

BS (4 Years) for Affiliated Colleges



Code	Subject Title	Cr. Hrs	Semester
PHY-414	MATERIALS SCIENCE-II (LAB)	3	VII
Year	Discipline		
4	Physics		

Course Outlines:

Note: The students are required to do at least ten experiments from the following list:

Classification of Materials,

To classify the given specimen of materials into Metallic materials and non-metallic materials

- a. Metals and alloys
 - b. Ferrous and Non-Ferrous metals
 - c. Ferrous and Non-Ferrous alloys
1. Study of furnace (Heat-Treatment Furnace) and a thermocouple pyrometer.
 2. Study/understanding and working of a Metallurgical Microscope.
 3. Study/understanding and working of a Metallurgical Microscope.
 4. Study the microstructure of a given metals/alloys.
 5. To determine the hardness of a given metallic material by
 - a. Vicker's Hardness testing Machine.
 - b. Brinell Hardness Testing Machine
 - c. Rockwell Hardness Testing Machine.
 6. Study the relationship of Vicker's, Brinell and Rockwell hardness of given material.
 7. To study the Mechanical Properties of a given sample.
 8. To perform mechanical testing of polyethene.
 9. To determine heat deflection temperature of given sample of polymer (Acrylic).
 10. To perform thermogravimetric analysis of given polymeric materials & determine decomposition temperature.
 11. To fabricate ceramic material by slip casting technique.
 12. To determine the thermal shock resistance of the given material.
 13. To study the thermal changes occurring in the given clays on heating with differential thermal analysis.(for refractory spalling index).
 14. To determine the % age loss of moisture of the given clay.
 15. To calculate moisture contents in the given sample of ceramics material.
 16. To determine the %age water absorption in the given sample of refractory material.
 17. To determine the loss in ignition in the given sample of clay.
 18. To determine the porosity and density of a given refractory material.