

# KIIT POLYTECHNIC, BHUBANESWAR

## LESSON PLAN

Session: 2022-23

Discipline : Metallurgical Engineering	Semester:4th, Summer/2024	Name of the Faculty:Manas Ranjan Behera Lecturer E-mail Id:mrbeherafmt@kp.kiit.ac.in
Subject: Material Testing(Th.1)	No. Of Days/Week:4	Start date:16/01/2024 End date :
<b>Week</b>	<b>Class Day</b>	<b>Theory Topics</b>
1st	1st	Introduction to hardness test
	2nd	Definition of hardness with example
	3rd	Types of hardness
	4th	Expression for Brinell hardness test
2nd	1st	Expression for Vickers hardness test
	2nd	Expression for Rockwell hardness test
	3rd	Rebound hardness, shore's scleroscope
	4th	Scratch hardness, mho's scale
3rd	1st	Relationship of hardness with strength
	2nd	Discussion on possible questionnaire
	3rd	Introduction to tensile test
	4th	Definition of stress with example
4th	1st	Definition of strain with example
	2nd	Explanation of stress-strain curve
	3rd	Explanation of modulus of elasticity and proof stress.
	4th	Explanation of yield point phenomenon
5th	1st	Explanation of true stress and true strain curve
	2nd	Definition of ductility with example
	3rd	Definition of toughness with example
	4th	Quiz test
6th	1st	Introduction to impact test
	2nd	Definition of impact strength with example
	3rd	Discussion about Charpy impact test
	4th	Discussion about Izod impact test
7th	1st	Discussion about transition temperature, ductility and brittle fracture

	2nd	Discussion on possible questionnaire
	3rd	Introduction to fatigue test
	4th	Definition of fatigue with example
8th	1st	Description of S-N curve and endurance limit
	2nd	Procedure of fatigue testing
	3rd	Procedure of fatigue testing machine
	4th	Different stress cycles
9th	1st	Metallurgical factors that affect fatigue behaviour
	2nd	Discussion on possible questionnaire
	3rd	Introduction to creep test
	4th	Definition of creep and its importance
10th	1st	Engineering creep curve, constant stress creep curve, Andrades concept
	2nd	Equicohesive temperature, factors affecting creep
	3rd	Creep testing machine, stress rupture test
	4th	Discussion on possible questionnaire
11th	1st	Introduction to Non destructive testing
	2nd	Scope and elementary idea about different NDT
	3rd	Significance of NDT
	4th	Description of visual testing
12th	1st	Description of leakage test
	2nd	Description of magnetic particle testing
	3rd	Description of dye penetration test
	4th	Acoustic methods and ultrasonic testing
13th	1st	Description of eddy current testing
	2nd	Description of X-ray diffraction
	3rd	Quiz test
	4th	Introduction to temperature measurement and calibration
14th	1st	Basic principle of pyrometry
	2nd	Different types of pyrometers and its use
	3rd	Basic principle of thermocouple
	4th	Different types of thermocouple and its use
15th	1st	Discussion on Previous year's questions
	2nd	Discussion on possible questionnaire
	3rd	Practice test
	4th	Practice test

Recommended books: 1. Testing of Metallic material by AVK Surya Narayan

2. Mechanical Metallurgy by Dieter

Manas Ranjan Behera

Signature of the concerned teacher