



# AGRI11001 Soil and Irrigation Management

## Term 2 - 2021

Profile information current as at 27/05/2024 10:23 pm

All details in this unit profile for AGRI11001 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

This unit covers the fundamentals of soil and irrigation systems. You will learn how soil properties affect crop growth; how management strategies can be applied to manage variable soil conditions; how to interpret soil analytical data and how to develop soil improvement programs. The unit will show you how different growing conditions define management options and how a range of irrigation systems can be used to increase production.

### Details

Career Level: *Undergraduate*

Unit Level: *Level 1*

Credit Points: 6

Student Contribution Band: 7

Fraction of Full-Time Student Load: 0.125

### Pre-requisites or Co-requisites

There are no requisites for this unit.

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 - 2021

- Bundaberg
- Emerald
- 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. **Online Quiz(zes)**

Weighting: 30%

#### 2. **Portfolio**

Weighting: 30%

#### 3. **Written Assessment**

Weighting: 40%

### 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 - Have Your Say

**Feedback**

Enjoyed the unit and particularly the Residential School

**Recommendation**

We shall strive to improve the delivery of this unit and make it even more enjoyable to students. The residential school activities will be refined to make them more engaging and clearer.

#### Feedback from Moodle - Have Your Say

**Feedback**

Exemplars were provided to help with assessments

**Recommendation**

The assessments will be explained better and exemplars will be provided.

#### Feedback from Moodle - Have Your Say

**Feedback**

More emphasis on basic sciences (especially biology) is required.

**Recommendation**

Basic sciences (biology and chemistry) will be embedded in the first four lectures and tutorials (first four weeks of term). A good understanding of basic sciences is crucial in this unit.

## Unit Learning Outcomes

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

1. Apply knowledge of soil testing results in order to describe different soil types
2. Explain how soil properties determine production opportunities
3. Develop, monitor and review soil amendment practices
4. Determine the feasibility of using or upgrading irrigation systems
5. Develop and evaluate an appropriate irrigation plan.

## Alignment of Learning Outcomes, Assessment and Graduate Attributes



### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
1 - Online Quiz(zes) - 30%	•	•	•		
2 - Portfolio - 30%	•	•		•	
3 - Written Assessment - 40%			•	•	•

### Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
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					

## Textbooks and Resources

### Textbooks

**There are no required textbooks.**

#### Additional Textbook Information

No

### 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

**Richard Koech** Unit Coordinator

[r.koech@cqu.edu.au](mailto:r.koech@cqu.edu.au)

## Schedule

### Week 1 - 12 Jul 2021

Module/Topic	Chapter	Events and Submissions/Topic
Unit Introduction and Soil Physics		

### Week 2 - 19 Jul 2021

Module/Topic	Chapter	Events and Submissions/Topic
Soil Chemistry		

### Week 3 - 26 Jul 2021

Module/Topic	Chapter	Events and Submissions/Topic
Soil Biology and Australian Soil Classification		

### Week 4 - 02 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic
Soil Management		

### Week 5 - 09 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic
Soil Constraints and Land Degradation		Quiz 1 is due end of Week 5 (15/08/2021, 11:45 PM AEST)

### Vacation Week - 16 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic
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<b>Week 6 - 23 Aug 2021</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Soil and Water Relationships		
<b>Week 7 - 30 Aug 2021</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Introduction to Irrigation		
<b>Week 8 - 06 Sep 2021</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Irrigation Planning and Design		
<b>Week 9 - 13 Sep 2021</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Irrigation Scheduling		Quiz 2 is due end of Week 9 (19/09/2021, 11:45 PM AEST).
<b>Week 10 - 20 Sep 2021</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Performance Evaluation of Irrigation Systems		
<b>Week 11 - 27 Sep 2021</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Irrigation Modernisation in Australia		Assessment 2A & 2B due end of Week 11 (03/10/2021, 11:45 PM AEST).
<b>Week 12 - 04 Oct 2021</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Soil and Irrigation Management Review		
<b>Review/Exam Week - 11 Oct 2021</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
		Assessment 3 is due Friday of Review/Exam Week (15/10/2021, 11:45 PM AEST).
<b>Exam Week - 18 Oct 2021</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>

## Term Specific Information

This unit has a Residential School. Check the Moodle site for details.

