MATERIALS SCIENCE & ENGINEERING LABORATORY

Description of the Laboratory:

Material Science lab deals with relationship between the structure and the properties of various materials. This laboratory also enables the knowledge on atomic structures of materials and probable imperfections using various prototypes. Moreover, with the support of different equipment as well as machines, students are inspired to examine the microstructural changes with respect to heat treatment processes and assess the resulting properties.

List of Experiments:

1. Study of metallurgical instruments & microscope
2. a) Preparation of specimen using cold setting die

   b) Preparation of specimen using hydraulic press

3. Preparation and study of the microstructure of cast irons
4. Preparation and study of the microstructure of carbon steels
5. Preparation and study of the microstructure of Non-Ferrous Alloys
6. Study of the microstructures of heat treated steels
7. Measurement of hardness of heat treated and untreated steels
8. Determination of hardenability of steel by Jominy End Quench Test
9. Determination of grain size, and phase distribution of specimens (any four materials) by Material Plus software
10. Experiment on Ultrasonic flaw detection
11. Experiment on Magnetic particle inspection
12. Experiment on Die-penetration

List of Equipment:

- Image Analysis System (Software)
- Cutting-off Machine
- Trinocular Metallurgical Microscope
- Binocular Metallurgical Microscope
- Micrometer Eyepiece 10X
- Dual disc polishing machine
- Hydraulic specimen mounting press
- Belt Grinder
- Muffle Furnace
- Jominy end quench test rig

- Rockwell cum Brinell Hardness Tester
- Specimen Leveler
- Specimen Drier
- Hand polishing stainless steel stands
- Cold setting dye

Photographs of the Lab/Equipment: