



ENVR12001 Soil Science and Conservation

Term 1 - 2024

Profile information current as at 09/05/2024 01:40 am

All details in this unit profile for ENVR12001 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

Soils are the physical and chemical foundation of terrestrial ecosystems and Australian soils are among the oldest and most fragile in the world. In this unit you will learn the origin of soils and how they are affected by geology, geography, climate, living organisms and time. You will develop soil classification and testing skills in the laboratory and in the field, and study the conservation, management and remediation of Australian soils.

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

Pre-requisites: CHEM11043 Atoms, Molecules and Matter or CHEM11041 Chemistry for the Life Sciences and BIOL11099 Living Systems or BIOL11102 Life Science Laboratory

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 1 - 2024

- Mixed Mode
- Rockhampton

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).

Residential Schools

This unit has a Compulsory Residential School for distance mode students and the details are:

Click here to see your [Residential School Timetable](#).

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. **Practical and Written Assessment**

Weighting: 30%

2. **Presentation and Written Assessment**

Weighting: 40%

3. **Online Quiz(zes)**

Weighting: 30%

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 Unit Coordinator

Feedback

The residential school in this unit is an excellent opportunity for the students to learn the material.

Recommendation

The residential school will remain unchanged for the next offering.

Unit Learning Outcomes

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

1. Describe the physical, chemical and biological characteristics of soil
2. Describe and classify a range of soils
3. Plan and conduct soil tests in the laboratory and field
4. Discuss the major challenges for the sustainable management and remediation of Australian soils.

Alignment of Learning Outcomes, Assessment and Graduate Attributes



Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
1 - Practical and Written Assessment - 30%	•	•	•	
2 - Presentation and Written Assessment - 40%	•		•	•
3 - Online Quiz(zes) - 30%		•		•

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	•	•	•	•

Graduate Attributes	Learning Outcomes			
	1	2	3	4
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 - Practical and Written Assessment - 30%	•	•	•	•	•	•				
2 - Presentation and Written Assessment - 40%	•	•	•	•	•	•	•			
3 - Online Quiz(zes) - 30%	•	•	•	•						

Textbooks and Resources

Textbooks

ENVR12001

Prescribed

Australian Soils and Landscapes

(2004)

Authors: Neil McKenzie, David Jacquier, Ray Isbell, Katharine Brown

CSIRO

ISBN: 9780643104334

Binding: Hardcover

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Australian soils and landscapes: an illustrated compendium
<http://ezproxy.cqu.edu.au/login?url=http://ebookcentral.proquest.com.ezproxy.cqu.edu.au/lib/cqu/detail.action?dociD=714045>
- Soil health, soil biology, soil born diseases and sustainable agriculture: a guide
<http://ezproxy.cqu.edu.au/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=1194484&site=eds-live&scope=site>

Referencing Style

All submissions for this unit must use the referencing style: [Harvard \(author-date\)](#)
For further information, see the Assessment Tasks.

Teaching Contacts

Natalie Wolfe Unit Coordinator

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Amie Anastasi Unit Coordinator

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Schedule

Week 1 - 04 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Soil Development (pedogenesis)	Readings as assigned on Moodle Week 1 tile.	

Week 2 - 11 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Physical properties of soils and classification	Readings as assigned on Moodle Week 2 tile.	

Week 3 - 18 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Soil microbes, sampling and processing	Readings as assigned on Moodle Week 3 tile.	

Week 4 - 25 Mar 2024

Module/Topic	Chapter	Events and Submissions/Topic
Soil Chemistry and solutions	Readings as assigned on Moodle Week 4 tile.	

Week 5 - 01 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
Soil ion chemistry and biochar	Readings as assigned on Moodle Week 5 tile.	

Vacation Week - 08 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
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Week 6 - 15 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
Field Trip and Res School (no lectures this week),		Residential School and Field trip , April 18 to 20, 2024 (Compulsory). See Moodle for more details and scheduling updates.

Week 7 - 22 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
Guest Speakers	Readings as assigned on Moodle Week 7 tile.	