## Assessment Tasks

### 1 Online Quizzes

#### Assessment Type

Online Quiz(zes)

#### Task Description

This assessment task consists of two Online Quizzes:

#### Quiz 1 (15%) - Due Week 5

This quiz will assess your understanding of content delivered during lectures and tutorials in Weeks 1, 2 and 3 of the

Term. The quiz may include short answer, multiple-choice and calculation-type of questions.

### **Quiz 2 (15%) - Due Week 9**

This quiz will assess your understanding of content delivered during lectures and tutorials in Weeks 4, 5 and 6 of the Term. The quiz may include short answer, multiple-choice and calculation-type questions.

Further details will be provided on the Moodle site.

#### **Number of Quizzes**

2

#### **Frequency of Quizzes**

Other

#### **Assessment Due Date**

Quiz 1 is due at the end of Week 5 (15/08/2021, 11:45 PM AEST) and Quiz 2 is due at the end of Week 9 (19/09/2021, 11:45 PM AEST).

#### **Return Date to Students**

Assessments will be returned to students within 10 working days after the due date.

#### **Weighting**

30%

#### **Minimum mark or grade**

50% of the total marks allocated to Quiz and Quiz 2

#### **Assessment Criteria**

The quizzes will have a series of short-answer, multiple-choice and calculation-type of questions. Responses to these questions will be assessed according to their quality, accuracy and level of detail provided by the student.

#### **Referencing Style**

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

#### **Submission**

Online

#### **Learning Outcomes Assessed**

- Apply knowledge of soil testing results in order to describe different soil types
- Explain how soil properties determine production opportunities
- Develop, monitor and review soil amendment practices

## **2 Portfolio**

### **Assessment Type**

Portfolio

### **Task Description**

The portfolio is made up of **two tasks** related to practical activities undertaken independently and during the Residential School.

### **Assessment 2A. Crop, Soil and Irrigation Assessment Report (15%)**

You are required to undertake a soil and irrigation assessment of an irrigated farm in your area, with a focus on crop/pasture, soil and irrigation aspects. You may also undertake the assessment at your home or in a local community garden. The assessment will require you to undertake basic soil texture analysis and soil infiltration test and present the results in a report format as described on the Moodle site.

You will then submit a written report which will include the following:

- Background information about the farm or garden (e.g., location, size, soil type, crop/s or pasture grown, irrigation method/s used and management practices).
- Visual inspection of soil and irrigation system.
- Results of basic field soil texture analysis (e.g. ribbon test or soaking and shaking). Briefly describe the method used.
- Results of field soil infiltration test. Briefly describe the method used.
- Your recommendations for improvement of the soil and irrigation aspects.

*Note: You may include information from published literature specifically undertaken in your area. The report should be written in 1500 to 2000 words and include an introduction and conclusion.*

### **Assessment 2B. Practical Report (15%)**

A two-day Residential School will be organised for this unit at a date to be advised later on the Unit's Moodle site. The practical activities will include field and laboratory soil analysis and irrigation performance evaluation tests. A handbook containing all the activities that will be undertaken during the Residential School will be provided on the Moodle site. You will use the handbook provided as the template for your practical report.

Further details about the Residential School activities will be provided in the Moodle site.

### **Assessment Due Date**

Assessments 2A & 2B are due at the end of Week 11 (03/10/2021, 11:45 PM AEST)

### **Return Date to Students**

Assessments will be returned within 10 working days after the due date.

### **Weighting**

30%

### **Minimum mark or grade**

50% of the total marks allocated to Assessments 2A and 2B.

### **Assessment Criteria**

**Assessment 2A (Crop, Soil and Irrigation Assessment Report)** will be based on:

- Content - the quality and details of the presented information. All aspects of the task must be covered - background information, visual inspection of soil and irrigation system/s, undertake practical activities (soil texture analysis, soil infiltration test).
- Recommendations for improvement of soil and irrigation aspects.
- Structure of the presentation - report to include introduction, methods, results and conclusion/recommendation.
- Evidence of practical activities undertaken (e.g., photographs, data)
- Presentation of the report - use of figures/tables/photos, formatting etc.
- Word length (1500 - 2000 words).

