



Composite Materials and Structures Certificate

Graduate School Learning Goals and Program Learning Outcomes

GSLG #1: Understand, interpret, shape, and augment the knowledge base.

PLO #1: Graduate Students will demonstrate expertise with methods and techniques for predicting and/or validating the response of a composite component through analysis and/or testing.

The courses offered (Table 1) in the graduate Composite Materials and Structures Certificate program are of sufficient number and scope to convey the necessary knowledge to satisfy the PLO. The attainment of the PLO can be assessed using student work such as homework, memos, quizzes and class projects.

GSLG #2: Share disciplinary expertise openly, effectively, and accurately.

PLO #2: Graduate Students will demonstrate the ability to generate and produce engineering reports of high professional-quality with significant technical content and data that describe the response characteristics of composite material systems.

The graduate courses with an engineering design or experimental project (Table 1) are of sufficient number and scope to convey the necessary knowledge to satisfy the PLO. The PLO's attainment can be assessed using memos and project reports.

GSLG #3: Demonstrate responsible and ethical practice.

PLO #3: Graduate Students will demonstrate an understanding of and the ability to correctly apply engineering standards and codes to manufacture, design and test composite structures that serve the public safely and sustainably.

The graduate classes with significant design content that incorporate codes (Table 1) are of sufficient number and scope to convey the necessary knowledge to satisfy the PLO. The attainment of the PLO can be assessed using student work such as homework, memos, quizzes and class projects.

Table 1: Mapping of PLOs to Mechanical Engineering Graduate Courses

PLO	<i>MEE</i> <i>441/541</i>	<i>MEE</i> <i>450</i>	<i>CIE</i> <i>543</i>	<i>MEE</i> <i>550</i>	<i>CIE</i> <i>644</i>	<i>SFR</i> <i>531</i>	<i>SFR</i> <i>545</i>	<i>SFR</i> <i>550</i>	<i>SFR</i> <i>570</i>
1	x	x	x	x	x	x	x	x	x
2	x				x				x
3	x		x		x				

- MEE 441/541 — Manufacturing and Testing of Composites (Required Course)
- MEE 450 — Mechanics of Composite Materials (Core Course)
- CIE 543 — Introduction to Composite Materials in Civil Engineering (Core Course)
- MEE 550 — Mechanics of Laminated Composite Structures
- CIE 644 — Advanced Composite Materials in Civil Engineering
- SFR 531 — Mechanics of Wood and Wood Composites
- SFR 545 — Adhesion and Adhesives Technology
- SFR 550 — Wood-Polymer Hybrid Composites
- SFR 570 — Cellulose Nanomaterials and Their Composites