CIVL2201
Soil Mechanics
Session 1, Weekday attendance, North Ryde 2021
School of Engineering

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Notice
As part of Phase 3 of our return to campus plan, most units will now run tutorials, seminars and other small group activities on campus, and most will keep an online version available to those students unable to return or those who choose to continue their studies online.

To check the availability of face-to-face activities for your unit, please go to timetable viewer. To check detailed information on unit assessments visit your unit’s iLearn space or consult your unit convenor.
General Information

Unit convenor and teaching staff

Convenor
Steven Hansen
steven.hansen@mq.edu.au
Contact via x8423
12 Wally's Walk, Rm 107
Monday 1-2 pm

Lecturer
Golnaz Alipour Esgandani
golnaz.alipour@mq.edu.au
Contact via email
50 Waterloo Rd
see iLearn

Credit points
10

Prerequisites
CIVL1001

Corequisites

Co-badged status

Unit description
This unit provides students with an introduction to engineering geology and soil mechanics. The unit presents and discusses specialised knowledge of soil mechanics that helps students undertake a variety of soil mechanics analyses through lectures and laboratory testing.

The first section on engineering geology will include an introduction to geology (minerals, rock types, rock structures), geological maps, rock evaluation and geophysical methods, and geohazards and adverse geological conditions case studies relevant to engineering applications. The second section on soil mechanics includes composition and particle sizes of the soil, physical soil states and soil classification, flow of water through soils, stresses, strains, and elastic deformation of soils, soil compaction, and soil settlement.

The main aim of this unit is to prepare students to develop fundamental knowledge required for more advanced units such as Geotechnical Engineering and Transport Engineering.
Important Academic Dates
Information about important academic dates including deadlines for withdrawing from units are available at https://students.mq.edu.au/important-dates

Learning Outcomes
On successful completion of this unit, you will be able to:

ULO1: Demonstrate a fundamental knowledge of solid Earth materials
ULO2: Compare different geohazards and describe their effect on construction projects
ULO3: Describe and classify soils and determine their physical characteristics
ULO4: Describe the behaviour and effect of flow of water through soils
ULO5: Assess the role of effective stress in soil mechanics theory and describe the strength of soils based on basic theories

General Assessment Information
Students are expected to attend all lectures, tutorials a practicals. Recordings of lectures, tutorials and some practicals will be made available via iLearn. Attendance is mandatory for all practicals which are conducted in the soil mechanics lab. Please contact your convenor [steven.hansen@mq.edu.au] as soon as possible if you have difficulty attending and participating in any classes. If there are circumstances that mean you miss a practical, you can apply for a disruption to studies request through ask.mq.edu.au and if approved this practical will be removed from your record of absences.

The dates for submission of assessment tasks are listed on the ilearn schedule. Extensions for submission of assessment tasks will be given only for illness or misadventure, which must be supported by documentation through the online request portal (ask.mq.edu.au). Assessment tasks submitted late without approval will be penalized 10% of the potential total mark per day late. Students must keep a copy of their assignments. To pass this unit, students must achieve an average grade of at least 50%.

On-line quizzes
Each week, a given problem set will be used to make sure that you have read and understood the lecture material and have successfully completed the practical and tutorial. The problem set will be administered using online quizzes through the iLearn system and together are worth 10% of the unit mark. You will do these quizzes in your own time, open book, and they will be available on Friday. They should only be attempted after completing that week’s practical and tutorial. The quizzes will close at 23:59 the following Wednesday. There will be a time limit of between 30 mins and 90 mins depending on how much material is covered. Quizzes will include conceptual questions as well as calculations. The question order and numeric quantities are random; you will only get one chance to answer each question and you will not be able to go back to previous problems.

Practicals and lab reports
There is an assessed practical activity each week; the schedule and details of which will be distributed via iLearn. For each practical, you must submit a written lab report which addresses the given problems/questions. Some practicals involve group work but reports are individually assessed, i.e. you must submit your own work written in your own words. Cutting and pasting information from web pages is NOT acceptable. Information you obtain from other sources (brief quotes, images, ideas) must be fully referenced in the text (author, year), with references listed at the end of the report (year, author, title, journal or link). Additionally, all work must be shown for calculation problems, including correct use of units and significant figures. Students who fail in these fundamental principles and basic skills may score zero for assignments.

Written assignments are to be submitted using Turnitin. Macquarie University promotes student awareness of information management and information ethics. As well as training and the provision of general information, the University tackles the issue of plagiarism through use of an online plagiarism detection tool (Turnitin). This software is used in conjunction with a set of procedures to ensure its use is equitable. Turnitin automatically compares your work to the work of your classmates, previous students from Macquarie University and other universities, and with material available on the Internet, both freely available and in subscription-based electronic journals and books. The results will be sent only to your unit convenor and tutors, who will analyze these in reference to the University’s standard Policy on Plagiarism.

Exams

This unit has two exams, a final and a mid-term. These examinations are based on lectures, reading material, practicals and tutorial exercises. This is information you should have absorbed through completing assignments and any other material presented during classes. A printed English dictionary (not electronic) may be brought in for the exam if English is not your first language. The educational rationale for the exam is to check the acquired knowledge by the students at the end of the unit.

The mid-term exam will be conducted during one of the scheduled lecture slots in week 7. Students are required to be present for this exam and exceptions will be given only if special consideration has been approved by the university prior to the exam. The final will occur during the normal exam period following week 13 and will be scheduled by the university. The exam timetable will be available in draft form about eight weeks before the commencement of examinations and finalized approximately four weeks before the commencement of the examinations.

### Assessment Tasks

<table>
<thead>
<tr>
<th>Name</th>
<th>Weighting</th>
<th>Hurdle</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>problem sets</td>
<td>10%</td>
<td>No</td>
<td>weekly</td>
</tr>
<tr>
<td>Practical Report</td>
<td>20%</td>
<td>No</td>
<td>weekly</td>
</tr>
<tr>
<td>Mid-session test</td>
<td>30%</td>
<td>No</td>
<td>week 7</td>
</tr>
<tr>
<td>Name</td>
<td>Weighting</td>
<td>Hurdle</td>
<td>Due</td>
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<td>-----------------------------</td>
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<tr>
<td>Final Examination</td>
<td>40%</td>
<td>No</td>
<td>TBD</td>
</tr>
</tbody>
</table>

**problem sets**

Assessment Type ¹: Problem set  
Indicative Time on Task ²: 26 hours  
Due: **weekly**  
Weighting: **10%**

weekly problem sets

On successful completion you will be able to:

- Demonstrate a fundamental knowledge of solid Earth materials
- Compare different geohazards and describe their effect on construction projects
- Describe the behaviour and effect of flow of water through soils
- Assess the role of effective stress in soil mechanics theory and describe the strength of soils based on basic theories

**Practical Report**

Assessment Type ¹: Lab report  
Indicative Time on Task ²: 12 hours  
Due: **weekly**  
Weighting: **20%**

Practical report based on lab work

On successful completion you will be able to:

- Compare different geohazards and describe their effect on construction projects
- Describe and classify soils and determine their physical characteristics
- Describe the behaviour and effect of flow of water through soils

**Mid-session test**

Assessment Type ¹: Quiz/Test  
Indicative Time on Task ²: 12 hours  
Due: **week 7**
Weighting: **30%**

Mid-session test

On successful completion you will be able to:

- Demonstrate a fundamental knowledge of solid Earth materials
- Compare different geohazards and describe their effect on construction projects
- Describe and classify soils and determine their physical characteristics

**Final Examination**

Assessment Type ¹: Examination

Indicative Time on Task ²: 20 hours

Due: **TBD**

Weighting: **40%**

Final examination

On successful completion you will be able to:

- Demonstrate a fundamental knowledge of solid Earth materials
- Compare different geohazards and describe their effect on construction projects
- Describe and classify soils and determine their physical characteristics
- Describe the behaviour and effect of flow of water through soils
- Assess the role of effective stress in soil mechanics theory and describe the strength of soils based on basic theories

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¹ If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the Learning Skills Unit for academic skills support.

² Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation
Delivery and Resources

Textbooks

The first weeks of class will use the free online textbook:


Source: [https://opengeology.org/textbook/](https://opengeology.org/textbook/)

The Soil Mechanics section uses the text:


Hardcopies can be obtained from a variety of sources.

Unit Schedule

This unit is broken up into several modules:

- Introduction to geology (weeks 1-3)
- Soil classification and clays (weeks 4-6)
- Soil and water (week 7-8)
- Soil mechanics (weeks 9-13)

See the iLearn page for more details.

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy (*Note: The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.*)
Students seeking more policy resources can visit the Student Policy Gateway (https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

**Student Code of Conduct**

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/admin/other-resources/student-conduct

**Results**

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

**Student Support**

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

**Learning Skills**

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- Getting help with your assignment
- Workshops
- StudyWise
- Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

**Student Enquiry Service**

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

**Equity Support**

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.
IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Changes from Previous Offering

not applicable

Changes since First Published

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