



NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY  
SERGARH-756060, BALASORE (ODISHA)  
(Approved by AICTE& affiliated to SCTE&VT, Odisha)



## LESSON PLAN

**SUBJECT: Th-4 (ELECTRICAL ENGINEERING MATERIAL )**

### CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	Conducting materials	16	16
2	Semiconducting materials	10	10
3	Insulating materials	9	9
4	Dielectric materials	8	8
5	Magnetic materials	8	8
6	Material for special purposes	9	9
Total Period:		60	60

<b>Discipline:</b> EE	<b>Semester:</b> 3rd	<b>Name of the Teaching Faculty: Er.Biswajit Parida</b>
<b>Week</b>	<b>Class Day</b>	<b>Theory / Practical Topics</b>
<b>1<sup>st</sup></b>	<b>1<sup>st</sup></b>	<b>Conducting Materials :</b> 1. 1 Introduction 1 . 2 Resistivity, factors affecting resistivity
	<b>2<sup>nd</sup></b>	1 . 3 Classification of conducting materials into low-resistivity and high resistivity materials
	<b>3<sup>rd</sup></b>	1 . 4 Low Resistivity Materials and their Applications. (Copper, Silver, Gold, Aluminum, Steel)
	<b>4<sup>th</sup></b>	1 . 4 Low Resistivity Materials and their Applications. (Copper, Silver, Gold, Aluminum, Steel)
<b>2<sup>nd</sup></b>	<b>1<sup>st</sup></b>	1 . 4 Low Resistivity Materials and their Applications. (Copper, Silver, Gold, Aluminum, Steel)
	<b>2<sup>nd</sup></b>	1 . 5 Stranded conductors 1 . 6 Bundled conductors
	<b>3<sup>rd</sup></b>	1 . 5 Stranded conductors 1 . 6 Bundled conductors
	<b>4<sup>th</sup></b>	1 . 7 Low resistivity copper alloys
<b>3<sup>rd</sup></b>	<b>1<sup>st</sup></b>	1 . 7 Low resistivity copper alloys
	<b>2<sup>nd</sup></b>	1 . 8 High Resistivity Materials and their Applications(Tungsten, Carbon, Platinum, Mercury)
	<b>3<sup>rd</sup></b>	1 . 8 High Resistivity Materials and their Applications(Tungsten, Carbon, Platinum, Mercury)
	<b>4<sup>th</sup></b>	1 . 8 High Resistivity Materials and their Applications(Tungsten, Carbon, Platinum, Mercury)
	<b>1<sup>st</sup></b>	1 . 8 High Resistivity Materials and their Applications(Tungsten, Carbon, Platinum, Mercury)

4 <sup>th</sup>	2 <sup>nd</sup>	1 . 9 Superconductivity
	3 <sup>rd</sup>	1 . 10 Superconducting materials
	4 <sup>th</sup>	1 . 11 Application of superconductor materials
5 <sup>th</sup>	1 <sup>st</sup>	<b>Semiconducting Materials:</b> 2 . 1 Introduction 2 . 2 Semiconductors
	2 <sup>nd</sup>	2 . 3 Electron Energy and Energy Band Theory 2 . 4 Excitation of Atoms
	3 <sup>rd</sup>	2 . 5 Insulators, Semiconductors and Conductors 2 . 6 Semiconductor Materials
	4 <sup>th</sup>	2 . 7 Covalent Bonds 2 . 8 Intrinsic Semiconductors
6 <sup>th</sup>	1 <sup>st</sup>	2 . 9 Extrinsic Semiconductors 2 . 10 N-Type Materials
	2 <sup>nd</sup>	2 . 11 P-Type Materials 2 . 12 Minority and Majority Carriers 2 . 13 Semi-Conductor Materials
	3 <sup>rd</sup>	2 . 14 Applications of Semiconductor materials 2.14.1 Rectifiers 2.14.2 Temperature-sensitive resistors or thermistors
	4 <sup>th</sup>	2.14.3 Photoconductive cells 2.14.4 Photovoltaic cells
7 <sup>th</sup>	1 <sup>st</sup>	2.14.5 Varistors 2.14.6 Transistors
	2 <sup>nd</sup>	2.14.7 Hall effect generators 2.14.8 Solar power
	3 <sup>rd</sup>	<b>3.Insulating Materials:</b> 3 . 1 Introduction 3 . 2 General properties of Insulating Materials

