



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Introduction to Laminated Composite Materials

CIVILEN 5162

Credit Hours:

3.00 - 3.00

Course Levels:

Undergraduate (1000-5000 level)

Graduate (5000-8000 level)

Course Components:

Lecture

Course Description:

Introduction to anisotropic material behavior and failure assessment of laminated composite materials. Classical lamination theory, beams, plates and shells.

Prerequisites and Co-requisites:

Prereq: MechEng 2020 (420) or 2040; or Grad standing in Engineering; or permission of instructor.

Course Goals / Objectives:

- provide basic understanding of analysis techniques required to assess the behavior of continuous fiber reinforced laminated composite structures, including beams, orthotropic laminates (thermal and hygral)
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Course Topics:

- Stress-strain relations for orthotropic materials Mechanical, thermal, and hygral response of orthotropic lamina Micromechanics models of orthotropic materials Lamina failure failure theories
 - Mechanical test methods for orthotropic materials Classical lamination theory
 - Equations of motion and analysis procedures for laminated composite beams Equations of motion and analysis procedures for laminated composite plates
 - Equations of motion and analysis procedures for laminated composite beams
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Designation:

Elective