



## Course Descriptor CVEN260 Geotechnical Engineering

<b>ACADEMIC YEAR</b>	2020-21	<b>SEMESTER</b>	Fall
<b>Course Code</b>	CVEN260	<b>Course Title</b>	Geotechnical Engineering
<b>Credit hours</b>	3	<b>Level of study</b>	Undergraduate
<b>College / Centre</b>	Engineering		
<b>Co-requisites</b>		<b>Pre-requisites</b>	CVEN 333

### 1. COURSE OUTLINE

[This course discusses the fundamental principles of geotechnical engineering, especially soil mechanics. Topics covered include the basic characteristics of soils, effective stress principle, seepage and flow nets, consolidation, and shear strength of soils.

### 2. AIMS

[The course provides students with basic concepts and theories in soil mechanics and application of these concepts within geotechnical engineering practice

### 3. LEARNING OUTCOMES, TEACHING, LEARNING and ASSESSMENT METHODS

<b>Learning Outcomes (Definitive)</b>	<b>Teaching and Learning methods (Indicative)</b>	<b>Assessment (Indicative)</b>
Upon successful completion of this course, students will be able to:		
1. Classify soils based on their basic physical characteristics	Lectures	Assignments
2. Determine seepage quantities and pore pressure within the ground	Lectures	Assignments
3. Determine the effective stress state within the ground, both under hydrostatic and seepage conditions	Lectures	Assignments
4. Calculate ground settlements due to consolidation	Lectures	Assignments
5. Perform quantitative assessments of soil shear strength	Lectures	Assignments

### 4. ASSESSMENT WEIGHTING

<b>Assessment</b>	<b>Percentage of final mark (%)</b>
1 <sup>st</sup> Examination	20
2 <sup>nd</sup> Examination	20
Assignments	20
Final Examination	40
Total	100



**Course Descriptor**  
**CVEN260 Geotechnical Engineering**

**5. ACHIEVING A PASS**

Students will achieve 3 credit hours for this course by passing **ALL** of the course assessments and achieving a **minimum overall score of 50%**.

<b>6. COURSE CONTENT (Indicative)</b>	
<b>LECTURE TOPIC</b>	<b>TIME (HOURS)</b>
Basic characteristics of soils (Lab. Experiments: Grain Size Distribution [Sieve Analysis and Hydrometer], Atterberg limits)	1.5
	1.5
	1.5
	1.5
Seepage (Lab. Experiments: Constant and Falling Head Tests)	1.5
	1.5
	1.5
Effective stress	1.5
	1.5
	1.5
	1.5
	1.5
Consolidation (Lab. Experiments: Oedometer Test)	1.5
	1.5
	1.5
Soil behavior in shear (Lab. Experiments: Direct Shear and Unconfined compressive strength tests)	1.5
	1.5
	1.5
	1.5
	1.5
Exercises and applications	9
<b>TOTAL HOURS</b>	<b>45</b>
Plus <b>RECOMMENDED INDEPENDENT STUDY HOURS</b>	<b>90</b>
<b>TOTAL COURSE HOURS</b>	<b>135</b>

## 7. RECOMMENDED READING

### Core text/s:

Craig's Soil Mechanics, J.A. Knappett & R.F. Craig, 8th edition, Spon Press, 2012

## 8. OPEN RESOURCES

<https://ocw.mit.edu/courses/civil-and-environmental-engineering/1-361-advanced-soil-mechanics-fall-2004/>