Department of Civil Engineering

Course Name:

Advanced Soil Mechanics (II)

Course Number: 20-416	**Credit:** 3
Program: Graduate	**Course Type:** Technical Selective
Prerequisite: -	**Corequisite:** -

Course Description (Objectives):

The goal of this course is to familiarize students with advanced topics and behavioral models in soil mechanics. It covers fundamental concepts of stress and strain and introduces elastic and plastic behavioral models.

Course Content (outline):

- Chapter 1: Introduction
- Chapter 2: Continuum Mechanics: Concepts & Basic Equations of Stress & Strain
- Chapter 3: Stress & Strain Paths and Invariants
- Chapter 4: Elasticity
- Chapter 5: Hypo-elasticity
- Chapter 6: Quasilinear Models
- Chapter 7: Plasticity, Introduction
- Chapter 8: Plasticity Models
- Chapter 9: Recent Developments
- Chapter 10: Applications for Design

References:

- "Theory & Problems of Continuum Mechanics", G.E. Mase, Schaum's Series, 1970
- "The Mechanics of Soils – An Introduction to Critical State Soil Mechanics", J.H. Atkinson & P.L. Bransby, McGraw Hill, 1978
- "Constitutive Laws for Engineering Materials, with Emphasis on Geologic Materials", C.S. Desai & H.J. Siriwardan, Prentice- Hall, 1984
- "Soil Behavior and Critical State Soil Mechanics", D.Muir Wood, Cambridge Univ. Press, 1990
- "Nonlinear Analysis in Soil Mechanics, Theory & Implementation", W.F. Chen & E. Mizuno, Elsevier, 1990