GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

MATERIAL SCIENCE AND METALLURGY LAB

Course Code: GR15A2024 L:0 T:0 P:2 C:2
II Year I Semester

Course Objectives
- To know the micro structure of different materials
- To impart the required material for products based on micro structure
- To know the properties of materials at higher elevated temperatures
- To refine grain size by heat treatment properties

Course Outcomes
- Ability to relate properties to microstructure.
- Understand various crystal structures and relationship to properties
- Ability to select metals and alloys for industrial applications
- Understanding metals and their use in industries
- Understanding heat treatment procedures and the change of properties
- Improving material properties by different heat treatment processes

List of Experiments
1. Preparation and study of the micro structure of Mild steel and Low carbon steel.
2. Preparation and study of the micro structure of High carbon steel and Stainless steel.
3. Preparation and study of the micro structure of Grey cast iron and White cast Iron.
4. Preparation and study of the micro structure of Malleable cast iron and Spheroidal cast iron.
5. Preparation and study of the micro structure of Aluminium.
6. Preparation and study of the micro structure of copper.
7. Preparation and study of the micro structure of Titanium (Ti6Al4V).
8. Preparation and study of the micro structure of Inconel 718 –Super alloy.
9. Study of the microstructure of Heat treated steels.
10. Harden ability of steels by Jominy End Quench test.
11. Find out the hardness of various treated and untreated steels.

Teaching Methodology: Experimental Test rigs & Microscopes