COURSE OUTLINE

CIV201 Geotechnical Engineering

School: School of Science, Technology and Engineering

2026 | Trimester 1

UniSC Sunshine Coast
UniSC Moreton Bay

BLENDED LEARNING

Most of your course is on campus but you may be able to do some components of this course online.

Please go to unisc.edu.au for up to date information on the teaching sessions and campuses where this course is usually offered.

1. What is this course about?

1.1. Description

In this course you will explore geoengineering fundamentals, including basic engineering geology, rock types, and geotechnical elements like soil and rock properties. Key concepts include void ratio, water content, and the two-phase model, assuming materials are granular and frictional. The course covers soil description, geological mapping, rock and soil classification, stress and strain in soils, shear soil failure, and shallow foundation design, with a focus on sustainable practices

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Tutorial/Workshop 1 – On campus workshop	1hr	Week 1	12 times
Laboratory 1 – On Campus Lab	2hrs	Week 2	12 times
Fieldwork – Fieldwork. Date to be advised	2hrs	Week 1	Once Only
Learning materials – Asynchronous Learning Material	1hr	Week 1	12 times

1.3. Course Topics

Topics may include:

- Geological Processes and Geological Mapping.
- Soil Classification for Engineering Purposes.
- Soil as a Three-Phase System — Phase Relationships.
- Ground Improvement and Soil Compaction.
- Stresses and Strains in Soils.
- Permeability of Soils.
- Shear Strength of Soils.
- Compressibility and Settlement of Soils.
- Lateral Earth Pressures.

2. What level is this course?

200 Level (Developing)

Building on and expanding the scope of introductory knowledge and skills, developing breadth or depth and applying knowledge and skills in a new context. May require pre-requisites where discipline specific introductory knowledge or skills is necessary. Normally, undertaken in the second or third full-time year of an undergraduate programs.

3. What is the unit value of this course?

12 units

4. How does this course contribute to my learning?

COURSE LEARNING OUTCOMES On successful completion of this course, you should be able to...	GRADUATE QUALITIES MAPPING Completing these tasks successfully will contribute to you becoming...	PROFESSIONAL STANDARD MAPPING * Competencies from multiple Professional Bodies (see below) *
1 Evaluate information and concepts in the selection and characterisation of soil to synthesise solutions for various applications.	Creative and critical thinker	2, 2, 2.1.a, 2.1.a, 2.1, 2.1
2 Apply advanced technical knowledge and skills, and expert judgement in research based problem solving exercises in geotechnical engineering.	Creative and critical thinker	2, 2, 2.1.d, 2.1.d, 2.1, 2.1
3 Examine the technical aspects of alternative construction materials and techniques to justify optimal solutions for specified applications.	Creative and critical thinker	2, 2, 2.1.f, 2.1.f, 2.1, 2.1
4 Undertake laboratory based testing to determine soil properties.	Empowered	2, 2, 2.2.h, 2.2.h, 2.2, 2.2
5 Describe the various constituents of soil, their behaviour and effect on material properties.	Knowledgeable	1, 1, 1.3.a, 1.3.a, 1.3, 1.3

* Competencies by Professional Body

CODE	COMPETENCY
ENGINEERS AUSTRALIA STAGE 1 ENGINEERING TECHNOLOGIST COMPETENCY STANDARDS	
1	Elements of competency: Knowledge and Skill Base
1.3.a	Knowledge and Skill Base - In-depth understanding of specialist bodies of knowledge within the technology domain: Proficiently applies advanced technical knowledge and skills to deliver engineering outcomes in specialist area(s) of the technology domain and associated industry, commercial and community sectors.
1.3	Knowledge and Skill Base: In-depth understanding of specialist bodies of knowledge within the technology domain.
2	Elements of competency: Engineering Application Ability
2.1.a	Engineering Application Ability - Application of established engineering methods to broadly-defined problem solving within the technology domain: Identifies, discerns and characterises salient issues, determines and analyses causes and effects, justifies and applies appropriate simplifying assumptions, predicts performance and behaviour, synthesises solution strategies and develops substantiated conclusions.
2.1.d	Engineering Application Ability - Application of established engineering methods to broadly-defined problem solving within the technology domain: Recognises problems which have component elements and/or implications beyond the engineering technologist's personal expertise and correctly identifies the need for supplementary professional input.