Week 8 - 29 Apr 2024

Module/Topic	Chapter	Events and Submissions/Topic
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Soil acidity and nutrients	Readings as assigned on Moodle Week 8 tile.	Field Workbook and Summary Due: Week 8 Friday (3 May 2024) 11:45 pm AEST
Week 9 - 06 May 2024		
Module/Topic	Chapter	Events and Submissions/Topic
Soil microbial ecology, nutrient cycling, and transport	Readings as assigned on Moodle Week 9 tile.	
Week 10 - 13 May 2024		
Module/Topic	Chapter	Events and Submissions/Topic
Soil pollutants and wastes	Readings as assigned on Moodle Week 10 tile.	Group Written Report must be submitted before 5PM AEST Monday Week 10.
Week 11 - 20 May 2024		
Module/Topic	Chapter	Events and Submissions/Topic
Soil conservation (biodegradation and bioremediation)	Readings as assigned on Moodle Week 11 tile.	
Week 12 - 27 May 2024		
Module/Topic	Chapter	Events and Submissions/Topic
In-class Group Oral Presentations, unit overview and quiz preparations.		Group Oral Presentation slides must be submitted before 8AM AEST Monday Week 12. Presentation will be delivered online (Zoom) and the times will be advised on Moodle. Self and Peer Assessments (SPA) must be submitted before 5PM AEST Friday Week 12.
Review/Exam Week - 03 Jun 2024		
Module/Topic	Chapter	Events and Submissions/Topic
		End of term online quiz Due: Review/Exam Week Monday (3 June 2024) 11:00 am AEST
Exam Week - 10 Jun 2024		
Module/Topic	Chapter	Events and Submissions/Topic

Assessment Tasks

1 Field Workbook and Summary

Assessment Type

Practical and Written Assessment

Task Description

For this assessment you will submit:

1. A scanned copy of your Field Workbook and worksheets completed on the field trip. The worksheets must include a legible soil characterisation for the sites we visited (10%).
2. A Summary of work completed at the residential school. This short report should include a brief description of the experiments carried out and their results, including relevant figures. It must be no more than 1500 words, excluding title page, references, table, figures and captions. Figures must be publication ready and generated using Excel, R or other suitable software. Resources and exemplars are available on the Moodle site to explain how to make publication ready figures in Excel (20%).

The ENVR12001 Residential School is compulsory for all students. You may not complete this activity using notes produced by another student.

Assessment Due Date

Week 8 Friday (3 May 2024) 11:45 pm AEST

Return Date to Students

Week 10 Friday (17 May 2024)

Weighting

30%

Minimum mark or grade

50%

Assessment Criteria

The Field Workbook and worksheets will be marked on:

1. Completeness and legibility of information in field workbook/notebook;
2. Completeness and legibility of information in worksheets.

The Summary will be marked on:

1. Completeness (all descriptions, field and laboratory soil tests and results presented);
2. Clarity, grammar, punctuation and organisation;
3. Figure presentation (figures and tables should be publication ready);
4. Accuracy and supporting evidence of the final soil classifications.

A complete rubric and exemplar with weightings will be available on Moodle.

Referencing Style

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

Submission

Online

Submission Instructions

Please submit your Field Workbook and Worksheets and Summary separately. Submit the scan of your Field Workbook and worksheets as a pdf document. Please submit your Summary as a word document with embedded figures and pictures.

Learning Outcomes Assessed

- Describe the physical, chemical and biological characteristics of soil
- Describe and classify a range of soils
- Plan and conduct soil tests in the laboratory and field

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence

2 Group Written Report, Group Oral Presentation & SPA

Assessment Type

Presentation and Written Assessment

Task Description

This assessment consists of:

1. Group written report will be a maximum of 3000 words long (excluding title page, figure and picture captions, tables and references) (25%).
2. Group Oral Presentation will consist of an 8-minute online (Zoom) presentation of the report with an additional 4 minutes for questions (10%). Each student will be given an individual mark for their portion of the presentation and that will form a part of your overall mark for the group presentation (i.e. you may receive a different mark from your group members).
3. Mark from the Self and Peer Assessment (SPA) tool, based on your contributions to the group work. It is in your best interests to participate fully and professionally with your peers. There is a guide to Working in Groups on the Moodle page (5%).

Both the written report and oral presentation should include:

- a region-appropriate acknowledgement/welcome to country;

- a description of the setting;
- a summary of the approach you would take to identify potential problems regarding soil at the site, and how you would assess, quantify and measure these issues.

A more detailed task description and exemplar is available on Moodle.

