SPINTRONIC TECHNOLOGY AND ADVANCE RESEARCH, BBSR
DETAILED LESSON PLAN - MATERIAL SCIENCE & ENGINEERING (MEPC205)

Department	Mechanical Engineering	Semester	3rd Semester
Faculty	Er.Laxmidhar Majhi	Session	2026-27
Course Code	MEPC205 TH3	Total Periods	45

Sl.No	Unit	Lecture Topic	Period	Cumulative Period
1	UNIT-I	Introduction to Material Science	1	1
2	UNIT-I	Unit Cell and Space Lattice	1	2
3	UNIT-I	Seven Crystal Systems	1	3
4	UNIT-I	BCC Structure	1	4
5	UNIT-I	FCC Structure	1	5
6	UNIT-I	HCP Structure	1	6
7	UNIT-I	Coordination Number	1	7
8	UNIT-I	Atomic Radius	1	8
9	UNIT-I	Atomic Packing Factor	1	9
10	UNIT-I	Primary & Secondary Bonds	1	10
11	UNIT-II	Phase Diagrams	1	11
12	UNIT-II	Isomorphous Systems	1	12
13	UNIT-II	Eutectic Systems	1	13
14	UNIT-II	Eutectoid Systems	1	14
15	UNIT-II	Iron Carbon Diagram	1	15
16	UNIT-II	Pig Iron	1	16
17	UNIT-II	Cast Iron	1	17
18	UNIT-II	Wrought Iron	1	18
19	UNIT-II	Alloy Steels	1	19
20	UNIT-II	Stainless Steel & HSS	1	20
21	UNIT-III	Properties of Aluminium	1	21
22	UNIT-III	Copper and Alloys	1	22
23	UNIT-III	Brasses	1	23
24	UNIT-III	Bronzes	1	24
25	UNIT-III	Nickel Alloys	1	25

26	UNIT-III	Bearing Alloys	1	26
27	UNIT-III	Commercial Grades	1	27
28	UNIT-IV	Introduction to Failure Analysis	1	28
29	UNIT-IV	Ductile Fracture	1	29
30	UNIT-IV	Brittle Fracture	1	30
31	UNIT-IV	Fatigue Failure	1	31
32	UNIT-IV	Creep Failure	1	32
33	UNIT-IV	Tensile Testing	1	33
34	UNIT-IV	Hardness Testing	1	34
35	UNIT-IV	NDT Methods	1	35
36	UNIT-IV	Radiography & Ultrasonic Testing	1	36
37	UNIT-V	Introduction to Corrosion	1	37
38	UNIT-V	Electrochemical Reactions	1	38
39	UNIT-V	Factors Affecting Corrosion	1	39
40	UNIT-V	Types of Corrosion	1	40
41	UNIT-V	Corrosion Control Methods	1	41
42	UNIT-V	Surface Engineering	1	42
43	UNIT-V	Electroplating	1	43
44	UNIT-V	PVD & CVD Coatings	1	44
45	UNIT-V	Pollution Norms, Revision & Class Test	1	45

REFERENCES

Material Science – GBS Narang

Material Science – R.K. Rajput

Material Science – R.S. Khurmi & R.S. Sedha

Material Science and Metallurgy – D.S. Nutt

Material Science and Engineering – V. Raghavan

Faculty Signature: _____

HOD Signature: _____