CODE	COMPETENCY
2.1.f	Engineering Application Ability - Application of established engineering methods to broadly-defined problem solving within the technology domain: Critically evaluates alternative implementation approaches using specialist engineering technologies and evaluates potential outcomes against appropriate criteria to justify an optimal solution choice.
2.2.h	Engineering Application Ability - Application of engineering techniques, tools and resources within the technology domain: Safely applies laboratory, test and experimental procedures appropriate to the technology domain.
2.1	Engineering Application Ability: Application of established engineering methods to broadly-defined problem solving within the technology domain.
2.2	Engineering Application Ability: Application of engineering techniques, tools and resources within the technology domain.
ENGINEERS AUSTRALIA STAGE 1 PROFESSIONAL ENGINEER COMPETENCY STANDARDS	
1	Elements of competency: Knowledge and Skill Base
1.3.a	Knowledge and Skill Base - In-depth understanding of specialist bodies of knowledge within the engineering discipline: Proficiently applies advanced technical knowledge and skills in at least one specialist practice domain of the engineering discipline.
1.3	Knowledge and Skill Base: In-depth understanding of specialist bodies of knowledge within the engineering discipline.
2	Elements of competency: Engineering Application Ability
2.1.a	Engineering Application Ability - Application of established engineering methods to complex engineering problem solving: Identifies, discerns and characterises salient issues, determines and analyses causes and effects, justifies and applies appropriate simplifying assumptions, predicts performance and behaviour, synthesises solution strategies and develops substantiated conclusions.
2.1.d	Engineering Application Ability - Application of established engineering methods to complex engineering problem solving: Investigates complex problems using research-based knowledge and research methods.
2.1.f	Engineering Application Ability - Application of established engineering methods to complex engineering problem solving: Conceptualises alternative engineering approaches and evaluates potential outcomes against appropriate criteria to justify an optimal solution choice.
2.2.h	Engineering Application Ability - Fluent application of engineering techniques, tools and resources: Safely applies laboratory, test and experimental procedures appropriate to the engineering discipline.
2.1	Engineering Application Ability: Application of established engineering methods to complex engineering problem solving.
2.2	Engineering Application Ability: Fluent application of engineering techniques, tools and resources.

5. Am I eligible to enrol in this course?

Refer to the UniSC Glossary of terms for definitions of “pre-requisites, co-requisites and anti-requisites”.

5.1. Pre-requisites

ENG105 or ENG102

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

Not applicable

5.4. Specific assumed prior knowledge and skills (where applicable)

Not applicable

5.5. Microcredential Information

Not applicable

6. How am I going to be assessed?

6.1. Grading Scale

Standard Grading (GRD)

High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL).

6.2. Details of early feedback on progress

Feedback will be provided every week in seminars/discussions. Example assessment pieces will be presented and considered prior to assessment being assigned.

6.3. Assessment tasks

DELIVERY MODE	TASK NO.	ASSESSMENT PRODUCT	INDIVIDUAL OR GROUP	WEIGHTING %	WHAT IS THE DURATION / LENGTH?	WHEN SHOULD I SUBMIT?	WHERE SHOULD I SUBMIT IT?
All	1	Practical / Laboratory Skills, and Written Piece	Group	40%	4 report submissions, each up to 400 words (or equiv.)	Throughout teaching period (refer to Format)	Online Assignment Submission with plagiarism check
All	2	Oral	Individual	20%	10-12 min	Week 12	In Class
All	3	Written Piece	Individual	40%	2000 words	Exam Period	Online Assignment Submission with plagiarism check

All - Assessment Task 1: Group Laboratory Reports

GOAL:	Group laboratory reports submitted on selected laboratory tasks.
PRODUCT:	Practical / Laboratory Skills, and Written Piece
AUTHORSHIP STATEMENT:	
FORMAT:	Submitted via Canvas due weeks after the relevant labs held on week 6,8,10 and 12.
CRITERIA:	

No.		Learning Outcome assessed
1	Examination of the technical aspects of alternative construction materials and techniques to justify optimal solutions for specified applications.	3
2	Evaluation of information and concepts in the selection and characterisation of soil to synthesise solutions for various applications.	1
3	Application of advanced technical knowledge and skills, and expert judgement in research based problem solving exercises in geotechnical engineering.	2
4	Performance of laboratory based testing to determine soil properties.	4

