

ENGG*3670 SOIL MECHANICS

SCHOOL OF ENGINEERING, UNIVERSITY OF GUELPH

FALL 2010

COURSE DESCRIPTION

Soil Mechanics is the branch of science that deals with the study of the physical properties of soil and the behavior of soil masses subjected to various types of forces. In this course we will study relations of soil physical and chemical properties to strength, visco-elastic property and pressure-volume relationships of soil systems, stress-strain characteristics of soil, environmental engineering applications of soil mechanics and field investigation methods.

INSTRUCTOR

Dr. Bahram Gharabaghi, THRN 221, 519-824-4120 x 58451, bgharaba@uoguelph.ca
Homepage: http://www.soe.uoguelph.ca/faculty_pages/bahram_g.html

LABORATORY MANAGER

John Whiteside, THRN 1107, 519-824-4120 x 54424, jwhitesi@uoguelph.ca

OFFICE HOURS

You are welcome to visit my office at your convenience and/or send me an email to book an appointment.

COURSE RESOURCES

- Lectures
 - Monday, Wednesday and Friday, 11:30AM - 12:20AM, CRSC, Room 116
- Laboratory
 - Section 101: Monday, 03:30PM - 05:20PM, THRN, Room 1109;
 - Section 102: Tuesday, 03:30PM - 05:20PM, THRN, Room 1109;
 - Section 103: Thursday, 03:30PM - 05:20PM, THRN, Room 1109; and
 - Section 104: Friday, 03:30PM - 05:20PM, THRN, Room 1109.

REQUIRED TEXTBOOKS

1. Braja M. Das. 2008 (Third Edition). Fundamentals of Geotechnical Engineering; Thomson Learning; ISBN-10: 0-495-29572-8; and
2. Cheng Liu and Jack B. Evett (Sixth Edition). 2009. Soil Properties, Testing, Measurement, and Evaluation. Pearson Prentice Hall. ISBN 0-13-614123-4.

TOPICS OF STUDY

Week	Date	Lecture Topics
1	Sep. 13 to 17	Soil Deposits and Grain-Size Analysis
2	Sep. 20 to 24	Weight-Volume Relationships
3	Sep. 27 to Oct. 1	Soil Compaction
4	Oct. 4 to Oct. 8	Hydraulic Conductivity and Seepage
5	Oct. 11 to 15	Stress in a Soil Mass
6	Oct. 18 to 22	Consolidation
7	Oct. 25 to 29	Shear Strength of Soil
8	Nov. 1 to 5	Slope Stability
9	Nov. 8 to 12	Subsurface Exploration
10	Nov. 15 to 19	Lateral Earth Pressure
11	Nov. 22 to 26	Shallow Foundations
12	Nov. 29 to Dec. 3	Retaining Walls

LEARNING OUTCOMES

- Knowledge of the basic properties of soil;
- Understanding mechanical behavior of soil materials;
- Knowledge of environmental engineering applications of soil mechanics; and
- Familiarity with standard laboratory and field methods of soil analysis.

LABORATORY EXPERIMENTS

Students will form groups of 2 to 3 students and collaborate in conducting the experiments, taking notes, and discussions; however, each student will write and submit a separate report. The reports are due within one week of the date of the experiment. If a student cannot attend a laboratory experiment on scheduled time for valid reasons, the student should contact the instructor and arrange to conduct the missed experiment during the Open Lab week and submit a report.

EVALUATION

The final grade will be determined from the results of the Final Examination and Laboratory Experiment Reports weighted as follows:

Week	Date	Activity	Room	Mark
1	Sep. 13 to 17	Lab 1: Standard Procedures	THRN 1109	5%
2	Sep. 20 to 24	Lab 2: Grain Size Analysis	THRN 1109	5%
3	Sep. 27 to Oct. 1	Lab 3: Hydrometer Analysis	THRN 1109	5%
4	Oct. 4 to Oct. 8	Lab 4: LL, PL and SL Analysis	THRN 1109	5%
5	Oct. 11 to 15	Lab 5: SEEP-W Software	THRN 1109	5%
6	Oct. 18 to 22	Lab 6: Permeability Test	THRN 1109	5%
7	Oct. 25 to 29	Lab 7: CTRAN-W Software	THRN 1109	5%
8	Nov. 1 to 5	Lab 8: Compaction Test	THRN 1109	5%
9	Nov. 8 to 12	Lab 9: Direct Shear Test	THRN 1109	5%
10	Nov. 15 to 19	Lab 10: SLOPE-W Software	THRN 1109	5%
11	Nov. 22 to 26	Open Lab	THRN 1109	-
12	Nov. 29 to Dec. 2	Tutorial for Final Exam	TBA	-
	Dec. 7	Final Examination	TBA	50%
		Total		100%

COURSELINK

Some of the course material will be made available and can be accessed on Courselink:

<https://courselink.uoguelph.ca/shared/login/login.html>

POLICY FOR MISSED EXAMINATION

If the Final Examination is not written, the procedures in the current University of Guelph Undergraduate Calendar must be followed.

PLEASE NOTE

The regulations concerning academic misconduct as outlined in the current University of Guelph undergraduate calendar will be strictly enforced.