

# LESSON PLAN

SUBJECT: ENGG. PHYSICS

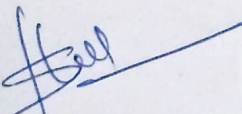
BRANCH: COMMON (ELECTRICAL & COMP. SC.)

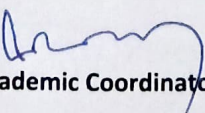
SEMESTER: 2<sup>ND</sup> (2023-24)

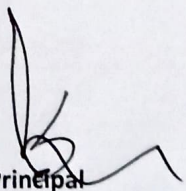
NAME OF THE FACULTY: ASEEMA BARIK



**GOVERNMENT POLYTECHNIC, BHADRAK**

  
HOD, Math & Sc

  
Academic Coordinator

  
Principal  
Govt. Polytechnic, Bhadrak



**LESSON PLAN FOR SUMMER SEMESTER – 2024**  
**Dept. of Math & Science, Govt. Polytechnic, Bhadrak**

Name of the Faculty : ASEEMA BARIK

Course Code: TH-2A

Theory: ENGG. PHY.

Total Periods : 60

Examination: SUMMER(2024)

Sem: 2<sup>ND</sup>

Class Test: 20

End Sem. Exam: 80

Total Mark :100

Class Start : 29.01.2024

<b>Discipline:</b> Electrical & Comp. Sc.	<b>Semester:</b> 2 <sup>ND</sup> (2024)	<b>Name of the Teaching Faculty :</b> Aseema Barik
<b>Subject:</b> Engineering Physics	<b>No. of Days/per week class allotted:</b> 04	<b>Semester from date:</b> 29.01.2024 <b>To Date:</b> 14.05.2024  <b>No. of Weeks:</b> 15
<b>Week</b>	<b>Class Day</b>	<b>Theory/ Topics</b>
1 <sup>st</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Brief discussion on geometry and mathematics</li> <li>▪ Definition of physical quantities, fundamental units, derived units</li> <li>▪ System of units</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Definition of dimension and dimensional formula of physical quantities</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Dimensional equation and principle of homogeneity</li> <li>▪ Checking the dimensional correctness of physical relations</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Definition and concept of scalar and vector quantities</li> <li>▪ Representation of vectors and types of vectors</li> </ul>
2 <sup>nd</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Triangle and parallelogram law of vector addition (graphical method)</li> <li>▪ Resolution of vectors</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Algebraic addition of vectors</li> <li>▪ Vector multiplication</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Concept of rest and motion</li> <li>▪ Displacement, speed, velocity, acceleration</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Force, upward motion under gravity</li> </ul>
3 <sup>rd</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Downward motion under gravity</li> <li>▪ Circular motion : angular velocity</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Angular velocity and angular acceleration</li> <li>▪ Relation between <math>v</math>, <math>\omega</math> and <math>a</math>, <math>\alpha</math></li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Numerical on kinematics</li> <li>▪ Definition and example of projectile</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Derivation of expression for equation of trajectory, T, H and R</li> <li>▪ Condition of maximum R</li> </ul>



4 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Definition of work, its formula and unit</li> <li>▪ Definition and concept of friction</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Static, dynamic and limiting friction</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Revision of limiting friction and laws of limiting friction</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Coefficient of friction and numerical</li> </ul>
5 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Method to reduce friction</li> <li>▪ Newton's law of gravitation</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Universal gravitational constant and acceleration due to gravity: Definition, concept, unit and dimension</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Relation between <math>g</math> and <math>G</math></li> <li>▪ Mass and weight</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Variation of <math>g</math> with altitude and depth</li> <li>▪ Kepler's law of planetary motion</li> </ul>
6 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Simple harmonic motion – definition and example</li> <li>▪ <math>s</math>, <math>v</math> and <math>a</math> in SHM</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Revision of SHM and wave motion</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Different wave parameters (<math>A</math>, <math>\lambda</math>, <math>f</math>, <math>T</math>)</li> <li>▪ Transverse and longitudinal wave motion</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Relation between <math>v</math>, <math>f</math>, <math>\lambda</math></li> <li>▪ Definition, properties and application of ultrasonic</li> </ul>
7 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Question and answer discussion on SHM and wave</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Heat and temperature – concept and differences</li> <li>▪ Units of heat</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Specific heat: concept and numerical</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Change of state and latent heat, numerical</li> </ul>
8 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Thermal expansion and expansion of solid, Definition of <math>\alpha</math>, <math>\beta</math>, <math>\gamma</math></li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Relation between <math>\alpha</math>, <math>\beta</math>, <math>\gamma</math></li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Work and heat, Joule's mechanical equivalent of heat</li> <li>▪ First law of thermodynamics</li> <li>▪ Brief discussion of other laws</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Reflection, Refraction</li> <li>▪ Laws of reflection and refraction</li> </ul>
9 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Class test</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Refractive index and numerical</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Critical angle and total internal reflection, fiber optic</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Refraction through prism</li> </ul>
10 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Class test</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Electrostatic and Coulomb's law</li> <li>▪ Absolute and relative permittivity, electric potential and potential difference</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Electric field</li> <li>▪ Capacitance</li> <li>▪ Series and parallel combination of capacitors</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Properties of magnet</li> </ul>



		<ul style="list-style-type: none"> <li>▪ Coulomb's law in magnetism</li> </ul>
11 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Magnetic flux density, magnetic field intensity</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Revision on B, H, <math>\phi</math> and magnetic lines of force</li> <li>▪ Electric current and Ohm's law</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Combination of resistors, Kirchoff's law</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Application of Kirchoff's law to Wheatstone bridge</li> <li>▪ Condition of balance</li> </ul>
12 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Electromagnetism, Biot-Savart Law</li> <li>▪ Force on a charge placed in a magnetic field</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Force acting on a current carrying conductor placed in magnetic field</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Fleming's Left Hand rule, Electromagnetic induction</li> <li>▪ Faraday's law of electromagnetic induction</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Lenz's law</li> <li>▪ Fleming's Right Hand Rule</li> <li>▪ Comparison between FLR and FRR</li> </ul>
13 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ LASER and its properties</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Principle of LASER</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Application of LASER</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Wireless transmission – ground waves, sky waves, space waves</li> </ul>
14 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Important questions and discussion</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Important questions and discussion</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Important questions and discussion</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Important questions and discussion</li> </ul>
15 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Important questions and discussion</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Important questions and discussion</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Important questions and discussion</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Important questions and discussion</li> </ul>

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Signature of Faculty