



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Introduction to Continuum Mechanics

MECHENG 7100

Credit Hours:

3.00 - 3.00

Course Levels:

Graduate (5000-8000 level)

Course Components:

Lecture

Course Description:

Continuum mechanics in Cartesian and general coordinates, vectors and tensors in indicial and direct notation, analysis of deformation and stress, balance principles.

Prerequisites and Co-requisites:

Prereq: 2020 (420) or 2040, and Math 2174, 2255 (255), or 2415 (415) or equiv; or Grad standing in Engineering; or permission of instructor.

Course Goals / Objectives:

- Ability to manipulate vectors and tensors using indicial and direct notation
 - Understanding of the relationships between various kinematic tensors
 - Understand the different stress tensors
 - Understand how to use balance laws in their integral and differential forms
 - Ability to read journal articles on continuum mechanics topics and understand the equations used in those articles
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Course Topics:

- Vectors, tensors, and tensor calculus in indicial and direct notation
 - Kinematic tensors for small and finite deformation
 - Stress tensors
 - Balance laws
 - Example problems in linear elasticity and Newtonian fluid mechanics
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Designation:

Elective