GENERIC SKILLS:	Communication, Collaboration, Problem solving, Organisation, Applying technologies

All - Assessment Task 2: Oral Presentation

GOAL:	Report on geotechnical engineering case study of interest.
PRODUCT:	Oral
AUTHORSHIP STATEMENT:	
FORMAT:	Individual oral presentation.
CRITERIA:	

No.		Learning Outcome assessed
1	Evaluation of information and concepts in the selection and characterisation of soil to synthesise solutions for various applications.	1
2	Application of advanced technical knowledge and skills, and expert judgement in research based problem solving exercises in geotechnical engineering.	2
3	Examination of the technical aspects of alternative construction materials and techniques to justify optimal solutions for specified applications.	3
4	Description of the various constituents of soil, their function and effect on material properties.	5

GENERIC SKILLS:	Communication, Organisation

All - Assessment Task 3: Written Piece

GOAL:	Report answering questions that examine any or all of the course material.
PRODUCT:	Written Piece
AUTHORSHIP STATEMENT:	
FORMAT:	Written report answering prescribed questions.
CRITERIA:	

No.		Learning Outcome assessed
1	Evaluation of information and concepts in the selection and characterisation of soil to synthesise solutions for various applications.	1
2	Application of advanced technical knowledge and skills, and expert judgement in research based problem solving exercises in geotechnical engineering.	2
3	Examination of the technical aspects of alternative construction materials and techniques to justify optimal solutions for specified applications.	3
4	Undertake laboratory based testing to determine soil properties.	4
5	Description of the various constituents of soil, their function and effect on material properties.	5

GENERIC SKILLS:	Problem solving, Organisation

7. Directed study hours

A 12-unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Student workload is calculated at 12.5 learning hours per one unit.

8. What resources do I need to undertake this course?

Please note: Course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Canvas site– Please log in as soon as possible.

8.1. Prescribed text(s) or course reader

There are no required/recommended resources for this course.

8.2. Specific requirements

Not applicable

9. How are risks managed in this course?

Risk assessments have been performed for all studio and laboratory classes and a low level of health and safety risk exists. Some risk concerns may include equipment, instruments, and tools; as well as manual handling items within the laboratory. It is your responsibility to review course material, search online, discuss with lecturers and peers and understand the risks associated with your specific course of study and to familiarise yourself with the University's general health and safety principles by reviewing the online induction training for students, and following the instructions of the University staff.

10. What administrative information is relevant to this course?

10.1. Assessment: Academic Integrity

Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that is considered to be academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

In order to minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Canvas, are electronically checked through Turnitin. This software allows for text comparisons to be made between your submitted assessment item and all other work to which Turnitin has access.

10.2. Assessment: Additional Requirements

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:
(a) The final mark is in the percentage range 47% to 49.4%; and
(b) The course is graded using the Standard Grading scale

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying: The final mark is in the percentage range 47% to 49.4% The course is graded using the Standard Grading scale You have not failed an assessment task in the course due to academic misconduct

10.3. Assessment: Submission penalties

Late submissions may be penalised up to and including the following maximum percentage of the assessment task's identified value, with weekdays and weekends included in the calculation of days late:
(a) One day: deduct 5%;
(b) Two days: deduct 10%;
(c) Three days: deduct 20%;
(d) Four days: deduct 40%;
(e) Five days: deduct 60%;
(f) Six days: deduct 80%;
(g) Seven days: A result of zero is awarded for the assessment task.

The following penalties will apply for a late submission for an online examination:
Less than 15 minutes: No penalty
From 15 minutes to 30 minutes: 20% penalty
More than 30 minutes: 100% penalty

10.4. Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Central Examinations
- Deferred Examinations
- Student Conduct
- Students with a Disability

For more information, visit https://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching

10.5. Student Charter

UniSC is committed to excellence in teaching, research and engagement in an environment that is inclusive, inspiring, safe and respectful. The Student Charter sets out what students can expect from the University, and what in turn is expected of students, to achieve these outcomes.

10.6. General Enquiries

For course-specific questions, contact your teaching staff or Course Coordinator.

For other enquiries or to access support, please contact Student Central:

- UniSC Student Central
- UniSC Adelaide Student Central