

Engineering Faculty Document No. EFD 54-25

TO: The Engineering Faculty
FROM: The Faculty of the School of Materials Engineering
DATE: November 12, 2024
RE: Scheduling, renaming, and prerequisite change for MSE 23500

The faculty of the School of Materials Engineering has approved the following changes to MSE 23500. This action is now submitted to the Engineering Faculty with a recommendation for approval.

From: MSE 23500 Materials Properties Laboratory

Prerequisites: CHM 11500, MA 16500
Scheduling: MF lectures

Catalog Description.

Laboratory experiments involving usage of standard equipment in the measurement of mechanical, microstructural, thermal, electrical, and optical properties. Introduction to computer-aided data analysis. Experiments are carried out with metal, ceramic, and polymeric materials to illustrate property-structure-processing relationships. Credits: 3.00

To: MSE 23500 Second Year Materials Engineering Laboratory

Prerequisites: CHM 11500 OR (CHM 11510 AND CHM 11520 OR CHM 11530), MA 16500;
Concurrent prerequisite: MSE 23000
Scheduling: M lectures

Catalog Description.

Laboratory experiments using standard equipment to measure material properties, characterize material structure and composition, and explore processing methods to form functional shapes, and modify properties of the formed shapes. Experiments are carried out with metal, ceramic, and polymeric materials to illustrate property-structure-processing relationships. Credits: 3.00

Course Objectives:

1. Identify and properly utilize primary sources and online databases to find information about material structures, properties, and processing techniques.
2. Demonstrate the use of a variety of processing techniques for metals, ceramics, and polymers and to identify the changes in microstructure and properties they cause.
3. Apply characterization techniques appropriate for the class of material analyzed.
4. Assess validity of experimental data and recognize experimental factors affecting data.
5. Accurately and clearly report engineering data using figures, graphs, and tables and proper statistical methods.
6. Display effective written communication in technical reports.

Reasons:

1) Prerequisite changes: Adding the introductory materials course as a concurrent prerequisite will enhance the learning experience for the students taking the laboratory course. The CHM 11500 prerequisite was changed to accept either the virtual or in-person labs which are now offered.

2) Name change: the School of Materials is updating the laboratory curriculum of its undergraduate program. There will be a dedicated laboratory experience for the sophomore and junior years before the yearlong, industrially sponsored, senior design project. The School is implementing the changes first with the sophomore year (this EFD). Stating the name as such ("Second Year") highlights that the content and experience is focused towards the second year in the MSE program. The students will have a similar course and laboratory experience targeting their third year.

3) Scheduling change: currently there are two lectures and one laboratory session. The proposed change is to schedule two laboratory sessions per week and decrease the lecture to once a week. The increased time in lab will allow students to pursue more open-ended projects.



David F. Bahr, Professor and Head
School of Materials Engineering