

ENVT 165 Geotechnical Sampling and Instrumentation

3 Credits, 16 weeks, 2 Hours Lecture, 3 Hours Lab per week

Official course description : The course is an introduction to the practical field and laboratory techniques used in the construction of buildings, industrial facilities, roads, bridges, containment structures, waste handling facilities, power lines, pipe lines and recreation sites common to the area. Topics such as construction site safety and material sampling and testing (soil, gravel, concrete and asphalt) are covered

Prerequisite: None

Instructor

Instructor: Neil O'Donnell
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Office Hours (Winter 2016)

Monday 11:00 – 12:00
Wednesday 10:00 – 12:00
Thursday 10:00 – 12:00

Hours of Instruction

Wednesday 3:00 – 4:50
Friday 2:00 – 4:50 (Lab)

Required Resources

Geotechnical Engineering: Principles and Practices. 2nd edition, ISBN-13: 978-0-13-236868-1

Course Outcomes

Upon successful completion of this course, students will be able to:

- Establish and explain connections of course knowledge, as it applies to relevant current events, with emphasis on those of environmental concern.
- Recognize the scope of geotechnical engineering and the role of the technologist.
- Describe the regulatory environment (codes, standards, regulations, standard practices) in which geotechnical engineering is conducted.
- Understand the composition, structure and classification of soil, aggregates, concrete, and asphalt.
- Identify the various geotechnical issues involved in the construction of foundations, roads, bridges, pond liners, ditches, weirs and dams.
- Distinguish the field and laboratory testing equipment frequently used by geotechnical engineers.
- Explain the function of various types of heavy construction equipment.
- Assess issues related to job site safety and etiquette.
- Categorize surficial land formations of importance to geotechnical engineers.

- Collect sand and gravel samples in the field, and perform common laboratory soil tests as per standard methods (soil sieve and proctor analysis, hydrometer, specific gravity, unit weight, shrinkage + expansion, compressibility).
- Describe concrete tests as per standard methods (slump test, ball penetration test, density, air content, cement content, aggregate sampling, strength tests). (Guest lecture)

Evaluation

Labs & Assignments	30%
Problems, Quizzes, & Videos	20%
1 st Half Exam (February 17)	10%
2 nd Half Exam (April 6)	10%
Final Exam	30%
Total	100%

A grade of C- is required for progression or transfer.

Grading System

Descriptor	Alpha Grade	4.0 Scale	Percent	Rubric for Letter Grades
Excellent	A+	4.0	> 92.9	Work shows in-depth and critical analysis, well developed ideas, creativity, excellent writing, clarity and proper format.
	A	4.0	85 – 92.9	
	A-	3.7	80 – 84.9	
Good	B+	3.3	77 – 79.9	Work is generally of high quality, well developed, well written, has clarity, and uses proper format.
	B	3.0	74 – 76.9	
	B-	2.7	70 – 73.9	
Satisfactory Progression	C+	2.3	67 – 69.9	Work has some developed ideas but needs more attention to clarity, style and formatting.
	C	2.0	64 – 66.9	
	C-	1.7	60 – 63.9	
Poor Minimum Pass	D+	1.3	55 – 59.9	Work is completed in a general way with minimal support, or is poorly written or did not use proper format.
	D	1.0	50 – 54.9	
Failure	F	0.0	< 50	Responses fail to demonstrate appropriate understanding or are fundamentally incomplete.

Proposed Schedule of Topics (Lectures)

Week 01	Groundwater & Mass wasting Review from EAS 100.
Week 02	Unit 1 : Geotechnology
Week 03	Unit 2 : Soil Behaviour
Week 04	Unit 2 : Soil Behaviour (continued)
Week 05	Unit 3 : Materials (Guest Lecturer)
Week 06	Unit 4 : Construction
Week 07	Mid-Term Quiz No.1; field trip to geotechnical lab
Week 08	Reading Week (Feb.22 – 26, 2016)
Week 09	Unit 5 : Site Investigation
Week 10	Unit 5 : Site Investigation (continued)
Week 11	Unit 6 : Groundwater Fundamentals

Week 12	Unit 7 : Geoenvironmental Issues
Week 13	Unit 8 : Slope Stability
Week 14	Mid-Term Quiz No.2; field trip to geotechnical lab
Week 15	Course Review and Summary
Week 16	Final Exams

Please Note:

Date and time allotted to each topic is subject to change. It is your responsibility as a student to contact the Office of the Registrar to complete the forms for Withdrawal or Change of Registration, and any other forms. Please refer to the list of important dates as noted in the Academic Schedule in the Keyano College Credit Calendar.

