



Techno India NJR Institute of Technology

Academic Administration of Techno NJR Institute

Syllabus Deployment

Name of Faculty	: Mr. Abhishek Sharma	Subject Code: 3ME4-22
Subject	: Material Testing Lab	
Department	: Mechanical Engineering	Sem: III
Total No. of Lectures Planned:	11	

COURSE OUTCOMES:

At the end of this course students will be able to:

- CO1: Learn the principles of materials science and engineering through lab investigation.
- CO2: Learn the basic skills required to properly use materials science Instrument.
- CO3: Analyze mechanical properties of materials.
- CO4: Perform Rockwell hardness tester for measurement of hardness.
- CO5: Analyze impact test, fatigue test and bending test.

Lecture No.	Practical No.	Topic
1	1	Study of various crystals structures through models BCC, FCC, HCP, tetrahedral and octahedral voids. Material identification of, say, 50 common items kept in a box.
2	2	Specimen preparation for metallographic examination /micro structural examination-cutting, grinding, polishing, etching.
3	3	Comparative study of microstructures of different given specimens (mild steel, gray C.I., brass, copper etc.)
4	4	Heat treatment experiments such as annealing, normalizing, quenching, case hardening and comparison of hardness before and after.
5	5	Study of Microstructure and hardness of steel at different rates of cooling. Microstructure examination of white cast iron.
6	6	To perform Tensile/Compressive/Shear/torsion test on a given material and to determine its various mechanical properties under

		tensile/compression/Shear/torsional loading
7	7	To determine Rockwell/ Vickers/Brinell hardness of a given material
8	8	To perform Impact test on a given material and to determine its resilience.
9	9	To study and perform Fatigue test on a given material and to determine fatigue strength of the material
10	10	To perform Bending test and to determine the Young's Modulus of Elasticity via deflection of beam.
11	11	Creep testing on creep testing machine

TEXT/REFERENCE BOOKS

1. SURYANARAYANAN, A.V.K. "TESTING OF METALIC MATERIALS" TATAMCGRAW HILL,1993.
2. VANDER VOORT, METALLOGRAPHY: PRINCIPLES AND PRACTICE, MCGRAW-HILL, 1984