UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING, ROURKELA
Session: 2022-23

Discipline: Metallurgical Engineering	Semester: 4th	Name of the Teaching Faculty: Parasmita Biswal	
Subject: Material Testing (TH-04)	No. of days/per week class allotted:4	Semester from Date: 14. 02. 2023 to Date: 23.05.2022 No. of weeks: 13	
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
	16		Brinell Hardness Test
5	17		Brinell Hardness Test
	18		Rockwell hardness test
	20		Vickers hardness test
	22	Chapter-3: Impact Test	impact strength
	23		Charpy impact test
	24		Izod impact test
6	25		transition temperature
	26		ductility, brittle fracture
	27		-do-

	28		Tutorial Class
7	29	Chapter-4: Fatigue Test	stress cycles
	31		S-N curve
	32		endurance limit
8	33		fatigue testing and fatigue testing machine
	35		metallurgical factors that affect fatigue behaviour
09	37	Chapter-5: Creep Test	creep and its importance
	38		engineering creep curve
	39		constant stress creep curve
	40		Andrade concept
10	41		equicohesive temperature
	42		factors that affect creep
	43		creep testing machine
	44		stress rupture test
11	45	Chapter- 6: Non – destructive Testing	scope and elementary idea about different NDT
	46		-do-
	47		Visual testing
	48		Leakage test
12	49		Magnetic particle testing
	50		Dye penetration test
	51		Acoustic methods and ultrasonic testing
	52		Eddy current testing
13	53		X – ray diffraction
	54	Chapter- 7: Temperature Measurement and Calibration	Analysis the basic principle of pyrometry
	55		types of thermocouple
	56		types of pyrometer
	57		Important question discussion
	58		Revision Class-I
	59		Revision Class-II