CE 332 SOIL MECHANICS
Required Course
Spring 2009

Instructors:	*Name:*	Özer Çinicioğlu	Turan Durgunoğlu
	Office Hours:	T 3 Th 2	F4
Course Data:	Hours:	Section 1: TT 12, Th 1 & Section 2:F123	

Course Description (Catalog):
CE332 Soil Mechanics **(3+0+0)3**
Physical properties of soils, soil classification, soil structure, moisture effects; compressibility and consolidation,; stress, deformation, and strength characteristics; stress distribution and analysis; lateral earth pressures; slope stability. Basic laboratory experiments.
Prerequisite: CE 331 Earth Sciences *Corequisite*: CE 334 Soil Mechanics Laboratory
Course Objectives (Learning Outcomes):
To establish an understanding of the fundamental concepts of mechanics of granular materials; including the behavior of multiphase materials and their constitutive behavior.
To provide students with exposure to the systematic methods for solving engineering problems in soil mechanics.
To discuss the basic mechanical principles underlying modern soil mechanics and to create an understanding of assumptions that are inherent to the solution of geotechnical problems
To build the necessary theoretical background for design and construction of foundation systems.
Textbook:
Das, B.M., "***Principles of Geotechnical Engineering***", Adapted International Student Edition, Thomson.
Reference Books:
Geotechnical Engineering, Donald P. Coduto; Soil Mechanics, R.F. Craig
Curricular Context:
This course introduces the basic principles of soil mechanics with direct implications and applications to design of foundation systems. The principles of statics and mechanics are used to understand multiphase material behavior which will form the necessary background for designing foundation systems and structures. Estimated design content is 20%.
Laboratory and Computer Usage:
The Laboratory session for the course is 1 hours per week. Numerical methods for the analysis of geotechnical engineering problems will be introduced
Class Policies:
Homework: Each week homework problems will be given, however the solutions will neither be collected nor graded. The solutions can be discussed in the office hours.
Attendance: Attendance affects the 5% of the course grade.
Short exams and projects: There will be three short exams and two term projects, 25% of the course grade.
Midterm exams: Two midterm exams, each 20% of the course grade.
Final exam: Comprehensive exam at the end of the semester, 30% of the course grade.
Contribution of the Course to Program Outcomes:
(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
(e) An ability to identify, formulate and solve engineering problems
(k) An ability to use the techniques, skills and modern engineering tools necessary for engineering practice
Course Assessment:
Course will be assessed on the basis of the accomplishments regarding the course objectives and the contributions to the program outcomes. The evaluation will consist mainly of the responses from the students, who will provide their comments to various course related questions in the final week of the semester.

Week	Topics	Reading assignment	Homework assignment	content
1	Introduction	Chapters 1 and 12	Homework 1	Origin of soil and grain size and introduction to subsoil exploration
2	Physical properties of soils	Chapter 2 and 3	Homework 2	weight-volume relationships, plasticity, and structure of soil, engineering classification of soils
3	Soil compaction	Chapter 11	Homework 3	principles and purpose of soil compaction
4	one-dimensional flow	chapter 4	Homework 4	permeability and seepage, darcy's law, hydraulic gradient, permeability, determination of coefficient of permeability
5			Homework 5	
6	effective stresses	chapter 5	Homework 6	stresses in soils, induced stresses due to different types of loading, principle of effective stress, quicksand, critical hydraulic gradient, concept of lateral earth pressures
7			Homework 7	
8	two-dimensional flow	chapter 4	Homework 8	construction of flow nets
9	consolidation	chapter 6	Homework 9	fundamentals of consolidation, laboratory tests, void ratio-pressure relationships, settlement-time relationship
10			Homework 10	
11	strength in soils	chapter 7	Homework 11	Mohr-Coulomb failure criteria, determination of shear strength parameters, strength tests, drained vs undrained strength
12			Homework 12	
13	slope stability	chapter 10	Homework 13	stability of slopes, methods for slope stability analysis