



Constitutive Models in Continuum Mechanics

MECHENG 7101

Credit Hours:

4.00 - 4.00

Course Levels:

Graduate (5000-8000 level)

Course Components:

Lecture

Course Description:

Continuum-level constitutive models are developed, starting from a mechanistic point of view. Problems involving elasticity, plasticity, visco-elasticity, & rubber elasticity are discussed.

Prerequisites and Co-requisites:

Prereq: 7040, 7100, 740, or 743, or permission of instructor.

Course Goals / Objectives:

- Understanding of the physics that underlie different constitutive behavior
 - Ability to read and interpret constitutive models in the research literature
 - Ability to use continuum mechanics concepts of stress and deformation to develop a simple constitutive law
 - Ability to develop computer code to reproduce results from constitutive models in the literature
 - Ability to decide on the appropriateness of constitutive assumptions
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Course Topics:

- Constitutive laws overview
 - Anisotropic linear elasticity
 - Finite elasticity
 - Viscoelasticity
 - Non-Newtonian fluid mechanics
 - Plasticity
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Designation:

Elective