrostatics and unit charge.                                |

  
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|------|-----------|--|
|      | 2         | Electric potential and potential distt<br>permittivity concept.              |
|      | 3         | Electric field intensity, Electric<br>capacitance, Resistance.               |
|      | 4         | Grouping of capacitors & Magnetic<br>properties of a magnet.                 |
| 13   | 1         | Magnetic field intensity (H), Magnetic field,<br>Magnetic field strength (H) |
|      | 2         | Magnetic lines of force and Magnetic<br>flux (Φ).                            |
|      | 3         | Electric current, concept & unit   |
|      | 4         | Ohm's law & derivation of resistance<br>unit.                                |
| 14   | 1         | Grouping of resistance, Numericals.  |
|      | 2         | Kirchoff's law of electric current   |
|      | 3         | Application of Ohm's law & Kirchoff's<br>law. Numericals.                    |
|      | 4         | Application to a Balanced wheatstone<br>Bridge.                              |
| 15   | 1         | Electromagnetism Concept & def <sup>n</sup> .                                |
|      | 2         | Force on a current carrying conductor<br>placed in a uniform magnetic field. |
|      | 3         | Faraday's law of electromagnetic<br>induction.                               |
|      | 4         | Lenz's law & Fleming's Right hand Rule.                                      |

*Niranjan Panda*  
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