

# LESSON PLAN

SUBJECT: APPLIED PHYSICS-II


BRANCH: COMMON (MECHANICAL & TEXTILE)

SEMESTER: 2<sup>ND</sup> (2024-25)

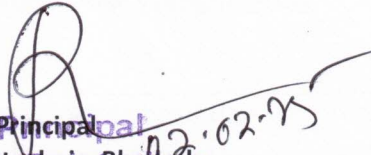
NAME OF THE FACULTY: ASEEMA BARIK



## GOVERNMENT POLYTECHNIC, BHADRAK

  
HOD, Math & Sc  
H.O.D. Math & Sc (I/c)

  
Academic Coordinator

  
Principal  
Govt. Polytechnic, Bhadrak  
Bhadrak

**LESSON PLAN FOR SUMMER SEMESTER – 2025**  
**Dept. of Math & Science ,Govt. Polytechnic, Bhadrak**

Name of the Faculty : ASEEMA BARIK  
Course Code: TH-2  
Theory: APPLIED PHYSICS-II  
Total Periods :60  
Examination: SUMMER (2025)  
Sem: SECOND

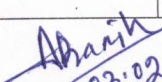
Internal Assessment/ Sessional: 30  
End Sem. Exam: 70  
Total Mark :100  
Class Start : 04.02.2025

<b>Discipline:</b> Math & Science	<b>Semester:</b> 2 <sup>ND</sup> (2025)	<b>Name of the Teaching Faculty : Aseema Barik</b>
<b>Subject:</b> Applied Physics-II	<b>No. of Days/per week class allotted: 04</b>	<b>Semester from date: 04.02.2025 To Date: 17.05.2025</b>  <b>No. of Weeks: 15</b>
<b>Week</b>	<b>Class Day</b>	<b>Theory/ Topics</b>
1 <sup>st</sup>	1 <sup>st</sup>	▪ Wave motion, transverse and longitudinal waves with examples
	2 <sup>nd</sup>	▪ Definitions of wave velocity, frequency and wavelength and their relationship
	3 <sup>rd</sup>	▪ Sound and light waves, wave equation, amplitude, phase, phase difference, principle of superposition of waves
	4 <sup>th</sup>	▪ Simple harmonic motion(definition), expression for displacement, velocity, acceleration, time period, frequency
2 <sup>nd</sup>	1 <sup>st</sup>	▪ Simple harmonic progressive wave and energy transfer
	2 <sup>nd</sup>	▪ Study of vibration of cantilever and determination of time period, free ,forced and resonant vibrations with examples
	3 <sup>rd</sup>	▪ Acoustics of buildings, reverberation, echo, noise, applications of reverberation
	4 <sup>th</sup>	▪ Ultrasonic waves – properties and applications (engineering and medical)
3 <sup>rd</sup>	1 <sup>st</sup>	▪ Optical laws- reflection and refraction, refractive index
	2 <sup>nd</sup>	▪ Images and image formation by mirrors and lens
	3 <sup>rd</sup>	▪ Power of lens, magnification and defects
	4 <sup>th</sup>	▪ Total internal reflection, critical angle and conditions for total internal reflection,



		<ul style="list-style-type: none"> <li>Applications of T.I.R. in optical fiber</li> </ul>
4 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Optical instruments; simple and compound microscope, astronomical microscope</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Magnifying power, resolving power, uses of microscope and telescope</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>Optical projection systems</li> <li>Coulomb's law, unit of charge, electric field</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>Electric lines of force and their properties</li> </ul>
5 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Electric flux, electric potential and potential difference</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Gauss law</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>Applications of Gauss law for straight charged conductor, plane charged sheet and charged sphere</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>Capacitor and its working, types of capacitors</li> <li>Capacitance and its units</li> </ul>
6 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Capacitance of a parallel plate capacitor, series and parallel combination of capacitors</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Dielectric and its effect on capacitance, dielectric break down</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>Electric current and its unit, direct and alternating current</li> <li>Resistance and its units</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>Specific resistance, conductance, specific conductance</li> </ul>
7 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Series and parallel combination of resistances, factors affecting resistance of a wire</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Carbon resistances and colour coding</li> <li>Ohm's law and its verification</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>Kirchhoff's laws, Wheatstone bridge and its applications (slide wire bridge only)</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>Concept of terminal potential difference and electromotive force (EMF)</li> </ul>
8 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>1<sup>ST</sup> INTERNAL ASSESSMENT</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>Heating effect of current, electric power</li> <li>Electric energy and its units (related numerical problems)</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>Advantages of electric energy over other forms of energy</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>Types of magnetic materials; dia, para and ferromagnetic with their properties</li> </ul>
9 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>Magnetic field and its units, magnetic intensity</li> </ul>

	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Magnetic lines of force, magnetic flux and units, magnetization</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Concept of electromagnetic induction, Faraday's laws</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Lorentz force</li> <li>▪ Force on current carrying conductor, force on rectangular coil placed in magnetic field</li> </ul>
10 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Moving coil galvanometer; principle, construction and working</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Conversion of a galvanometer into ammeter and voltmeter</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Energy bands in solids, types of materials (insulator, semi-conductor, conductor)</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Intrinsic and extrinsic semiconductors, p-n junction diode</li> </ul>
11 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Junction diode and V-I characteristics, types of junction diode</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Diode as rectifier- half wave and full wave rectifier</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Transistors- description, types- pnp and npn, electronic applications</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Photocells, solar cells; working principle and engineering applications</li> </ul>
12 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Lasers: energy levels, ionization and excitation potentials</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Spontaneous and stimulated emission</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Population inversion, pumping methods , optical feedback</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Types of lasers; Ruby, He-Ne and semiconductor</li> </ul>
13 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ 2<sup>ND</sup> INTERNAL ASSESSMENT</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Laser characteristics and applications (engineering and medical)</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Introduction to optical fibers</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Light propagation, acceptance angle and numerical aperture</li> </ul>
14 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Fiber types and applications in telecommunication, medical and sensors</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Nanoscience and nanotechnology: introduction</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Nanoparticles and nanomaterials, properties at nanoscale</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Nanotechnology, nanotechnology based devices and applications</li> </ul>
15 <sup>th</sup>	1 <sup>st</sup>	<ul style="list-style-type: none"> <li>▪ Previous year question discussion</li> </ul>
	2 <sup>nd</sup>	<ul style="list-style-type: none"> <li>▪ Short type question discussion</li> </ul>
	3 <sup>rd</sup>	<ul style="list-style-type: none"> <li>▪ Important question discussion</li> </ul>
	4 <sup>th</sup>	<ul style="list-style-type: none"> <li>▪ Important question discussion</li> </ul>

  
 03.02.2025  
 Signature of Faculty