**Assessment 2B (Practical Report)** will be based on:

- The quality of data and information collected during Residential School.
- Analysis and presentation of the results using tables and figures.
- Discussion of the results obtained from the practical activities.
- The clarity of English expression, spelling and grammar.

### **Referencing Style**

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

### **Submission**

Online

### **Learning Outcomes Assessed**

- Apply knowledge of soil testing results in order to describe different soil types
- Explain how soil properties determine production opportunities
- Determine the feasibility of using or upgrading irrigation systems

## **3 Develop and Evaluate an Irrigation Plan**

### **Assessment Type**

Written Assessment

### **Task Description**

This assessment task requires you to prepare a plan for a new irrigation system or a modification of an existing irrigation system. You will also develop an appropriate management plan for your system. You are required to choose a property with a current water allocation which could be used to supply water to a farming enterprise. The property MAY or MAY



NOT have an existing irrigation system. You will need to visit the property to collect data to develop your plan. You will select an appropriate irrigated cropping or pasture enterprise and provide a justification.

Your Irrigation Plan will be in the format of a report (2500-3000 words) and will include an introduction, aims, the main body addressing the points listed below, and in addition, conclusions and references.

### **1. Background information**

- Brief overview of the farm including location, topography, size and enterprises (crops or livestock) currently on the farm. Include an aerial map of the farm (you may use Google maps, Google Earth, Queensland Globe or similar programs).
- Climatic parameters - rainfall and temperature.
- Soil information - (Australian Soil Classification, texture and structure).
- Water supply (source, quality and treatment requirements).

### **2. Cropping enterprise and irrigation system**

- Crop/s or pasture to be irrigated, including water and other management requirements of the crop/s. The water requirements of the crop may be obtained from published literature and industry websites. Explain the reason for choosing the crop/s.
- Select an irrigation system to be used (e.g. trickle, furrow, sprinkler irrigation). Explain your choice of irrigation system.
- A sketch of the irrigation layout/design.
- Specific requirements of the irrigation system (e.g. determination of peak water demand - show relevant calculations).

### **3. Installation requirements of the selected irrigation system**

- Pumping requirements (including type of pump and its capacity).
- List of all of the components used in the installation of the system (e.g. pipes, valves, and emitters or sprinklers).
- Installation procedures for various components.
- Periodic checking procedures to evaluate the efficiency and effectiveness of the irrigation system.

### **4. Irrigation system management and operation**

- Provide a suggested irrigation schedule (application rates and irrigation cycle). Explain using some sample calculations how this may be estimated using evapotranspiration figures.
- Provide examples of techniques used for evaluating the performance of the irrigation system.
- Explain safety procedures to be followed when operating the irrigation system.

### **Assessment Due Date**

Assessment 3 is due Friday of Review/Exam Week (15/10/2021, 11:45 PM AEST).

### **Return Date to Students**

Assessments will be returned within 10 working days after the due date.

### **Weighting**

40%

### **Minimum mark or grade**

50% of the total marks allocated to this assessment (Develop and Evaluate an Irrigation Plan).

### **Assessment Criteria**

The report will be assessed as follows:

- Content - all the key aspects covered in the report (background information; cropping enterprise and irrigation system; sketch of the irrigation layout/design; installation requirements; and irrigation system management and operation).
- The detail, accuracy and quality of the information provided.
- The clarity of English expression, spelling and grammar.
- Referencing.
- Presentation of report - structure, use of figures and tables.
- Word length (2500-3000 words).

Further information including marking rubric will be made available on the Moodle site.

### Referencing Style

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

### Submission

Online

### Learning Outcomes Assessed

- Develop, monitor and review soil amendment practices
- Determine the feasibility of using or upgrading irrigation systems
- Develop and evaluate an appropriate irrigation plan.

## 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