Assessment Due Date

Group Written report must be submitted by 5PM AEST Monday Week 10. Group Oral Presentation slides must be submitted before 8AM AEST Monday Week 12. Presentations will be completed during Week 12. Specific times will be advised on Moodle. Self and Peer Assessments (SPA) must be submitted before 5PM AEST Friday Week 12.

Return Date to Students

Exam Week Friday (14 June 2024)

Weighting

40%

Assessment Criteria

The Group Written Report, Group Oral Presentation & SPA will be graded in the following way:

Group Written Report:

1. Completeness of scenario description;
2. Approach and reasoning;
3. Appropriateness of the methods selected to assess, quantify and measure the issues;
4. Clarity, grammar, spelling, references, and contribution statement.

Group Oral Presentation:

1. Presentation quality (including slides, oral presentation, on-time delivery, organization and focus);
2. Audience targeting;
3. Equal division of presentation time;
4. Quality of answers to questions asked after the presentation;
5. Each student will receive an individual mark based on presentation quality for their portion of the presentation excluding the Acknowledgement of Country.

Self and Peer Assessment (SPA):

1. Each student's final mark for the SPA will be an average of their peers' assessment of their contribution to the group.

Referencing Style

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

Submission

Online Group

Submission Instructions

Group Written Report must be submitted as a word document through Moodle using TurnItIn; Group Oral Presentation slides must be submitted through Moodle; a link to complete the Self and Peer Assessments will be sent to your CQU email when all Group Oral Presentations are completed. Only one person in each group needs to submit the report and presentation slides portion of the assessment (just make sure they do!). Each student must undertake their own SPA.

Learning Outcomes Assessed

- Describe the physical, chemical and biological characteristics of soil
- Plan and conduct soil tests in the laboratory and field
- Discuss the major challenges for the sustainable management and remediation of Australian soils.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Cross Cultural Competence

3 End of term online quiz

Assessment Type

Online Quiz(zes)

Task Description

This is the End of Term Online Quiz, it will be open for 24 hours. You will get one attempt and have 90 minutes to complete it once you start. Make sure to begin the quiz at least 90 minutes before the closing time to ensure you have the full 90 minutes to complete the quiz. The quiz is worth 60 marks, and the marks are divided in the following manner:

- Five 1 mark Short Answer Soil Physics questions (1 Soil order, 1 Soil Texture, 3 Non-Specific) (5 marks total)
- One 15 mark Soil Classification question (15 marks total)
- Two 5 mark Soil Chemistry questions (10 marks total)
- One 10 mark Soil Chemistry question (10 marks total)
- Two 10 mark Soil Biology questions (20 marks total)

The questions in each category are selected from a question bank and are balanced for difficulty and type. The marks are a relative guide to how long is required to answer each question (1 mark ~ 1 minute). For each question, type your answer in the box provided. It is an open book quiz but your answers must be your own work and will be checked against answers available in textbooks or on Google/Reddit/DuckDuckGo/etc. The unit coordinator has provided required/suggested materials (e.g. Soil Texture Triangle) in a Moodle tile titled "Useful documents/links for the End of Term Quiz". Spelling and grammar are not a primary concern in marking (you won't lose marks for misspelling or poor punctuation), but you will not get full marks if your ideas are hindered or obscured by poor spelling/grammar. Some questions allow you to submit a hand-drawn sketch with your answer. Before beginning the quiz, you must have a digital camera/smart phone to take pictures with and a means to upload the images to moodle from that camera before the quiz attempt ends). Please confirm that you can transfer pictures from your camera or phone to your computer before you begin.

Number of Quizzes

1

Frequency of Quizzes

Other

Assessment Due Date

Review/Exam Week Monday (3 June 2024) 11:00 am AEST

The End of term online quiz will open on Sunday 2 June at 11:00 am AEST and close on Monday 3 June at 11:00 am AEST.

Return Date to Students

Exam Week Friday (14 June 2024)

Weighting

30%

Minimum mark or grade

50%

Assessment Criteria

Quiz answers will be marked based on:

1. Completeness of the answer;
2. Relevance of the answer (did you answer the question);
3. Accuracy of the answer.

Spelling and grammar will not be marked except as it impacts the ability of the marker to understand the answer.

Referencing Style

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

Submission

Online

Learning Outcomes Assessed

- Describe and classify a range of soils
- Discuss the major challenges for the sustainable management and remediation of Australian soils.

Graduate Attributes

- Communication
- Problem Solving

- Critical Thinking
- Information Literacy

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