



# BLAR12052 Geotechnical Studies

## Term 2 - 2017

Profile information current as at 03/05/2024 08:19 am

All details in this unit profile for BLAR12052 have been officially approved by CQUniversity and represent a learning partnership between the University and you (our student). The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

### General Information

#### Overview

In this unit, you will learn the role of geotechnical investigations in the design process, and soil mechanics including description of physical properties, soil classification, bearing capacity, permeability, compressibility, shear strength, slope stability, flow of water, and foundations and footings including investigations into basic principles of subsurface rock and soil materials and their ability to support structures.

#### Details

Career Level: *Undergraduate*

Unit Level: *Level 2*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

#### Pre-requisites or Co-requisites

BLAR11049 Built Environment Communication and Skills Or COMM11003 Professional and Technical Communication (before 2012 term 1)

Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the [Assessment Policy and Procedure \(Higher Education Coursework\)](#).

#### Offerings For Term 2 - 2017

- Distance

#### Attendance Requirements

All on-campus students are expected to attend scheduled classes - in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

#### Website

[This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.](#)

## Class and Assessment Overview

### Recommended Student Time Commitment

Each 6-credit Undergraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

### Class Timetable

#### [Regional Campuses](#)

Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

#### [Metropolitan Campuses](#)

Adelaide, Brisbane, Melbourne, Perth, Sydney

### Assessment Overview

#### 1. **Written Assessment**

Weighting: 30%

#### 2. **Written Assessment**

Weighting: 25%

#### 3. **Online Quiz(zes)**

Weighting: 10%

#### 4. **Written Assessment**

Weighting: 35%

### Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the [University's Grades and Results Policy](#) for more details of interim results and final grades.

## CQUniversity Policies

**All University policies are available on the [CQUniversity Policy site](#).**

You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the [CQUniversity Policy site](#).

## Previous Student Feedback

### Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

#### Feedback from moodle course evaluation

##### Feedback

Other feedback • Text book is very complex and elaborate on these in study guide. • More worked examples would be beneficial for those who haven't touched maths for many years • Lecture recordings not clear

##### Recommendation

Noted the points. Would like to add few more solved examples with explanation in the study guide or as an additional resource. Will attend the clarity of the recorded lectures.

#### Feedback from moodle course evaluation

##### Feedback

About the lecturer & communication • The lecturer was helpful in providing assistance when required • Lecturer responded emails and forum questions in an adequate timeframe

##### Recommendation

thanks for the feedback. Will continue to do the same

#### Feedback from moodle course evaluation

##### Feedback

Course content • Course information was extremely useful • The course provided insight into an aspect of the building and design industry that is normally overlooked by many • The emphasis of the topic was on mathematical equations

##### Recommendation

Good to know that that the course information is useful. Regarding content : This is a common course for all building programs. Course content was developed to meet the requirement of accrediting institutes and graduate attributes .

#### Feedback from moodle course evaluation

##### Feedback

Assessments • Workbook required huge amount of work and yet worth 0% marks • Wording of an assessment question was not clear

##### Recommendation

It is expected that students to do the workbook activities on a regular basis (from week-1) to gain sufficient knowledge and skills to complete the assessment items. Every year assessment questions will be updated. Will make sure the questions are worded appropriately. Also, it is expected that students need to contact the lecturer to clarification of course related matters including assessments.

## Unit Learning Outcomes

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

1. Apply soil and rock mechanics principles in building design and construction.
2. Interpret the influences of geological processes and natural environments on geotechnical design.
3. Explain the use and limitations of geotechnical design in built environment projects.
4. Perform basic geotechnical calculations including soil phase relationships, strength, stability, stress, compressibility, permeability and bearing capacity.

