

CE 322 – GEOTECHNICAL ENGINEERING

Type (check one): Required: X Elective:

2005-2006 Catalog Data: CE 322. Geotechnical Engineering. A study of origin and composition of soils; character and properties; gradation and permeability; seepage phenomena and frost action; introduction to mechanics of earth masses including consideration of stresses, strains, consolidation theory, rate of consolidation, total and differential settlements and shearing resistance. Prerequisites: CE 213, CE 299. Corequisites: CE 322L. Offered in the Fall semester.
One semester; three credits.

Prerequisites: CE 213 and CE 299

Co-requisites: CE 322L

Textbook: Braja M. Das, *Fundamentals of Geotechnical Engineering*, Brooks/Cole, Second Edition, 2005.

Other Required Materials: None

Other References: None

Instructor: K. Madhavan, Professor of Civil Engineering

Course Objectives: To understand the basic principles in Geotechnical Engineering.

Prerequisites by Topics:

1. Forces and resultants
2. Static equilibrium
3. Stresses, strains, and stress analysis
4. Basic properties of solids and liquids

Topics:

1. Soils and Rocks
2. Soil Composition
3. Classification of Soil
4. Soil Compaction
5. Flow of Water in Soil
6. Effective Stress Concepts
7. Stresses in a Soil Mass
8. Compressibility of Soil
9. Shear Strength of Soil

Class Schedule: Three 50-minute sessions per week

Prepared by: K. Madhavan **Date:** August 2005

**Professional Component:
CE 322 – Geotechnical Engineering**

Category (check one)	<input type="checkbox"/> Math/Basic Science <input checked="" type="checkbox"/> Engineering <input type="checkbox"/> General Education <input type="checkbox"/> Other
Design (check one)	<input type="checkbox"/> Significant <input type="checkbox"/> Some <input checked="" type="checkbox"/> None
Realistic Constraints (check all that apply)	<input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Sustainability <input type="checkbox"/> Manufacturability <input type="checkbox"/> Ethical <input type="checkbox"/> Health & Safety <input type="checkbox"/> Social <input type="checkbox"/> Political

Relationship to Program Outcomes:

Check all that apply:

- (a) an ability to apply knowledge of mathematics, science, and engineering
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a system, component, or process to meet desired needs
- (d) an ability to function on multi-disciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
- (i) a recognition of the need for and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice