# LESSON PLAN SUMMER 2023

| DISCIPLINE: PHYSICS | SEMESTER: 2nd | NAME OF THE TEACHING FACULTY: MISS SUSHREE SANGITA BEHERA (PTGF) |
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| **Subject:** ENGINEEERING PHYSICS | **No. of Days/per week class allotted: 04classes** | **Semester From date:20-03-2023 to Date:27.06.2023** |
| **Total period alloted: 60** | | **No. of Weeks: 16** |

| Sl. No | Week | Class Day | Theory/Practical Topics | No of periods allotted |
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| 1 | **4th Week/ March 2023** | 1ST | 1.1 Physical quantities - (Definition).<br>1.2 Definition of fundamental and derived units, systems of units (FPS, CGS, MKS and SI units). | 1 |
| | | 2ND | 1.3 Definition of dimension and Dimensional formulae of physical quantities. | 1 |
| | | 3RD | 1.4 Dimensional equations and Principle of homogeneity, | 1 |
| | | 4TH | 2.1 Scalar and Vector quantities (definition and concept), Representation of a Vector – examples, types of vectors. | 1 |
| 2 | **Last Week / March 2023** | 1ST | 2.2 Triangle and Parallelogram law of vector Addition (Statement only),2.3 Resolution of Vectors – Simple Numericals on Horizontal and Vertical components | 1 |
| | | 2ND | 2.4 Vector multiplication (scalar product and vector product of vectors). | 1 |
| | | 3RD | 3.1 Concept of Rest and Motion.<br>3.2 Displacement, Speed, Velocity, Acceleration & FORCE (Definition, formula, dimension & SI units). | 1 |
| | | 4TH | 3.3 Equations of Motion under Gravity (upward and downward motion) - no derivation. | 1 |
| 3 | **1st Week/ April 2023** | 1ST | 3.4 Circular motion: Angular displacement, Angular velocity and Angular acceleration (definition, formula & SI units). | 1 |
| | | 2ND | 3.5 Relation between –(i) Linear & Angular velocity, (ii) Linear & Angular acceleration).<br>3.6 Define Projectile, Examples of Projectile. | 1 |
| | | 3RD | 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. | 1 |

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| | | 4TH | 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. | 1 |
| 4 | **2nd Week/ April 2023** | 1ST | 4.1 Work – Definition, Formula & SI units.<br>4.2 Friction – Definition & Concept. | 1 |
| | | 2ND | 4.3 Types of friction (static, dynamic), Limiting Friction (Definition with Concept). | 1 |
| | | 3RD | 4.4 Laws of Limiting Friction (Only statement, No Experimental Verification).<br>4.5 Coefficient of Friction – Definition & Formula, Simple | 1 |
| | | 4TH | 4.6 Methods to reduce friction | 1 |
| 5 | **3rd Week/ April 2023** | 1ST | 5.1 Newton's Laws of Gravitation – Statement and Explanation.<br>5.2 Universal Gravitational Constant (G)- Definition, Unit | 1 |
| | | 2ND | 5.3 Acceleration due to gravity (g)- Definition and Concept.<br>5.4 Definition of mass and weight | 1 |
| | | 3RD | 5.5 Relation between g and G. | 1 |
| | | 4TH | 5.6 Variation of g with altitude and depth (No derivation – Only Explanation). | 1 |
| 6 | **4th Week/ April 2023** | 1ST | 5.7 Kepler's Laws of Planetary Motion (Statement only). | 1 |
| | | 2ND | 6.1 Simple Harmonic Motion (SHM) - Definition & Examples. | 1 |
| | | 3RD | 6.2 Expression (Formula/Equation) for displacement, velocity, acceleration of a body/ particle | 1 |
| | | 4TH | 6.3. Wave motion – Definition & Concept.<br>6.4 Transverse and Longitudinal wave motion – Definition, Examples & Comparison | 1 |
| 7 | **1st Week/ May 2023** | 1ST | 6.5 Definition of different wave parameters (Amplitude, Wavelength, Frequency, Time Period. | 1 |
| | | 2ND | 6.6 Derivation of Relation between Velocity, Frequency and Wavelength of a wave | 1 |
| | | 3RD | 6.7 Ultrasonics – Definition, Properties & Applications. | 1 |
| | | 4TH | 7.1 Heat and Temperature – Definition & Difference<br>7.2 Units of Heat (FPS, CGS, MKS & SI). | 1 |
| 8 | **2nd Week/ May 2023** | 1ST | 7.3 Specific Heat (concept, definition, unit, dimension and simple numerical)<br>7.4 Change of state (concept), Latent Heat (concept, definition, unit, dimension and simple numerical) | 1 |
| | | 2ND | 7.5 Thermal Expansion – Definition & Concept | 1 |
| | | 3RD | 7.6 Expansion of Solids (Concept) | 1 |

