

# LESSON PLAN

SUB: ELECTRICAL ENGINEERING MATERIAL

BRANCH:- ELECTRICAL ENGG.

SEMESTER: 3<sup>rd</sup>

NAME OF FACULTY: NIBEDITA HO



**GOVERNMENT POLYTECHNIC,  
BHADRAK**

Hod, Electrical

HOD (ELECT.)  
G.P.BHADRAK

Academic Co-ordinator

Principal  
Govt. Polytechnic Bhadrak  
Principal  
Govt. Polytechnic  
Bhadrak

Discipline: Electrical Engg.	Semester: 3 <sup>rd</sup>	Name of the Teaching Faculty : Nibedita Ho
Subject: Electrical Engineering Material	No. of Days/per week class allotted:4	Semester from date: 01.08.2023 To Date: 30.11.2023  No. of Weeks:15
Week	Class Day	Theory
1 <sup>st</sup>	1 <sup>st</sup>	Introduction Conducting Materials
	2 <sup>nd</sup>	Atomic structure, Inter atomic bonds
	3 <sup>rd</sup>	Resistivity, factors affecting resistivity
	4 <sup>th</sup>	Classification of conducting materials into low-resistivity and high resistivity materials
2 <sup>nd</sup>	1 <sup>st</sup>	Low Resistivity Materials and their Applications. (Copper, Silver, Gold, Aluminum, Steel)
	2 <sup>nd</sup>	Stranded conductors
	3 <sup>rd</sup>	Bundled conductors
	4 <sup>th</sup>	Low resistivity copper alloys
3 <sup>rd</sup>	1 <sup>st</sup>	High Resistivity Materials and their Applications (Tungsten, Carbon, Platinum, Mercury)
	2 <sup>nd</sup>	Superconductivity
	3 <sup>rd</sup>	Superconducting materials
	4 <sup>th</sup>	Application of superconductor materials
4 <sup>th</sup>	1 <sup>st</sup>	Introduction of Semiconducting Materials
	2 <sup>nd</sup>	Electron Energy and Energy Band Theory
	3 <sup>rd</sup>	Excitation of Atoms
	4 <sup>th</sup>	Insulators, Semiconductors and Conductors
5 <sup>th</sup>	1 <sup>st</sup>	Semiconductor Materials
	2 <sup>nd</sup>	Covalent Bonds
	3 <sup>rd</sup>	Intrinsic Semiconductors
	4 <sup>th</sup>	Extrinsic Semiconductors
6 <sup>th</sup>	1 <sup>st</sup>	N-Type Materials, P-Type Materials
	2 <sup>nd</sup>	Minority and Majority Carriers
	4 <sup>th</sup>	Applications of Semiconductor materials Rectifiers, Temperature-sensitive resistors or thermistors

7 <sup>th</sup>	1 <sup>st</sup>	Photoconductive cells, Photovoltaic cells, Varistors, Transistors, Hall effect generators, Solar power
	2 <sup>nd</sup>	Introduction Insulating Materials
	3 <sup>rd</sup>	General properties of Insulating Materials Electrical properties
	4 <sup>th</sup>	Visual properties, Mechanical properties
8 <sup>th</sup>	1 <sup>st</sup>	Thermal properties
	2 <sup>nd</sup>	Chemical properties, Ageing
	3 <sup>rd</sup>	Insulating Materials – Classification, properties, application of fibrous materials
	4 <sup>th</sup>	Impregnated fibrous materials, Non-resinous materials
9 <sup>th</sup>	1 <sup>st</sup>	Insulating liquids, Ceramics, mica & Mica Products
	2 <sup>nd</sup>	Asbestos & asbestos products, glass, Natural & synthetic rubbers.
	3 <sup>rd</sup>	Glass, Natural & synthetic rubbers.
	4 <sup>th</sup>	Insulating resins & their products, laminates
10 <sup>th</sup>	1 <sup>st</sup>	Adhesives, enamels & varnishes
	2 <sup>nd</sup>	Insulating gases - Introduction, commonly used insulating gases.
	3 <sup>rd</sup>	Introduction of Dielectric Materials, Dielectric Constant of Permittivity
	4 <sup>th</sup>	Polarization
11 <sup>th</sup>	1 <sup>st</sup>	Dielectric Loss
	2 <sup>nd</sup>	Electric Conductivity of Dielectrics and their Break Down (Solid)
	3 <sup>rd</sup>	Liquid & Gaseous dielectric Break Down

	4 <sup>th</sup>	Properties of Dielectrics.
12 <sup>th</sup>	1 <sup>st</sup>	Applications of Dielectrics.
	2 <sup>nd</sup>	Introduction of Magnetic Materials
	3 <sup>rd</sup>	Classification :Diamagnetism, Para magnetism, Ferromagnetism
	4 <sup>th</sup>	Magnetization Curve
13 <sup>th</sup>	1 <sup>st</sup>	Hysteresis
	2 <sup>nd</sup>	Eddy Currents, Curie Point, Magneto-striction
	3 <sup>rd</sup>	Soft magnetic materials
	4 <sup>th</sup>	Hard magnetic materials
14 <sup>th</sup>	1 <sup>st</sup>	Introduction of Materials for Special Purposes
	2 <sup>nd</sup>	Structural Materials
	3 <sup>rd</sup>	Protective Materials – Lead, Steel tapes, wires and strips
	4 <sup>th</sup>	Steel tapes, wires and strips
15 <sup>th</sup>	1 <sup>st</sup>	Bimetals
	2 <sup>nd</sup>	Soldering Materials
	3 <sup>rd</sup>	Fuse and Fuse materials.
	4 <sup>th</sup>	Dehydrating material.

*T. R.*  
31.07.2023

Lect.in Elect.Engg.  
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