



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Materials Science and Engineering Lab II

MATSCEN 3332

Credit Hours:

2.00

Course Levels:

Undergraduate (1000-5000 level)

Course Components:

Lecture

Lab

Course Description:

Laboratory experiments related to materials application and performance. Advanced experimental techniques and analysis in these areas. Technical writing skills at fully professional level.

Prerequisites and Co-requisites:

Prereq: 2241, 2331, and 2251; and enrollment as MatScEn-BS student; or permission of instructor.

Course Goals / Objectives:

- Ability to conduct advanced experiments in materials application properties
 - Ability to conduct advanced experiments in materials performance
 - Skills in analysis of limited data that is that is difficult to reproduce
 - Experimental design to obtain systematic data at minimal cost/effort
 - Experimental data analysis through finite element simulations
 - Ability to write effective technical reports that contain a critical analysis of the state-of-the-art, the experiment, recommendations and perspectives
 - Building students' portfolio of important accomplishments
-

Course Topics:

- Mechanical strength, deformation and reliability.
 - Mechanical property measurement.
 - Structural evolution during annealing, sintering and deformation.
 - COMSOL multi-physics finite element data analysis.
 - Chemical and mechanical degradation: (stress) corrosion and fatigue. Effect of surface treatments.
 - Electrochemical characterization and interfacial transfer phenomena.
-

Designation:

Required