

CIVE 353 - Geotechnical Engineering I

Course Outline



Instructor:

Dr. Mark Knight
E-mail: maknight@uwaterloo.ca

Office: E2-2343A
Telephone: ext. 6919

Course Website:

Laboratory Instructor:

Ken Bowman
E-mail: kbowman@uwaterloo.ca

Office: E2-2342A
Telephone: ext. 3656

Teaching Assistants:

Adedamola Adedapo
E-mail: aaadedap@engmail.uwaterloo.ca

Office: E2-2342F

Rizwan Younis
E-mail: ryounis@engmail.uwaterloo.ca

Office: E2-2342E

Course Textbook

Das, Braja, 2006. *Principles of Geotechnical Engineering 6th Edition*. Thomson

Laboratory Manual

CivE 353 Laboratory Manual is available from the course website under LAB

Additional Reference Books

- Craig, R.F, 1997. *Soil Mechanics 6th edition*. E & FN Spon, NY
Das B. M., 1998. *Principles of Geotechnical Engineering, 4th Edition*, PWS
Lambe and Whitman, 1969. *Soil Mechanics*, Wiley & Sons.
Holtz and Kovacs, 1981. *An Introduction to Geotechnical Engineering*, Prentice-Hall.
Terzaghi and Peck, 1967. *Soil Mechanics in Engineering Practice, 2nd edition*, Wiley & Sons.
Bowles, 1978. *Engineering Soil Properties and Their Measurement*, McGraw-Hill.
Lambe, 1951. *Soil Testing in Engineering*, Wiley & Sons.
Bishop and Henkel, 1962. *The Measurement of Soil Properties in the Triaxial Test*, Arnold.

Course Objective

By the end of this course you will have an understanding of soil deposits and grain size analysis; weight-volume relationships; plasticity and soil classification; soil compaction; flow through porous media (hydraulic conductivity and seepage); stresses in a soil mass; consolidation; and shear strength of soils.

CIVE 353 - Geotechnical Engineering I

Course Outline



In subsequent geotechnical courses (CivE 354 and CivE 454) principles developed in this course will be applied to the design of shallow and deep foundations, earth structures, earth slopes, braced excavations, and retaining walls. Course concepts will be presented through class lectures, tutorials, laboratory sessions and specified readings.

Work Requirements

To obtain credit for this course you must attend all laboratory sessions, submit all assigned term work (laboratory and assignments) for grading, write the term tests, and achieve a grade of at least 50 percent on the final exam.

Laboratory

Attendance for all scheduled laboratory sessions is compulsory. Experiments to be completed are: hydraulic conductivity, consolidation, compaction, direct shear, and triaxial. Background information, experimental procedure and requirements for each laboratory exercise are described in the laboratory manuals posted on the course website. Each student is expected to bring a copy of the appropriate laboratory manual to each lab session.

For the laboratory sessions, the class will be divided into lab groups consisting of four students per group. Students can set their own lab groups by submitting to Ken Bowman, in writing (e-mail), the names of four students by **Thursday, January 5, 2006**. A list of the laboratory groups and the experiment schedule will be posted outside the soils laboratory (E2-2342) and on the course website on Monday, January 9th.

Each lab group will be required to submit a report upon the completion of each laboratory session. At the start of each lab session Ken Bowman will define the due date for each lab. The website and laboratory manual contains information on lab report format and expectations.

To ensure that you are prepared for each lab session a short quiz will be given at the beginning of each lab session. Quizzes will be evaluated and worth 5 term marks.

Lab reports will be evaluated and worth 10 term marks in total.

Assignments

Weekly assignments will be posted on the course website with a due date. Assignments must be submitted on the due date. Only one question on each assignment will be graded. Assignment solutions will be posted on the course website after each assignment has been submitted for grading. **Graded assignments will be worth 5 term marks.**

CIVE 353 - Geotechnical Engineering I

Course Outline



Term Quizzes

To assess your progress during the course there will be two quizzes during the term.

1. Week of January 23
2. Week of February 20

Each quiz will be conducted during a scheduled class period, will be 50 minutes in duration, and will be worth 10 term marks.

Grading Scheme

The term grade will be determined using:

Assignments	5%
Lab quizzes	5%
Term quizzes (10% each)	20%
Lab Reports	10%
Final Exam	60%

IMPORTANT NOTES:

The final exam score will be submitted as the final course grade when the final exam score is greater than the term grade or when the final exam score is less than 50 percent.

Examples:

Term grade is 55% and final exam score is 90% - the final course grade will be 90%.

Term grade is 80% and final exam score is 40% - the final course grade will be 40%.

To achieve course credit the follow conditions will apply:

1. Attendance at all laboratory sessions.
2. All assigned work must be completed and submitted for grading.
3. A passing grade of at least 50% on the final exam.