

- Course Number and Title: M E 405. Special Topics: Mechanics of Composite Materials
- Catalog Description: N/A
- Credit Hours: 3 Credits (3)
- Prerequisite(s) / Corequisite(s): Prerequisite(s): N/A  
Corequisite(s): N/A
- Required: Elective for BSME Degree
- Course Availability: Spring Semester
- Instructor (Usual): Dr. Borys Drach (See <https://mae.nmsu.edu/people/faculty.html>)
- Textbook: I.M. Daniel, O. Ishai "Engineering Mechanics of Composite Materials" 2<sup>nd</sup> Edition, Oxford University Press ISBN-10: 019515097X, ISBN-13: 978-0195150971.
- Course Learning Objectives: After completing this course, a student should be able to:
  - 1) Identify basic types of material anisotropy.
  - 2) Calculate effective elastic properties of laminated composite materials.
  - 3) Perform strength and failure predictions for some types of laminated composite materials.
  - 4) Describe major manufacturing processes for composite materials.
- Topics Covered:
  - Basic concepts and classification
  - Anisotropy of composite materials
  - Micromechanical predictions of elastic and hygrothermal properties
  - Manufacturing processes of polymer and carbon matrix composites
  - Strength and failure of composites and porous materials
  - Multidirectional laminates; Experimental methods for characterization of composite materials