COURSE TITLE: Engineering Mechanics of Composite Structures  Cr Hrs 3

LECTURE HOURS: 3  LABORATORY HOURS: 0

INSTRUCTOR: Dr. Ashok Kumar Ghosh  OFFICE HOURS: TBD


SUPPLEMENTAL REFERENCES
a) Books

b) Journals
1. Composites;
2. Journal of Composites Technology & Research (ASTM)
3. SAMPE Journal
5. Experimental Mechanics (SEM)
6. Polymer Composites (SPE);
7. Journal of Composite Materials
8. Journal of Reinforced Plastics and Composites
9. Composites Science and Technology

c) Material Properties: www.matweb.com

COURSE DESCRIPTION:
This course will address issues related to composite structures, their macro-mechanics to structural design and development. Emphasis will be given to development of analytical procedures for determining material properties and prediction of structural behavior. We will look into development of effective experimental methods for material characterization, stress analysis, and failure analysis. The course will also explore the concept of “Multifunctional Composite”- a more recent concept that mimics characteristics of Bio- systems.

PREREQUISITE: MENG 300, MENG 304 or Consent of the Instructor

TOPICS:
The course material will be covered in the following order:

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<tr>
<th>Topic</th>
<th>Text Chapter</th>
<th>Description</th>
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<tr>
<td>1</td>
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<td>Fiber-Reinforced Composite Materials</td>
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<td>2</td>
<td>2.7</td>
<td>Linear Elastic Stress-strain Characteristics</td>
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<td>3</td>
<td>3.4</td>
<td>Prediction of Engineering Properties-Micro</td>
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Homework assignments must be submitted on the due date. Questions on the homework will be answered in class or during office hour. Homework must be done neatly and professionally on Engineering Paper. Students are encouraged to collaborate on homework, but submit individual solutions that indicate individual contributions.

Midterm Examination:
There will be one (1) examination. For campus-students the test will be in-class and for distance-students a convenient methods will be identified after discussion with the students. Make-up examination will be given to unavoidable cases only with approval from the instructor.

Final Examination:
The final examination will be comprehensive and will be governed by the same set of rules as those for Midterm examination.

Final Project:
A final project will be assigned to each student. The final project topic must be approved by the instructor on or before 6th week from the day of the first class.

Grading
The final course grade will be computed as follows:

- Homework: 100 points
- Midterm Exam.: 150 points
- Final Exam.: 200 points
- Final Project: 150 points