	<b>4<sup>th</sup></b>	3.2.1 Electrical properties 3.2.2 Visual properties
<b>8<sup>th</sup></b>	<b>1<sup>st</sup></b>	3.2.3 Mechanical properties
	<b>2<sup>nd</sup></b>	3.2.4 Thermal properties 3.2.5 Chemical properties
	<b>3<sup>rd</sup></b>	3.2.6 Ageing 3.3 Insulating Materials – Classification, properties, applications 3.3.1 Introduction
	<b>4<sup>th</sup></b>	3.3.2 Classification of insulating materials on the basis physical and chemical structure
<b>9<sup>th</sup></b>	<b>1<sup>st</sup></b>	3.3.2 Classification of insulating materials on the basis physical and chemical structure
	<b>2<sup>nd</sup></b>	3.4 Insulating Gases 3.4.1 Introduction. 3.4.2 Commonly used insulating gases
	<b>3<sup>rd</sup></b>	3.4 Insulating Gases 3.4.1 Introduction. 3.4.2 Commonly used insulating gases
	<b>4<sup>th</sup></b>	3.4 Insulating Gases 3.4.1 Introduction. 3.4.2 Commonly used insulating gases
<b>10<sup>th</sup></b>	<b>1<sup>st</sup></b>	<b>4. Dielectric Materials:</b> 4.1 Introduction
	<b>2<sup>nd</sup></b>	4.2 Dielectric Constant of Permittivity
	<b>3<sup>rd</sup></b>	4.3 Polarization
	<b>4<sup>th</sup></b>	4.4 Dielectric Loss
	<b>1<sup>st</sup></b>	4.5 Electric Conductivity of Dielectrics and their Break Down

11 <sup>th</sup>	2 <sup>nd</sup>	4.5 Electric Conductivity of Dielectrics and their Break Down
	3 <sup>rd</sup>	4.6 Properties of Dielectrics.
	4 <sup>th</sup>	4.7 Applications of Dielectrics
12 <sup>th</sup>	1 <sup>st</sup>	<b>Magnetic Materials:</b> 5.1 Introduction
	2 <sup>nd</sup>	5.2 Classification 5.2.1 Diamagnetism 5.2.2 Para magnetism
	3 <sup>rd</sup>	5.2 Classification 5.2.1 Diamagnetism 5.2.2 Para magnetism
	4 <sup>th</sup>	5.3 Magnetization Curve 5.4 Hysteresis
13 <sup>th</sup>	1 <sup>st</sup>	5.5 Eddy Currents 5.6 Curie Point
	2 <sup>nd</sup>	5.7 Magneto-striction
	3 <sup>rd</sup>	5.8 Soft and Hard magnetic Materials 5.8.1 Soft magnetic materials 5.8.2 Hard magnetic materials
	4 <sup>th</sup>	5.8 Soft and Hard magnetic Materials 5.8.1 Soft magnetic materials 5.8.2 Hard magnetic materials
14 <sup>th</sup>	1 <sup>st</sup>	<b>6 Materials for Special Purposes</b> 6.1 Introduction
	2 <sup>nd</sup>	6.2 Structural Materials
	3 <sup>rd</sup>	6.3 Protective Materials 6.3.1 Lead 6.3.2 Steel tapes, wires and strips

	<b>4<sup>th</sup></b>	6.3 Protective Materials 6.3.1 Lead 6.3.2 Steel tapes, wires and strips
<b>15<sup>th</sup></b>	<b>1<sup>st</sup></b>	6.4 Other Materials 6.4.1 Thermocouple materials 6.4.2 Bimetals
	<b>2<sup>nd</sup></b>	6.4.3 Soldering Materials
	<b>3<sup>rd</sup></b>	6.4.4 Fuse and Fuse materials
	<b>4<sup>th</sup></b>	6.4.5 Dehydrating material.

