

LESSON PLAN

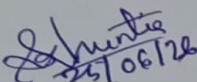
Discipline: Metallurgical Engineering	Semester: 3rd Semester	Name of the Teaching Faculty: Ms. Sitanjali Khuntia
Subject: Introduction to Materials Engineering	No of days /Week class allotted: 03	Semester from Date: 01/7/2026 to 05/11/2026
Sub code: Th-1 (MTPC201)		No of weeks: 20

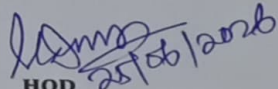
Course Outcomes:

- CO1. Understand material structure: Understanding how the atoms of a material are arranged.**
CO2. Understand Crystal defects: To know the crystal defects, present in material and differentiate them.
CO3. Understand material properties: Understanding the properties of materials, such as strength, conductivity, and density.
CO4. Knowledge of Engineering Materials: To know various types of engineering materials and their application.

Month	Week	No of periods available	Class Day	Theory topics	CO
July	1 ST	3P	02-07-2026	Introduction – Historical perspective, Scope of Materials Engineering	CO4
			03-07-2026	Processing/Structure/Properties/Performance correlations	CO1
			04-07-2026	Atomic structure & fundamental concepts on atoms	CO1
	2 ND	2P	09-07-2026	Bonding forces and energies	CO1
			10-07-2026	Interatomic bonds – covalent, metallic, Ionic bond, Hydrogen bond and Van derwaals bond	CO1
	3 RD	2P	17-07-2026	Introduction to crystallography, crystals and lattices	CO1
			18-07-2026	Bravais lattices, unit cells	CO1
	4 TH	2P	23-07-2026	Crystal structures – SC, FCC, BCC	CO1
			24-07-2026	Crystal structures – HCP, coordination number	CO1
	5 TH	2P	30-07-2026	CLASS TEST	CO1
			31-07-2026	Crystallographic directions & planes	CO1
August	1 ST	1P	01-08-2026	Linear and planar densities	CO1
	2 ND	2P	06-08-2026	Close-packed crystal structures, APF & density	CO1
			07-08-2026	Crystal imperfections – point defects	CO2
	3 RD	2P	13-08-2026	Line Defect- dislocation	CO2
			14-08-2026	Interfacial defects, Bulk or Volume Defects	CO2
	4 TH	2P	20-08-2026	Mechanical properties – stress & strain	CO3
			21-08-2026	Deformation types, Hooke's law	CO3
	5 TH	2P	28-08-2026	Electrical resistivity of metals, Ohm's law	CO3
			29-08-2026	CLASS TEST	CO2 & CO3
September	1 ST	2P	03-09-2026	1 st Internal Assessment	CO1 to CO3
			05-09-2026	Electrical conductivity, electronic & ionic conduction	CO3
	2 ND	2P	10-09-2026	Energy band structures in solids	CO3
			11-09-2026	Electrical characteristics of commercial alloys	CO3
	3 rd	3P	17-09-2026	Aluminum electrical wires, applications	CO3
			18-09-2026	Semiconductor basics – intrinsic	CO3
			19-09-2026	Extrinsic semiconductors	CO3
	4 th	2P	24-09-2026	Factors that Affect Carrier Mobility, Piezoelectricity	CO3

				and its applications	
			25-09-2026	Magnetic properties – dia, Para, Ferro Anti-Ferro & ferromagnetism	CO3 CO3
October	1 ST	2P	01-10-2026	Superconductivity	CO3
			03-10-2026	Optical properties – EM radiation & light interactions	CO3
	2 ND	2P	08-10-2026	2 nd Internal Assessment	
			09-10-2026	Refraction, reflection, absorption, transmission	CO3
	3 RD	2P	15-10-2026	Applications of optical phenomena – luminescence, LEDs	CO4
			16-10-2026	Engineering materials – fundamentals, Classification of engineering materials	CO4
	4 TH	2P	22-10-2026	Metals, polymers, ceramics overview	CO4
			23-10-2026	Composites & electronic materials	CO4
	5 TH	3P	29-10-2026	Material selection – criteria & examples	CO4
			30-10-2026	Case studies on material selection	CO4
			31-10-2026	viva discussion	CO1 to CO4
Nov	1 st	1P	05-11-2026	Course wrap-up & question bank discussion	CO1 to CO4


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