



School of Civil and Environmental Engineering

Term 1 2020

CVEN9525

FUNDAMENTALS OF  
GEOMECHANICS

#### COURSE DETAILS

<b>Units of Credit</b>	6	
<b>Class and Workshop</b>	Fridays, 17:00 - 21:00	Colombo Theatre A (K-B16-LG03)
<b>Course Coordinator and Lecturer</b>	Dr Babak Shahbodagh email: <a href="mailto:b.shahbodagh@unsw.edu.au">b.shahbodagh@unsw.edu.au</a> office: CE 507, Civil Engineering Building	
<b>Demonstrator</b>	Mrs Noor Adnan Sadik Baktash email: <a href="mailto:n.baktash@unsw.edu.au">n.baktash@unsw.edu.au</a>	

#### INFORMATION ABOUT THE COURSE

This is an introductory course to fundamentals of soil mechanics. It covers the most important topics in soil mechanics; the basic classification of soil, phase relationships, the principle of effective stress and its importance in soil mechanics and geote

- < relate to those aspects of soil behaviour which have a significant environmental impact,
- < be able to solve a range of soil related problems especially those involving water flow, soil settlement and soil strength,
- < have a sound basis for further formal study and self-study in the geotechnical area,
- < develop a rational approach to problem solving which will lead to the development of design skills.

## TEACHING STRATEGIES

The contents of this subject will be presented in a series of lectures followed by workshop questions. The lectures explain the theory of soil behaviour and greatly assist in understanding the different concepts in classical soil mechanics. Understanding and application of each concept will be enhanced in workshops.

A series of assignments will be given so that students can examine their understanding of the theories. Students are advised to tackle some of the assignments during the two days break between the lectures and reflect on their learning. It is expected that students will put in at least 1.5 hours of private study for each hour of contact. During private studies students should review and reflect on lecture material and class problems, solve workshop and assignment problems, and generally study the concepts taught in a soil mechanics book.

An example of the approaches to learning is:

### **Lectures**

- < Find out what you must learn
- < Follow worked examples
- <

**COURSE PROGRAM****TERM 1 2020**

<b>Date</b>	<b>Topic</b>	<b>Lecture Content</b>	<b>Demonstration Content</b>
21/02/2020 (Week 1)			



## ASSESSMENT OVERVIEW

<b>Item</b>	<b>Length</b>	<b>Weighting</b>	<b>Learning outcomes assessed</b>	<b>Assessment Criteria</b> <i>(this needs to explicitly describe what students are expected to demonstrate in the task)</i>	<b>Due date and submission requirements</b>	<b>and Deadline for absolute fail</b>	<b>Marks returned</b>
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## RELEVANT RESOURCES

Learning will be greatly enhanced by reading a text book on the topic. Also, people working in industry where geomechanics is used are recommended to buy a text book to add to their own library. There are many books published on the topic, and the main UNSW library has dozens.

One of the best text books, on which most of the course PowerPoint slides are based and contains thorough explanations and dozens of worked examples, is sold in the UNSW bookshop:

Second Edition. International Edition. Pearson.

The following reference books may also be useful for additional reading, many of them can be found in the UNSW library:

- < Craig, R. F. "Soil Mechanics", CRC press, 2004
- < -2006
- < Lambe and Whitman, "Soil Mechanics", Wiley, 1975
- < Scott, C., "An Introduction to Soil Mechanics and Foundation Engineering", AS Publisher, 1980
- <
- <

Also, students may find the following Soil Mechanics Book in PDF  
<http://geo.verruijt.net/> website, as SoilMechBook.pdf

## DATES TO NOTE

Refer to MyUNSW for Important Dates available at:

<https://my.unsw.edu.au/student/resources/KeyDates.html>

## PLAGIARISM

## Appendix A: Engineers Australia (EA) Competencies

### Stage 1 Competencies for Professional Engineers

	<b>Program Intended Learning Outcomes</b>
<b>PE1: Knowledge and Skill Base</b>	PE1.1 Comprehensive, theory-based understanding of underpinning fundamentals
	PE1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing
	PE1.3 In-depth understanding of specialist bodies of knowledge
	PE1.4 Discernment of knowledge development and research directions
	PE1.5 Knowledge of engineering design practice
	PE1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice
<b>PE2: Engineering Application Ability</b>	PE2.1 Application of established engineering methods to complex problem solving
	PE2.2 Fluent application of engineering techniques, tools and resources
	PE2.3 Application of systematic engineering synthesis and design processes
	PE2.4 Application of systematic approaches to the conduct and management of engineering projects
<b>PE3: Professional and Personal Attributes</b>	PE3.1 Ethical conduct and professional accountability
	PE3.2 Effective oral and written communication (professional and lay domains)
	PE3.3 Creative, innovative and pro-active demeanour
	PE3.4 Professional use and management of information
	PE3.5 Orderly management of self, and professional conduct
	PE3.6 Effective team membership and team leadership