MME-4413

STRUCTURAL CHARACTERIZATION

1. **Title of Course:** MME 4413 Structural Characterization

2. **2000 Catalogue:** The application of modern instrumentation and techniques to structural characterization problems. Both theory and operation will be stressed. X-ray Analysis, electron microscopy (TEM-SEM) and electron probe analysis will be included. Prerequisite: MME-3407 with grade of C or better or instructor approval. Laboratory Fee required.

3. **Prerequisite:** Prerequisite: MME 3407 with grade of C or better or instructor approval. Laboratory Fee required.


5. **Course Objectives:** The course is designed to teach the fundamentals of various analytical instruments. Emphasis is placed on the similarities between different instruments.

6. **Topics:**
   1. Optical Microscopy and Digital Imaging
   2. Optical Emission and Absorption Spectroscopy
   3. IR Spectroscopy
   4. X-ray Fluorescence Spectroscopy
   5. Mass Spectroscopy
   6. Surface Analysis—AES, XPS, SIMS
   7. X-ray Diffraction
   8. Scanning Electron Microscopy
   9. Transmission Electron Microscopy

7. **Class Schedule:** The course meets three times a week for 50 minutes per class. The total number of class sessions is 45. There is a three hour laboratory each week.

8. **Contribution to the professional Component:** This course teaches material that will be used heavily later in the design project.

9. **Relationship to Program Objectives:** This course contributes mostly to Objective I.

10. **Prepared by:** John McClure 5/17/01