



**Course Outline**

**ENVIRONMENTAL**  
**TECHNOLOGY**

**ENVT 165**  
**Geotechnical Sampling and Instrumentation**  
**Winter, 2014**

**3 CREDITS**  
**2 HOURS LECTURE, 3 HOURS LAB PER WEEK**

**INSTRUCTOR: Neil O'Donnell**

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**PHONE NUMBER:** (780) 791-4821  
**E-MAIL:** [neil.o'donnell@keyano.ca](mailto:neil.o'donnell@keyano.ca)  
**OFFICE NUMBER:** S209G

**OFFICE HOURS:**

Tuesday	11:00 am - noon
Wednesday	11:00 am – noon; 1:00 – 2:00 pm
Thursday	9:00 am – 10:00 am
Friday	1:00 pm – 2:00 pm

Other times are possible, by appointment.

**HOURS OF INSTRUCTION:**

Monday	2:00 – 4:50 pm	Room S114
Thursday	2:00 – 3:50 pm	Room S207

**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.

**PRE-REQUISITE(S):**

EAS 100.

**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)

### REQUIRED RESOURCES:

Caduto, D.P., Yeung, M.R., and Kitch, W.A., 2010 Geotechnical Engineering: Principles and Practices. 2<sup>nd</sup> edition. Prentice-Hall/Pearson.

It is recognized that parts of this book are too advanced for the course. Additional handouts will be provided.

### TOPICS TO BE COVERED:

**Please Note:**

This course outline may be modified to facilitate unforeseen time constraints. Date and time allotted to each topic is subject to change.

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.24 – 28, 2014)
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
Weeks 16/17	Final Exams

### MOODLE

Go to <http://ilearn.keyano.ca>

This course is supported through Moodle. Assignments, readings and handouts will be posted on Moodle. Login information will be provided by your instructor. For further instructions please see the Moodle handout.

## EVALUATION:

Assignment	Percentage	Due Date
Labs & Assignments	30%	As assigned
Problems, Quizzes, Videos	20%	As assigned
Midterm No.1	10%	Week 7
Midterm No.2	10%	Week 14
Final Examination	30%	Week 16/17

## RULES FOR LABS, REPORTS, AND ASSIGNMENTS

### 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.

## GRADING SYSTEM:

Letter Grade	Description	Grade Points
A+		4
A	Excellent	4
A-		3.7
B+		3.3
B	Good	3
B-		2.7
C+		2.3
C	Satisfactory	2
C-		1.7
D+		1.3
D	Minimal Pass	1
F	Failure	0

A minimum grade of 'C-' is required for progression.

Students in the geotechnical lab must have satisfactorily completed the Keyano WHMIS certification course, and will observe the dress and behaviour codes for Workplace Hazardous One sites outlined in that course. Cell phones and other electronic devices should be turned off during all lecture and lab sessions, unless otherwise exempted by the instructor.

**Students who do not complete all the required work should not expect to pass the course.**

*For additional information, students should consult pp.30-31 on the calendar, at <http://www.keyano.ca/FutureStudents/WhattoStudy/AcademicCalendar>*

January 6, 2014	First day of classes
January 17, 2014	Courses dropped after this date will be designated “W”. (A withdrawal (W) is not reflected in your GPA).
February 24 – 28, 2014	Reading Week
March 7, 2014	Courses dropped after this date will be designated “WF”. (A withdrawal failure (WF) counts as a 0 in your GPA).
April 17, 2014	Last day of classes
April 22-30, 2014	Final Exams

## COLLEGE POLICIES

### Equality, Equity and Respect

The Keyano College is committed to providing an environment of equality, equity and respect for all people within the College community. All members of this community are considered partners in developing teaching and learning contexts that are welcoming to all. Faculty, staff, and students are encouraged to use inclusive language to create a classroom atmosphere in which students' experiences and views are treated with equal respect and valued in relation to their gender, ethnic and cultural background, and sexual orientation.

*Students should consult:*

<http://www.keyano.ca/StudentLife/StudentConduct/IndividualRightsPolicy>

### Plagiarism and Cheating

Every student expects to be treated and evaluated fairly in a course. Plagiarism and cheating robs everyone of this right.

No student may submit words, ideas or data of another student or person as his or her own in any writing, project, assignment, quiz, electronic presentation, exam etc. Any work used that is not the student's own must be clearly cited as belonging to someone else. There are penalties for using other's work and not citing it. The Student's Rights & Responsibilities document clearly outlines these penalties and the appeal process.

- No learner can obtain information from another student during an exam.
- No learner can bring unauthorized information (paper or electronic) into an exam or quiz.
- No student can submit work done in another course for grading in this course without the written prior approval of the course instructor.

- No student can submit copyright protected or commercially produced materials as part or all of an assignment without proper citation & permission.

### **Student Rights & Responsibilities**

Students should consult pp.36-40 in the Keyano College Credit Calendar at:

<http://www.keyano.ca/Academics/CreditCalendar>

### **Specialized Supports and Duty to Accommodate**

#### *Disability Support Services: Learner Assistance Program*

If you have a documented disability or you think that you would benefit from some assistance from a Disabilities Counsellor, please call or visit the Disability Supports Office 780-792-5608 to book an appointment (across from the library). Services and accommodations are intended to assist you in your program of study, while maintaining the academic standards of Keyano College. We can be of assistance to you in disclosing your disability to your instructor, providing accommodations, and supporting your overall success at Keyano College.

#### *Specialized Supports and Duty to Accommodate*

Specialized Support and Duty to Accommodate are aligned with the office of Disability Support Services: Learner Assistance Program (LAP) guided by federal and provincial human rights legislation, and defined by a number of Keyano College policies. Keyano College is obligated by legislation to provide disability-related accommodations to students with identified disabilities to the point of undue hardship.



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**Neil O'Donnell, Instructor**

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**Date**

**Reviewed and approved by:**

\_\_\_\_\_  
**Louis Dingley, Chairperson**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Guy Harmer, Dean**

\_\_\_\_\_  
**Date**