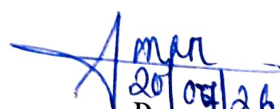
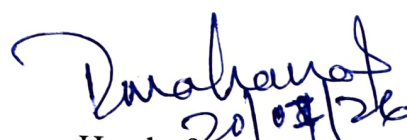


LESSON PLAN FOR ACADEMIC SESSION: 2026-27 (WINTER)

Discipline: Metallurgical Engineering	Semester : 3rd	Name of the Teaching Faculty : Amarjit Mohanta
Subject : Introduction to Materials Engineering	No. of days / week class allotted : 03	Semester From : 01/07/2026 to 05/11/2026
Week	Class Day	Theory Topics
1 ST	1 st	Historical perspective
	2 nd	Scope of Materials engineering
	3 rd	Processing/Structure/Properties/ Performance Correlations
2 ND	1 st	Processing/Structure/Properties/ Performance Correlations
	2 nd	Fundamental concepts on atoms
	3 rd	Fundamental concepts on atoms
3 RD	1 st	Bonding Forces and Energies
	2 nd	Interatomic bonds (Covalent bond, Metallic bond, Ionic bond, Hydrogen bond and Vander waals bond)
	3 rd	Interatomic bonds (Covalent bond, Metallic bond, Ionic bond, Hydrogen bond and Vander waals bond)
4 TH	1 st	Interatomic bonds (Covalent bond, Metallic bond, Ionic bond, Hydrogen bond and Vander waals bond)
	2 nd	Crystal and crystallography
	3 rd	Bravais lattices, unit cells
5 TH	1 st	Crystal structures (SC, FCC, BCC and HCP)
	2 nd	Crystal structures (SC, FCC, BCC and HCP)
	3 rd	Point Coordinates, Crystallographic Directions, Crystallographic Planes
6 TH	1 st	Point Coordinates, Crystallographic Directions, Crystallographic Planes
	2 nd	Linear and Planar Densities
	3 rd	Linear and Planar Densities
7 TH	1 st	Close-Packed Crystal Structures
	2 nd	Crystal planes and directions, co-ordination number
	3 rd	Calculation of APF and Density
8 TH	1 st	Point defects (Vacancies and Self-Interstitials)
	2 nd	Dislocations—Linear Defects
	3 rd	Interfacial Defects
9 TH	1 st	Bulk or Volume Defects

	2 nd	Basic concepts on stress and strain, Deformation and its types
	3 rd	Hooke's Law
	1 st	Electrical Resistivity of Metals, Ohm's Law Electrical Conductivity
10 TH	2 nd	Electronic and Ionic Conduction
	3 rd	Energy Band Structures in Solids
	1 st	Electrical Characteristics of Commercial Alloys
11 TH	2 nd	Materials of Importance—Aluminum Electrical Wires
	3 rd	SEMICONDUCTIVITY (intrinsic Semiconduction and Extrinsic Semiconduction)
12 th	1 st	Factors that Affect Carrier Mobility
	2 nd	Piezoelectricity and its applications
	3 rd	Diamagnetism, Paramagnetism, Ferromagnetism, Antiferromagnetism and Ferrimagnetism
13 th	1 st	Superconductivity Optical
	2 nd	Electromagnetic Radiation
	3 rd	Light Interactions with Solids
14 th	1 st	Atomic and Electronic Interactions
	2 nd	Refraction, Reflection, Absorption and Transmission
	3 rd	Applications of optical phenomena (Luminescence, Photoconductivity, Light-Emitting Diodes, Lasers and Optical Fibers in Communications) □
15 th	1 st	Fundamentals of Engineering Materials
	2 nd	Classification of Engineering Material (Metal, Polymer, Ceramic, Composite and Electronic material)
	3 rd	Material Selection
	1 st	Class Test
	2 nd	Revision
	3 rd	


 Prepared by
 Amarjit Mohanta


 Head of the Department
 (Metallurgy Engineering)
 GP Sonepur


 Academic co-ordinator
 GP Sonepur