ENVT 165, Geotechnical Sampling and Instrumentation

3 credits, 2 hours lecture, 3 hours lab

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, pipelines 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 and Co-requisites

Prerequisite: EAS 100

Course Learning Outcomes (CLOs)

Upon successful completion of the course, the student shall be able to:

CLO1 Establish and explain connections of course knowledge, as it applies to relevant current events, with emphasis on those of environmental concern.

CLO2 Recognize the scope of geotechnical engineering and the role of the technologist.

CLO3 Describe the regulatory environment (codes, standards, regulations, standard practices) in which geotechnical engineering is conducted.

CLO4 Understand the composition, structure and classification of soil, aggregates, concrete, and asphalt.

CLO5 Identify the various geotechnical issues involved in the construction of foundations, roads, bridges, pond liners, ditches, weirs, and dams.

CLO6 Distinguish the field and laboratory testing equipment frequently used by geotechnical engineers.

CLO7 Explain the function on of various types of heavy construction equipment.

CLO8 Assess issues related to job site safety and etiquette.

CLO9 Categorize surficial land formations of importance to geotechnical engineers.

CLO10 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).

CLO11 Describe concrete tests as per standard methods (slump test, ball penetration test, density, air content, cement content, aggregate sampling, strength tests). (Guest lecture possible).

Evaluation

Assessment Type	Percentage
Lab Reports	40%
Assignments	10%
Midterms	20%
Final Exam	30%
Total	**100%**

Course Completion Requirements

Minimum passing mark of D or 50% is required.

Grading Scale

4.0 Grade Scale	Alpha Grade	Percentage Grade
4.0	A+	93-100
4.0	A	85-92.9
3.7	A-	80-84.9
3.3	B+	77-79.9
3.0	B	74-76.9
2.7	B-	70-73.9
2.3	C+	67-69.9
2.0	C	64-66.9
1.7	C-	60-63.9
1.3	D+	55-59.9
1.0	D	50-54.9
0.0	F	0-49.9

Land Acknowledgement

We respectfully acknowledge that Keyano College is on Treaty No. 8 Territory, the ancestral and traditional territory of the Cree, Dene, and Métis people.

Course Outline Review Date: April 2025