Performance Requirements

Laboratory work will be conducted weekly starting the first week of classes. Labs will be graded. Completion of the labs and a passing grade on that component of the course are considered mandatory to pass ENVT 165.

The labs will run 3 hours per week. Attendance is mandatory. Students may hand in completed assignments before the end or at the end of **that** lab session, or no later than one week following, with no penalty. Ordinarily, after one week, a late penalty will be assessed, as outlined below.

Due Dates

- Due Dates usually are set for one week following a lab, video assignment, report, field trip, or presentation.
- Unless specified differently by instructor, labs, reports, and assignments will be submitted electronically via Moodle.
- If submitted on or before the Due Date – full marks; *may be extended another 7 days for reasonable cause approved by instructor.*
- Otherwise, if submitted within one week (7 days) after the Due Date – 50% of regular mark.
- More than one week late – must be handed in, but will not be marked – zero assigned.
- Any changes due to special circumstances will be communicated by instructor via Moodle.

Term Mark

- Will be determined from all the labs, reports, and assignments.
- Mark will be weighted average of all submissions.
- If 20% or more of submissions (labs, reports, and assignments) are missing, student will not be allowed to write the final exam.

Laboratory Safety

In the science laboratories, safety is important.

Students must complete the *WHMIS for Students* online training course on Moodle before entering the science laboratories.

Students must comply with the mandatory laboratory safety rules for this course as provided in the laboratory manual. Failure to do so will result in progressive discipline such as a verbal warning, refused entry into the laboratory, or suspension from the College.

Student Attendance

Class attendance is useful for two reasons. First, class attendance maximizes a student's learning experience. Second, attending class is a good way to keep informed of matters relating to the administration of the course (e.g., the timing of assignments and exams). Ultimately, you are responsible for your own learning and performance in this course.

It is the responsibility of each student to be prepared for all classes. Students who miss classes are responsible for the material covered in those classes and for ensuring that they are prepared for the next class, including the completion of any assignments and / or notes that may be due.

Academic Misconduct

Students are considered to be responsible adults and should adhere to principles of intellectual integrity. Intellectual dishonesty may take many forms, such as:

- Plagiarism or the submission of another person's work as one's own
- The use of unauthorized aids in assignments or examinations (cheating)
- Collusion or the unauthorized collaboration with others in preparing work
- The deliberate misrepresentation of qualifications
- The willful distortion of results or data
- Substitution in an examination by another person
- Handing in the same unchanged work as submitted for another assignment
- Breach of confidentiality.

The consequences for academic misconduct range from a verbal reprimand to expulsion from the College. More specific descriptions and details are found in the Student Rights and Student Code of Conduct section of the Keyano College 2015-2016 credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Student Code of Conduct Policies.

In order to ensure your understanding of the concept of plagiarism, you must successfully complete the online tutorial found on ilearn.keyano.ca. Then print the certificate, sign it, and show it to each of your instructors. Your course work will not be graded until you show this signed certificate.

Specialized Supports**Counselling and Disability Services**

Counselling Services provides a wide range of specialized counselling services to prospective and registered students, including personal, career and academic counselling.

SKILL Centre

The SKILL Centre is a learning space in the Clearwater Campus at Keyano College where students can gather to share ideas, collaborate on projects and get new perspectives on learning from our tutorial staff.

The SKILL Centre, through a variety of delivery methods, provides assistance in skill development to Keyano students. Assistance is provided by instructors, staff and student tutors. Individuals wishing to improve their mathematics, writing, grammar, study, or other skills, can take advantage of this unique service.

Authorization

This course outline has been reviewed and approved by the Program Chair.

Neil O'Donnell, Instructor

Louis Dingley, Chair

Date Authorized

Guy Harmer, Dean

Date Authorized

Signed copies to be delivered to:

Instructor

Registrar's Office