Materials Science and Engineering Lab I

MATSCEN 3331

Credit Hours:
2.00

Course Levels:
Undergraduate (1000-5000 level)

Course Components:
Lecture
Lab

Course Description:
Laboratory experiments related to materials processes and properties. Introduction to experimental techniques used in materials fields. Data analysis, presentation, and technical writing skills.

Prerequisites and Co-requisites:
Prereq: 2331, and enrollment as MatScEn-BS major; or permission of instructor.

Course Goals / Objectives:
- Ability to conduct simple experiments in materials synthesis, processing and process control
- Ability to conduct simple experiments in materials continuum property measurement
- Skills in reduction, analysis and presentation of redundant and less accurate data
- Computer data acquisition, analysis and process control
- Ability to write, clear, concise, complete and correct technical reports
- Building students' portfolio of important accomplishments
Course Topics:
- Materials synthesis and processing.
- Transport: modes, species, continuity. Solid state, and irreversible thermodynamics.
- Process control for temperature, atmosphere, and vacuum.
- LabVIEW instrumentation.
- Continuum properties and their analysis in time and frequency domain.
- Data reduction, derivations, error analysis and statistics.
- Document formatting and processing.

Designation:
Required