Government Polytechnic, Sonepur
Session: 2023-24
Lesson Plan

Discipline: **Metallurgical Engineering**	Semester: **4th**	Name of the Teaching Faculty: **Goutam Kumar Majhi**	
Subject: **Material Testing (TH-01)**	No. of days/per week class allotted:**4**	Semester from Date: **16. 01. 2024** to Date: **26.04.2024** No. of weeks: 15	
Week	**Class No.**		**Lecture Topics**
1	1	Chapter -2: Tensile Test :	Introduction
	2		Basic concepts about stress and strain
	3		Tensile testing
	4		stress-strain curve
2	5		-do-
	6		modulus of elasticity, proof stress
	7		UTS & Fracture stress
	8		ductility and toughness
3	9		True stress and true strain curve.
	10		yield point phenomenon
	11		-do-
	12	Chapter-1: Hardness Test	Hardness of a material
4	13		rebound hardness with reference to shore's Scleroscope
	14		scratch hardness and explain mho's scale
	15		-do-
	16		Brinel Hardness Test
	17		-do-
	18		Rockwell hardness test
	19		-do-
	20		Vickers hardness test
6	21		-do-
	22	Chapter-3: Impact Test	impact strength
	23		Charpy impact test
	24		Izod impact test
7	25		transition temperature
	26		ductility, brittle fracture
	27		-do-

	28		Tutorial Class
8	29	Chapter-4: Fatigue Test	stress cycles
	30		-do-
	31		S-N curve
	32		endurance limit
9	33		fatigue testing and fatigue testing machine
	34		-do-
	35		metallurgical factors that affect fatigue behaviour
	36		-do-
10	37	Chapter-5: Creep Test	creep and its importance
	38		engineering creep curve
	39		constant stress creep curve
	40		Andrade concept
11	41		equicohesive temperature
	42		factors that affect creep
	43		creep testing machine
	44		stress rupture test
12	45	Chapter- 6: Non – destructive Testing	scope and elementary idea about different NDT
	46		-do-
	47		Visual testing
	48		Leakage test
13	49		Magnetic particle testing
	50		Dye penetration test
	51		Acoustic methods and ultrasonic testing
	52		Eddy current testing
14	53		X – ray diffraction
	54	Chapter- 7: Temperature Measurement and Calibration	Analysis the basic principle of pyrometry
	55		-do-
	56		types of pyrometer
15	57		types of thermocouple
	58		Revision Class-I
	59		Revision Class-II
	60		Important question discussion

16/01/2024
Prepared By
(G.K. Majhi, Lect. Metallurgy)

16/01/2024
HOD
Metallurgical Engg.

16/1/24
Academic-Coordinator