

## ADVANCED SOIL MECHANICS

### COURSE OUTLINE

Text: Wood, D.M. (1990), *Soil Behaviour and Critical State Soil Mechanics*, Cambridge University Press, New York, NY 10011, 462 pp.

Desai, C.S. and Siriwardane, H.J. (1984), *Constitutive Laws for Engineering Materials with Emphasis on Geologic Materials*, Prentice-Hall, Inc. Englewood Cliffs, NJ 07632, 468 pp.

References: Lambe, T.W. and Whitman, R.V. (1969), *Soil Mechanics*, John Wiley & Sons, Inc., New York, 553 pp.

Potts, D.M., and Zdravkovic, L. (2001), *Finite Element Analysis in Geotechnical Engineering Application*, Thomas Telford, London, UK, 427 pp.

Chen, W.F., and Baladi, G.Y. (1985) *Soil Plasticity-Theory and Implementation*, Elsevier Science Publishing Company, Inc., New York, New York, 231 pp.

Mitchell, J.K. (1993), *Fundamentals of Soil Behavior*, John Wiley & Sons, Inc., New York, 437 pp.

Desai, C.S. and Christian, J.T. (1977), *Numerical Methods in Geotechnical Engineering*, McGraw-Hill Book Company, New York, 783 pp.

1. Introduction
2. Definition of Strain and Stress Tensor, Tensor Calculus
3. Linear Elasticity
4. Nonlinear Behavior
5. Constitutive Models
  - Higher Order Elasticity (Hyperelasticity)
  - Hypoelasticity
  - Quasilinear Models
  - Plasticity
  - Elasto-Plastic Models (Cam Clay and Cap models)
6. Critical States
7. Strength of Soils
8. Stress-Dilatancy Relationships
9. Correlations with Index Properties

Grading:	Problems	20%
	Term Paper	30%
	Midterm Exam	20%
	Final Exam	30%