

<b>Discipline :Electrical Engineering</b>	<b>Semester:-3<sup>rd</sup> sem</b>	<b>Name of the teaching faculty:- MANMOHAN PANDA</b>
<b>Subject:-Electrical Engineering Materials</b>	<b>No. of Days/week class Allotted :-4</b>	<b>No. of weeks:-15 SESSION- 2023-2024 (Winter)</b>
<b>No. of week</b>	<b>No. of class</b>	<b>Topic to be Taught</b>
1 <sup>st</sup>	1 <sup>st</sup>	<b>Conducting Materials:</b> Introduction
	2 <sup>nd</sup>	Resistivity, factors affecting resistivity
	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>	Classification of conducting materials into low-resistivity and high resistivity materials
	2 <sup>nd</sup>	Low Resistivity Materials and their Applications. (Copper, Silver,Gold, Aluminum, Steel)
	3 <sup>rd</sup>	Low Resistivity Materials and their Applications. (Copper, Silver,Gold, Aluminum, Steel)
	4 <sup>th</sup>	Stranded conductors
3 <sup>rd</sup>	1 <sup>st</sup>	Bundled conductors
	2 <sup>nd</sup>	Low resistivity copper alloys
	3 <sup>rd</sup>	High Resistivity Materials and their Applications(Tungsten, Carbon,Platinum, Mercury)
	4 <sup>th</sup>	High Resistivity Materials and their Applications(Tungsten, Carbon,Platinum, Mercury)
4 <sup>th</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
	1 <sup>st</sup>	<b>Semiconducting Materials:</b> Introduction to Semiconductors
	2 <sup>nd</sup>	Electron Energy and Energy Band Theory
	3 <sup>rd</sup>	Excitation of Atoms

5th		Insulators, Semiconductors and Conductors
	4 <sup>th</sup>	Semiconductor Materials Covalent Bonds
6th	1 <sup>st</sup>	Intrinsic Semiconductors Extrinsic Semiconductors
	2 <sup>nd</sup>	N-Type Materials P-Type Materials
	3 <sup>rd</sup>	Minority and Majority Carriers Semi-Conductor Materials
	4 <sup>th</sup>	<b>Applications of Semiconductor materials</b> Rectifiers Temperature-sensitive resistors or thermistors
7th	1 <sup>st</sup>	Photoconductive cells Photovoltaic cells
	2 <sup>nd</sup>	Varistors Transistors Hall effect generators Solar power
	3 <sup>rd</sup>	<b>Insulating Materials:</b> Introduction General properties of Insulating Materials
	4 <sup>th</sup>	Electrical properties Visual properties Mechanical properties
8th	1 <sup>st</sup>	Thermal properties Chemical properties Ageing
	2 <sup>nd</sup>	Insulating Materials – Classification, properties, applications
	3 <sup>rd</sup>	Insulating Materials – Classification, properties, applications
	4 <sup>th</sup>	Classification of insulating materials on the basis of physical structure
9th	1 <sup>st</sup>	Classification of insulating materials on the basis of chemical structure
	2 <sup>nd</sup>	Insulating Gases
	3 <sup>rd</sup>	Commonly used insulating gases
	4 <sup>th</sup>	<b>Dielectric Materials:</b> Introduction
	1 <sup>st</sup>	Dielectric Constant of Permittivity
	2 <sup>nd</sup>	Polarization
		Dielectric Loss

10th	3 <sup>rd</sup>	
	4 <sup>th</sup>	Electric Conductivity of Dielectrics and their Break Down
11th	1 <sup>st</sup>	Electric Conductivity of Dielectrics and their Break Down
	2 <sup>nd</sup>	Properties of Dielectrics
	3 <sup>rd</sup>	Applications of Dielectrics
	4 <sup>th</sup>	<b>Magnetic Materials:</b> Introduction
12th	1 <sup>st</sup>	Classification of magnetic materials introduction to Diamagnetism Para magnetism Ferromagnetism
	2 <sup>nd</sup>	Classification of magnetic materials Details Study of Diamagnetism Para magnetism Ferromagnetism
	3 <sup>rd</sup>	Magnetization Curve Hysteresis
	4 <sup>th</sup>	Eddy Currents Curie Point
	5 <sup>th</sup>	Magneto-striction
13 <sup>th</sup>	1 <sup>st</sup>	Soft magnetic materials
	2 <sup>nd</sup>	Hard magnetic materials
	3 <sup>rd</sup>	<b>Materials for Special Purposes</b> Introduction
	4 <sup>th</sup>	Structural Materials
14 <sup>th</sup>	1 <sup>st</sup>	Protective Materials
	2 <sup>nd</sup>	Lead Steel tapes, wires and strips
	3 <sup>rd</sup>	Other Materials
	4 <sup>th</sup>	Thermocouple materials
		Bimetals

15 <sup>th</sup>	1 <sup>st</sup>	
	2 <sup>nd</sup>	Soldering Materials
	3 <sup>rd</sup>	Fuse and Fuse materials
	4 <sup>th</sup>	Dehydrating material

