

## DEPARTMENT OF MECHANICAL ENGINEERING

### DETAILS OF THE MATERIALS SCIENCE LABORATORY

<b>Name of the Laboratory</b>	:	MATERIALS SCIENCE
<b>Name of the Lab In-charge</b>	:	Dr. J.S. Binoj
<b>Name of the Lab-Technician In-charge</b>	:	Mr.T. ESWARAI AH
<b>Area of the Lab</b>	:	143 Sq.mts
<b>Lab Occupancy</b>	:	36 students
<b>Description of the Lab</b>	:	The lab deals with relationship between the structure and properties of various metals. It enables the students to identify the structure and structure change with respect to the heat treatment processes. It helps the student to use materials properly and realize new design opportunities with materials.

#### LIST OF EXPERIMENTS

1. Study of metallurgical instruments & microscope.
2. (a) Preparation of mounted specimen using cold setting die. (b) Preparation of mounted specimen using hydraulic specimen mounting press.
3. Preparation and study of the microstructure of pure metals (Fe, Cu, Al).
4. Preparation and study of the microstructure of carbon steels (Low carbon steel, medium carbon steel, High carbon steel, case carburized steel)
5. Preparation and study of the microstructure of Non-Ferrous alloys (Al alloy, Cu alloy, Stainless steel)
6. (a) Study of the microstructures of heat-treated steels. (b) Measurement of hardness of heat treated and untreated steels.
7. Determination of Hardenability of steel by Jominy End Quench Test

<b>LIST OF EQUIPMENT</b>		
<b>S.NO</b>	<b>Name of the Major Equipment(Above Rs. 50,000)</b>	<b>Quantity</b>
1.	Image Analysis System (Software)	01
2.	Cutting-off Machine	01
<b>S.NO</b>	<b>Name of the Minor Equipment(Below Rs. 50,000)</b>	<b>Quantity</b>
1.	Trinocular Metallurgical Microscope	02
2.	Binocular Metallurgical Microscope	08
3.	Micrometer Eyepiece 10X	10
4.	Dual disc polishing machine	02
5.	Hydraulic specimen mounting press	01
6.	Belt Grinder	01
7.	Muffle Furnace	01
8.	Jominy end quench test rig	01
9.	Rockwell cum Brinell Hardness Tester	01
10.	Specimen Leveler	02
11.	Specimen Drier	01
12.	Hand polishing stainless steel stands	05
13.	Cold setting dye	01



**Materials Science Laboratory**