## Alignment of Learning Outcomes, Assessment and Graduate Attributes



## Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
1 - Written Assessment - 30%	•	•	•	•
2 - Written Assessment - 25%	•	•	•	•
3 - Online Quiz(zes) - 10%	•	•	•	
4 - Written Assessment - 35%	•	•	•	•

## Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes			
	1	2	3	4
1 - Communication	•	•	•	•
2 - Problem Solving	•	•	•	•
3 - Critical Thinking				
4 - Information Literacy	•	•	•	•
5 - Team Work				
6 - Information Technology Competence	•	•	•	•
7 - Cross Cultural Competence				
8 - Ethical practice				
9 - Social Innovation				
10 - Aboriginal and Torres Strait Islander Cultures				

## Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes									
	1	2	3	4	5	6	7	8	9	10
1 - Written Assessment - 30%	•	•		•		•				
2 - Written Assessment - 25%	•	•		•		•				
3 - Online Quiz(zes) - 10%	•	•		•		•				
4 - Written Assessment - 35%	•	•		•		•				

## Textbooks and Resources

### Textbooks

BLAR12052

#### Prescribed

#### Principles of Geotechnical Engineering

Edition: 8 (2014)

Authors: Braja M. Das, and Khaled Sobhan

Cengage Learning

Stamford, CT, USA

Binding: Paperback

[View textbooks at the CQUniversity Bookshop](#)

### IT Resources

**You will need access to the following IT resources:**

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)

## Referencing Style

All submissions for this unit must use the referencing style: [Harvard \(author-date\)](#)

For further information, see the Assessment Tasks.

## Teaching Contacts

**Stephanie Flowers** Unit Coordinator

[s.flowers@cqu.edu.au](mailto:s.flowers@cqu.edu.au)

## Schedule

### Week 1 - 10 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Topic 1: Historical of geotechnical studies, origin of soil, and weight-volume relationships	Please refer to the study guide and Moodle site for specific text book readings and additional unit information	

### Week 2 - 17 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Topic 2: Plasticity and structure of soil, classification of soil, and soil compaction	Please refer to the study guide and Moodle site for specific text book readings and additional unit information	

### Week 3 - 24 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Topic 3: Permeability	Please refer to the study guide and Moodle site for specific text book readings and additional unit information	

### Week 4 - 31 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Topic 4: In situ stress	Please refer to the study guide and Moodle site for specific text book readings and additional unit information	

#### Week 5 - 07 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Topic 5: Stresses in a soil mass	Please refer to the study guide and Moodle site for specific text book readings and additional unit information	<b>Assessment item 1</b> Due: Week 5 Thursday (10 Aug 2017) 11:45 pm AEST

#### Vacation Week - 14 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
--------------	---------	------------------------------

#### Week 6 - 21 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Topic 6: Compressibility of soil	Please refer to the study guide and Moodle site for specific text book readings and additional unit information	

#### Week 7 - 28 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Topic 7: Shear strength of soil	Please refer to the study guide and Moodle site for specific text book readings and additional unit information	

#### Week 8 - 04 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Topic 8: Lateral earth pressure: At-rest, Rankine, and Coulomb	Please refer to the study guide and Moodle site for specific text book readings and additional unit information	

#### Week 9 - 11 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Topic 9: Lateral earth pressure: Curved failure surface	Please refer to the study guide and Moodle site for specific text book readings and additional unit information	<b>Assessment item 2</b> Due: Week 9 Thursday (14 Sep 2017) 11:45 pm AEST

#### Week 10 - 18 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Topic 10: Slope stability	Please refer to the study guide and Moodle site for specific text book readings and additional unit information	

#### Week 11 - 25 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Topic 11: Soil bearing capacity for shallow foundations	Please refer to the study guide and Moodle site for specific text book readings and additional unit information	

#### Week 12 - 02 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
--------------	---------	------------------------------

Topic 12: Subsoil exploration and rock mechanics

Please refer to the study guide and Moodle site for specific text book readings and additional unit information

#### Review/Exam Week - 09 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
		<b>Assessment item 3 (Quiz)</b> Due: Review/Exam Week Monday (9 Oct 2017) 11:45 pm AEST <b>Assessment item 4</b> Due: Review/Exam Week Wednesday (11 Oct 2017) 11:45 pm AEST

#### Exam Week - 16 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
--------------	---------	------------------------------

## Term Specific Information

To pass this unit, you must achieve 50% or more in each assessment item (1 to 4) and an overall cumulative result of 50% or more from all assessments.

## Assessment Tasks

### 1 Assessment item 1

#### Assessment Type

Written Assessment

#### Task Description

Assessment task 1 covers Topic 1-3 in the study guide, and will require you to research and answer a number of questions that explore significant geotechnical concepts and calculations in relation to soil characteristics/properties, standard Proctor test, conductivity test, and soil compaction.

As with all assessments, formatting and presentation is really important, technical accuracy and referencing where required is paramount with an overarching requirement for demonstrating your answer / submission / design with clarity. Your assignment should be produced in electronic format either as

- a single word-processed document, or
- a single pdf format document.

All submissions must be submitted through the assessment link in Moodle, by uploading your file following the on-screen instructions.

Further information regarding the assessment will be available on the unit Moodle site.

#### Assessment Due Date

Week 5 Thursday (10 Aug 2017) 11:45 pm AEST

#### Return Date to Students

Week 7 Thursday (31 Aug 2017)

#### Weighting

30%

#### Minimum mark or grade

You are required to obtain at least 50% of allocated marks for this assessment task in order to pass this unit.

#### Assessment Criteria

The assignment will be assessed on the following basis:

Clarity of expression and comprehensive coverage of issues

Use of quality supporting documentation as appropriate

Use of original thought and content

Overall presentation and ability to communicate using correct spelling, grammar and punctuation and the use of appropriate diagrams and other visual communication.

Demonstration of core knowledge and demonstration of appropriate application of knowledge.

### Referencing Style

- [Harvard \(author-date\)](#)

### Submission

Online

### Learning Outcomes Assessed

- Apply soil and rock mechanics principles in building design and construction.
- Interpret the influences of geological processes and natural environments on geotechnical design.
- Explain the use and limitations of geotechnical design in built environment projects.
- Perform basic geotechnical calculations including soil phase relationships, strength, stability, stress, compressibility, permeability and bearing capacity.

### Graduate Attributes

- Communication
- Problem Solving
- Information Literacy
- Information Technology Competence

## 2 Assessment item 2

### Assessment Type

Written Assessment

### Task Description

Assessment task 2 covers Topic 4-7 in the study guide, and will require you to research and answer a number of questions that explore significant geotechnical concepts and calculations in relation to stresses in a soil mass, compressibility of soil, and shear strength of soil.

As with all assessments, formatting and presentation is really important, technical accuracy and referencing where required is paramount with an overarching requirement for demonstrating your answer / submission / design with clarity. Your assignment should be produced in electronic format either as

- a single word-processed document, or
- a single pdf format document.

All submissions must be submitted through the assessment link in Moodle, by uploading your file following the on-screen instructions.

Further information regarding the assessment will be available on the unit Moodle site.

### Assessment Due Date

Week 9 Thursday (14 Sept 2017) 11:45 pm AEST

### Return Date to Students

Week 11 Thursday (28 Sept 2017)

### Weighting

25%

### Minimum mark or grade

You are required to obtain at least 50% of allocated marks for this assessment task in order to pass this unit.

### Assessment Criteria

The assignment will be assessed on the following basis:

Clarity of expression and comprehensive coverage of issues

Use of quality supporting documentation as appropriate

Use of original thought and content

Overall presentation and ability to communicate using correct spelling, grammar and punctuation and the use of appropriate diagrams and other visual communication.

Demonstration of core knowledge and demonstration of appropriate application of knowledge.

### Referencing Style

- [Harvard \(author-date\)](#)

### Submission

Online



## Learning Outcomes Assessed

- Apply soil and rock mechanics principles in building design and construction.
- Interpret the influences of geological processes and natural environments on geotechnical design.
- Explain the use and limitations of geotechnical design in built environment projects.
- Perform basic geotechnical calculations including soil phase relationships, strength, stability, stress, compressibility, permeability and bearing capacity.