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| | | 4TH | 7.7 Coefficient of linear, superficial and cubical expansions of Solids – Definition & Units.<br>7.8 Relation between α, β & ϒ | 1 |
| 9 | **3rd Week/ May 2023** | 1ST | 7.9 Work and Heat - Concept & Relation | 1 |
| | | 2ND | 7.10 Joule's Mechanical Equivalent of Heat (Definition, Unit),7.11 First Law of Thermodynamics (Statement and concept only | 1 |
| | | 3RD | 8.1 Reflection & Refraction – Definition.<br>8.2 Laws of reflection and refraction (Statement only) | 1 |
| | | 4TH | 8.3 Refractive index – Definition, Formula &Simple numerical. | 1 |
| 10 | **4th Week/ May 2023** | 1ST | 8.4 Critical Angle and Total internal reflection – Concept, Definition & Explanation | 1 |
| | | 2ND | 8.5 Refraction through Prism (Ray Diagram & Formula only – NO derivation), 8.6 Fiber Optics – Definition, Properties & Applications | 1 |
| | | 3RD | 9.1 Electrostatics – Definition & Concept.<br>9.2 Statement & Explanation of Coulombs laws, Definition of Unit charge. | 1 |
| | | 4TH | 9.3 Absolute & Relative Permittivity (ε) – Definition, Relation & Unit.<br>9.4 Electric potential and Electric Potential difference (Definition, Formula & SI Units). | 1 |
| 11 | **Last Week days/ May 2023** | 1ST | 9.5 Electric field, Electric field intensity (E) – Definition, Formula & Unit.<br>9.6 Capacitance - Definition, Formula & Unit. | 1 |
| | | 2ND | 9.7 Series and Parallel combination of Capacitors (No derivation, Formula for effective/Combined/total capacitance & Simple numericals).<br>9.8 Magnet, Properties of a magnet. | 1 |
| | | 3RD | 9.9 Coulomb's Laws in Magnetism – Statement & Explanation, Unit Pole (Definition).<br>9.10 Magnetic field, Magnetic Field intensity (H) - (Definition, Formula & SI Unit). | 1 |
| | | 4TH | 9.11 Magnetic lines of force ( Definition and Properties) | 1 |
| 12 | **1st Week/ June 2023** | 1ST | 9.12 Magnetic Flux (Φ) & Magnetic Flux Density (B) – Definition, Formula & Unit. | 1 |
| | | 2ND | 10.1 Electric Current – Definition, Formula & SI Units. | 1 |
| | | 3RD | 10.2 Ohm's law and its applications. | 1 |
| | | 4TH | 10.3 Series and Parallel combination of resistors (No derivation, Formula for effective/Combined/ total resistance & Simple numericals). | 1 |
| 13 | **2nd Week/ June 2023** | 1ST | 10.4 Kirchhoff's laws (Statement & Explanation with diagram). | 1 |
| | | 2ND | 10.5 Application of Kirchhoff's laws to Wheatstone bridge - Balanced condition of Wheatstone's Bridge – Condition of Balance (Equation). | 1 |

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| | | 3RD | 11.1 Electromagnetism – Definition & Concept. | 1 |
| | | 4TH | 11.2 Force acting on a current carrying conductor placed in a uniform magnetic field, Fleming's Left Hand Rule | 1 |
| 14 | **3rd Week/ June 2023** | 1ST | 11.3 Faraday's Laws of Electromagnetic Induction (Statement only)<br>11.4 Lenz's Law (Statement) | 1 |
| | | 2ND | 11.5 Fleming's Right Hand Rule | 1 |
| | | 3RD | 11.6 Comparison between Fleming's Right Hand Rule and Fleming's | 1 |
| | | 4TH | 12.1 LASER & laser beam (Concept and Definition) | 1 |
| 15 | **4th Week/ June 2023** | 1ST | 12.2 Principle of LASER (Population Inversion & Optical Pumping) | 1 |
| | | 2ND | 12.3 Properties & Applications of LASER<br>12.4 Wireless Transmission – Ground Waves, Sky Waves, Space Waves<br>( Concept & Definition | 1 |
| | | 3RD | REVISION | 1 |
| | | 4TH | REVISION | 1 |
| 16 | **5th Week/ June 2023** | 1ST | REVISION | 1 |
| | | 2ND | REVISION | 1 |

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