



Course Descriptor

CVEN 537 – Ground Improvement

ACADEMIC YEAR	2020-2021	SEMESTER	Fall
Course Code	CVEN 537	Course Title	Ground Improvement
Credit hours	3	Level of study	Undergraduate
College / Centre	College of Engineering		
Co-requisites	--	Pre-requisites	CVEN443

1. COURSE OUTLINE

This is a design course to increase understanding of geotechnical engineering applications of practical significance in construction.

2. AIMS

Study of the properties of difficult soils such as soft and loose soils, expansive soils, desert sands, sabkha, and collapsible soils. Design and implementation aspects of various improvement techniques such as compaction, dynamic compaction, preloading; dewatering and sand drains, soil stabilization, stone columns, deep compaction, geosynthetics reinforcement, and grouting.

3. LEARNING OUTCOMES, TEACHING, LEARNING and ASSESSMENT METHODS

Learning Outcomes (Definitive)	Teaching and Learning methods (Indicative)	Assessment (Indicative)
1. Demonstrate knowledge of methods used in Ground Improvement	Lecturers,	<i>Assignment</i>
2. Perform analysis for shallow and deep compaction	Lecturers,	<i>Assignment</i>
3. Investigate the methods of deep replacement and their effectiveness	Lecturers,	<i>Assignment</i>
4. Demonstrate knowledge of Preloading techniques	Lectures,	<i>Assignment</i>
5. Perform designs for Deep Mixing and Grouting methods	Lectures,	<i>Assignment</i>



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4. ASSESSMENT WEIGHTING

Assessment	Percentage of final mark (%)
Assignments	20
Mid-term Examinations	2x20 = 40
Final Examination	40
TOTAL	100%

5. ACHIEVING A PASS

Students will achieve **03** credit hours for this course by passing **ALL** of the course assessments [*alternatively, list the compulsory pass assessments**] and achieving a **minimum overall score of 50%**

6. COURSE CONTENT (Indicative)

LECTURE TOPIC	TIME (HOURS)
Introduction	1.5
Shallow Compaction	1.5
Shallow Compaction	3
Deep Compaction	3
Deep Compaction	3
Deep Replacement	3
Deep Replacement	3
Preloading	3
Preloading	3
Preloading	3
Deep Mixing	3
Deep Mixing	3
Grouting	3
Grouting	3
In Situ Ground Reinforcement	3
TOTAL HOURS	
Plus RECOMMENDED INDEPENDENT STUDY HOURS	
TOTAL COURSE HOURS	



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7. RECOMMENDED

READING Core text/s:

“Principles and Practice of Ground Improvement”, Jie Han, 1st edition, Wiley, 2015

Library + online resources:

8. OPEN RESOURCES

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