## Graduate Attributes

- Communication
- Problem Solving
- Information Literacy
- Information Technology Competence

## 3 Assessment item 3 (Quiz)

### Assessment Type

Online Quiz(zes)

### Task Description

Assessment task 3 is a quiz. This assessment covers all topics in the study guide, and will require you to answer 20 multiple choice questions based on all the units topics presented during the term.

Further information regarding the assessment will be available on the unit Moodle site.

### Number of Quizzes

1

### Frequency of Quizzes

### Assessment Due Date

Review/Exam Week Monday (9 Oct 2017) 11:45 pm AEST

### Return Date to Students

After the quiz is closed

### Weighting

10%

### Minimum mark or grade

You are required to obtain at least 50% of allocated marks for this assessment task in order to pass this unit.

### Assessment Criteria

Successful completion of the online quiz from a single attempt.

### Referencing Style

- [Harvard \(author-date\)](#)

### Submission

Online

## Learning Outcomes Assessed

- Apply soil and rock mechanics principles in building design and construction.
- Interpret the influences of geological processes and natural environments on geotechnical design.
- Explain the use and limitations of geotechnical design in built environment projects.

## Graduate Attributes

- Communication
- Problem Solving
- Information Literacy
- Information Technology Competence

## 4 Assessment item 4

### Assessment Type

Written Assessment

### Task Description

Assessment task 4 covers Topic 8-12 in the study guide, and will require you to research and answer a number of

questions that explore significant geotechnical studies concepts and calculations in relation to earth pressure, slope stability, soil bearing capacity, and subsoil exploration and rock mechanics.

As with all assessments, formatting and presentation is really important, technical accuracy and referencing where required is paramount with an overarching requirement for demonstrating your answer / submission / design with clarity. Your assignment should be produced in electronic format either as

- a single word-processed document, or
- a single pdf format document

All submissions must be submitted through the assessment link in Moodle, by uploading your file following the on-screen instructions.

Further information regarding the assessment will be available on the unit Moodle site.

**Assessment Due Date**

Review/Exam Week Wednesday (11 Oct 2017) 11:45 pm AEST

**Return Date to Students**

Monday 24th October 2016

**Weighting**

35%

**Minimum mark or grade**

You are required to obtain at least 50% of allocated marks for this assessment task in order to pass this unit.

**Assessment Criteria**

The assignment will be assessed on the following basis:

Clarity of expression and comprehensive coverage of issues

Use of quality supporting documentation as appropriate

Use of original thought and content

Overall presentation and ability to communicate using correct spelling, grammar and punctuation and the use of appropriate diagrams and other visual communication.

Demonstration of core knowledge and demonstration of appropriate application of knowledge.

**Referencing Style**

- [Harvard \(author-date\)](#)

**Submission**

Online

**Learning Outcomes Assessed**

- Apply soil and rock mechanics principles in building design and construction.
- Interpret the influences of geological processes and natural environments on geotechnical design.
- Explain the use and limitations of geotechnical design in built environment projects.
- Perform basic geotechnical calculations including soil phase relationships, strength, stability, stress, compressibility, permeability and bearing capacity.

**Graduate Attributes**

- Communication
- Problem Solving
- Information Literacy
- Information Technology Competence

## Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the [Student Academic Integrity Policy and Procedure](#). This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

### What is a breach of academic integrity?

A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

### Why is academic integrity important?

A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

### Where can I get assistance?

For academic advice and guidance, the [Academic Learning Centre \(ALC\)](#) can support you in becoming confident in completing assessments with integrity and of high standard.

### What can you do to act with integrity?



#### Be Honest

If your assessment task is done by someone else, it would be dishonest of you to claim it as your own



#### Seek Help

If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)



#### Produce Original Work

Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem