

CE 322L – GEOTECHNICAL ENGINEERING LABORATORY

Type (check one): Required: X Elective: _____

2005-2006 Catalog Data: CE 322L. Geotechnical Engineering Laboratory. Standard laboratory tests to determine soil properties. Written communication skills are required.
Co-requisite: CE 322. Offered in the Fall semester. *One semester, one credit.*

Prerequisites: None

Co-Requisites: CE 322

References: Bowles, *Engineering Properties of Soils and Their Measurements*, McGraw Hill

Textbook: Instructor's Handouts

Other Required Materials: None

Other References: None

Instructor: Dr. K. Madhavan, Professor of Civil Engineering

Course Objectives:

1. To understand the basic tests done on soils
2. To clarify concepts learned in Geotechnical Engineering

Prerequisites by Topics: None

Topics: Laboratory Experiments:

1. Determinations of liquid, plastic and shrinkage limits.
2. Grain size distribution – mechanical sieve analysis.
3. Grain size distribution – hydrometer analysis
4. Moisture-density relationships by Standard Proctor Method
5. Density of soils in the field – sand cone method
6. Determination of permeability of a sandy soil
7. Unconfined compression test
8. Consolidation test
9. Triaxial test (data acquisition system)
10. Field visit

Class Schedule: One 170 minute laboratory period per week

Prepared by: Dr. K. Madhavan, P.E. **Date:** August 2005

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

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 checked="" type="checkbox"/> Some <input 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 checked="" 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