

LESSON PLAN 2025(W)

SUBJECT:- MATERIAL TESTING

SUBJECT CODE:- TH-5

SEMESTER:-3rd

BRANCH:-METALLURGICAL

NAME OF FACULTY:- SAGARIKA PALEI

CLASS ALLOTTED:-3P/WEEK

WEEKS	DATE	DATE :- FROM- 14/07/2025 TO 15/11/2025	TEACHING AID
		THEORY- TOPIC/LESSON	
1	15/07/2025 TO 19/07/2025	Introduction to Material Testing Importance & objectives of material testing Classification of materials: Metals, ceramics, polymers, composites	White board & Marker
2	21/07/2025 TO 26/07/2025	Standard organizations: ASTM, ISO, IS, DIN Mechanical Properties of Materials. Elastic and Plastic Deformation. Stress-strain behavior, Hooke's Law .	White board . & Marker
3	28/07/2025 TO 02/082025	Yield strength, ultimate tensile strength (UTS), fracture strength Ductility, brittleness, toughness, and resilience. Fatigue and creep.	White board & Marker
4	04/08/2025 TO 09/08/2025	(Destructive Testing (DT) Methods • Tensile Test: stress-strain behavior, yield strength, tensile strength, ductility, and toughness , stress- strain curve, modulus of elasticity, proof stress, true stress and true strain curve.	White board & Marker
5	11/08/2025 TO 16/08/2025	Relationship between True stress vs Engineering Stress, True Strain vs Engineering Strain. Compression Test: Compressive strength and plastic deformation	White board & Marker
6	18/08/2025 TO 23/08/2025	Hardness Testing: Brinell Hardness Test (BHN) Rockwell Hardness Test (RHN) Vickers Hardness Test (VHN)	White board & Marker
7	25/08/2025 TO 30/08/2025	Mohs Hardness Test. Impact Testing: Charpy and Izod tests, Discuss about transition temperature, factors affecting transition temperature, ductility, brittle fracture.	White board & Marker
8	01/09/2025 TO 06/09/2025	Fatigue Testing: Different stress cycles, S-N curves, endurance limit, procedure of fatigue testing and fatigue testing machine, Mention different metallurgical factors that affect fatigue behavior	White board & Marker
9	08/09/2025 TO 13/09/2025	Creep Testing: Stages of creep, effect of temperature and stress, creep rate, creep rupture strength, engineering creep curve, constant stress creep curve and Andrade concept equi- cohesive temperature,	White board & Marker
10	15/09/2025 TO 20/09/2025	State various factors that affect creep, creep testing machine, stress rupture test. Fracture mechanics: Types of fractures: Ductile, brittle, fatigue, creep • Crack initiation and modes of Crack propagation	White board & Marker

11	22/09/2025 TO 27/09/2025	<ul style="list-style-type: none"> Case studies of real-world material failures Non-Destructive Testing (NDT) Methods Visual Inspection: Surface defects, cracks, surface roughness	White board & Marker
12	08/10/2025 TO 11/10/2025	Liquid Penetrant Test (LPT): Surface crack detection Magnetic Particle Testing (MPT): Detection of surface & subsurface defects	White board & Marker
13	13/10/2025 TO 18/10/2025	Ultrasonic Testing (UT): Internal defect detection using high-frequency waves. Radiographic Testing (RT): X-ray and gamma-ray testing for welds and castings.	White board & Marker
14	20/10/2025 TO 25/10/2025	Eddy Current Testing (ECT): Conductivity & defect detection in metals Advanced Material Testing Techniques & Industrial Applications & Case Studies Nanoindentation	White board & Marker
15	27/10/2025 TO 01/11/2025	Advanced NDT techniques (phased array ultrasound technique) Quality control and material selection	White board & Marker
16	03/11/2025 TO 08/11/2025	Revision.....	White board & Marker
17	10/11/2025 TO 15/11/2025	Revision.....	White board & Marker


 Signature of HOD


 Signature of Faculty