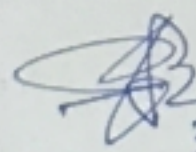


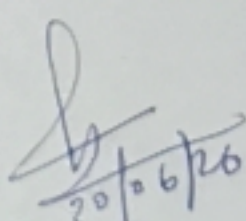
GOVT POLYTECHNIC MAYURBHANJ, TIKARPADA

LESSON PLAN OF INTRODUCTION TO MATERIALS ENGINEERING ACADEMIC YEAR (2026-2027) WINTER

DISCIPLINE: METALLURGY ENGINEERING		SEMESTER: 3RD	NAME OF THE TEACHING FACULTY: SUBRAT KUMAR BEHERA
SUBJECT: INTRODUCTION TO MATERIALS ENGINEERING, COURSE CODE: MTPC201		NO OF DAYS/PER WEEK CLASS ALLOTTED:03	SEMESTER FROM DATE:01.07.2026, TO DATE:05.11.2026, NO OF WEEKS: 16
WEEK	CLASS NO	UNITS	LECTURE TOPICS
1	1	CHAPTER -1 INTRODUCTION TO MATERIALS ENGINEERING	INTRODUCTION CLASS
	2		INTRODUCTION TO MATERIALS ENGINEERING
	3		HISTORICAL PERSPECTIVE
2	4		SCOPE OF MATERIALS ENGINEERING
	5		PROCESSING/STRUCTURE/PROPERTIES/ PERFORMANCE CORRELATIONS
	6		ATOMIC STRUCTURE AND INTERATOMIC BONDING
3	7		FUNDAMENTAL CONCEPTS ON ATOMS
	8		BONDING FORCES AND ENERGIES
	9		INTERATOMIC BONDS (COVALENT BOND, METALLIC BOND, IONIC BOND, HYDROGEN BOND AND VANDER WAALS BOND)
4	10	CHAPTER -2 THE STRUCTURE OF CRYSTALLINE SOLIDS	REVISION
	11		CRYSTAL AND CRYSTALLOGRAPHY, BRAVAIS LATTICES, UNIT CELLS, CRYSTAL STRUCTURES (SC, FCC, BCC AND HCP)
	12		POINT COORDINATES, CRYSTALLOGRAPHIC DIRECTIONS, CRYSTALLOGRAPHIC PLANES
5	13		LINEAR AND PLANAR DENSITIES, CLOSE-PACKED CRYSTAL STRUCTURES
	14		CRYSTAL PLANES AND DIRECTIONS, CO-ORDINATION NUMBER
	15		CALCULATION OF APF AND DENSITY IMPERFECTIONS IN SOLIDS
6	16		POINT DEFECTS (VACANCIES AND SELF-INTERSTITIALS), DISLOCATIONS—LINEAR DEFECTS, INTERFACIAL DEFECTS
	17		BULK OR VOLUME DEFECTS
	18		REVISION
7	19		DOUBT CLEARING CLASS
	20		SURPRISE TEST
	21		CRYSTAL AND CRYSTALLOGRAPHY, BRAVAIS LATTICES, UNIT CELLS, CRYSTAL STRUCTURES (SC, FCC, BCC AND HCP)
8	22		POINT COORDINATES, CRYSTALLOGRAPHIC DIRECTIONS, CRYSTALLOGRAPHIC PLANES
	23		REVISION
	24		GROUP DISCUSSION

9	25	CHAPTER -3 MECHANICAL PROPERTIES, ELECTRICAL PROPERTIES, MAGNETIC PROPERTIES	
	26		
	27		
10	28		BASIC CONCEPTS ON STRESS AND STRAIN
	29		DEFORMATION AND ITS TYPES, HOOKE'S LAW
	30		ELECTRICAL RESISTIVITY OF METALS, OHM'S LAW ELECTRICAL CONDUCTIVITY
11	31		ELECTRONIC AND IONIC CONDUCTION, ENERGY BAND STRUCTURES IN SOLIDS,
	32		ELECTRICAL CHARACTERISTICS OF COMMERCIAL ALLOYS, MATERIALS OF IMPORTANCE—ALUMINUM ELECTRICAL WIRES
	33		SEMICONDUCTIVITY (INTRINSIC SEMICONDUCTION AND EXTRINSIC SEMICONDUCTION)
12	34		FACTORS THAT AFFECT CARRIER MOBILITY, PIEZOELECTRICITY AND ITS APPLICATIONS
	35	CHAPTER -4 ENGINEERING MATERIALS	DIAMAGNETISM, PARAMAGNETISM, FERROMAGNETISM, ANTIFERROMAGNETISM AND FERRIMAGNETISM
	36		SUPERCONDUCTIVITY OPTICAL
13	37		ELECTROMAGNETIC RADIATION, LIGHT INTERACTIONS WITH SOLIDS, ATOMIC AND ELECTRONIC INTERACTIONS
	38		REFRACTION, REFLECTION, ABSORPTION AND TRANSMISSION,
	39		APPLICATIONS OF OPTICAL PHENOMENA (LUMINESCENCE, PHOTOCONDUCTIVITY, LIGHT- EMITTING DIODES, LASERS AND OPTICAL FIBERS IN COMMUNICATIONS)
14	40		REVISION
	41		DOUBT CLEARING CLASS
	42		SURPRISE TEST
15	43		FUNDAMENTALS OF ENGINEERING MATERIALS
	44		CLASSIFICATION OF ENGINEERING MATERIAL (METAL, POLYMER, CERAMIC, COMPOSITE AND ELECTRONIC MATERIAL)
	45		MATERIAL SELECTION
16	46		REVISION
	47		PRE-SEMESTER
	48		REVISION


 30.6.26
 S. H. Belare
 U. V. Page-11


 30/6/26
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