ENEC13014 *Water Supply and Wastewater Technology*
Term 1 - 2021

Profile information current as at 14/12/2025 12:29 pm

General Information

Overview
In this unit you will be introduced to water and wastewater treatment, including water distribution systems and wastewater collection systems. The unit will cover characteristics of water and wastewater, different types of treatment processes and the design of different components of water and wastewater treatment plants.

Details
Career Level: *Undergraduate*
Unit Level: *Level 3*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites
Prerequisites: ENEC12010 Hydraulics and Hydrology
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 - 2021

- Bundaberg
- Cairns
- Gladstone
- Mackay
- Online
- 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).

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: 30%
3. **Online Test**
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 Unit coordinator observations and student evaluations

Feedback
The assessment schedule should be revised to allow more time on the final assignment

Recommendation
Return the schedule to the 2019 version to complete the Assignment 1 earlier and allow more time for Assignment 2.

Feedback from Student evaluations

Feedback
Some content in the lectures is not in SI units and does not directly relate to the assessments

Recommendation
Lecture material should be revised to follow the Australian guidelines where relevant.

Feedback from Student evaluations

Feedback
Expectations of assignments could be clearer

Recommendation
Develop marking rubrics for assignments that explain expectations at various levels of performance that can also assist students to breakdown the assignment into individual tasks.

Feedback from Student evaluations

Feedback
Having Moodle preloaded with lecture slides enabled independent learning which was helpful for students with other commitments

Recommendation
Continue to preload Moodle with learning resources to facilitate independent learning.

Unit Learning Outcomes

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

1. Characterise the quality parameters of potable water and wastewater
2. Formulate a preliminary design of water and wastewater treatment plants
3. Design water distribution and wastewater collection networks
4. Demonstrate a level of communication expected of professional engineers.

The learning outcomes are linked to Engineers Australia Stage 1 Competencies and also discipline capabilities. You can find the mapping for this on the Engineering Undergraduate Course website.

Alignment of Learning Outcomes, Assessment and Graduate Attributes

— N/A Level • Introductory Level • Intermediate Level • Graduate Level ◦ Professional Level ◦ Advanced Level

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
1 - Written Assessment - 30%			•	•
2 - Written Assessment - 30%	•	•		•
3 - Online Test - 40%	•	•	•	

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 - 30%	•	•	•	•		•		•		
3 - Online Test - 40%			•	•		•				

Textbooks and Resources

Textbooks

There are no required textbooks.

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

Raj Sharma Unit Coordinator
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Schedule

Week 1 - 08 Mar 2021

Module/Topic	Chapter	Events and Submissions/Topic
Principle of water distribution system	Chapter 2	

Week 2 - 15 Mar 2021

Module/Topic	Chapter	Events and Submissions/Topic
Fire demand and demand patterns	Related Guidelines and Standards	

Week 3 - 22 Mar 2021

Module/Topic	Chapter	Events and Submissions/Topic
Components design and operation of water distribution system	Chapter 3 Related Guidelines and Standards	

Week 4 - 29 Mar 2021

Module/Topic	Chapter	Events and Submissions/Topic
Modeling of water distribution system	Chapter 3 Related Guidelines and Standards	

Week 5 - 05 Apr 2021

Module/Topic	Chapter	Events and Submissions/Topic
Principles of wastewater system design	Chapter 3 Related Guidelines and Standards	

Vacation Week - 12 Apr 2021

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 19 Apr 2021

Module/Topic	Chapter	Events and Submissions/Topic

Wastewater source and design flow calculations	Chapter 4	**Design and analysis of water distribution system** Due: Week 6 Monday (19 Apr 2021) 9:00 am AEST

Week 7 - 26 Apr 2021

Module/Topic	Chapter	Events and Submissions/Topic
Design of Sanitary Sewer	Chapter 6	

Week 8 - 03 May 2021

Module/Topic	Chapter	Events and Submissions/Topic
Health and environmental issues of wastewater	Chapter 6	

Week 9 - 10 May 2021

Module/Topic	Chapter	Events and Submissions/Topic
Water quality	Chapter 6	

Week 10 - 17 May 2021

Module/Topic	Chapter	Events and Submissions/Topic
Water treatment		**Design and analysis of sewer system** Due: Week 10 Monday (17 May 2021) 9:00 am AEST

Week 11 - 24 May 2021

Module/Topic	Chapter	Events and Submissions/Topic
Wastewater treatment		

Week 12 - 31 May 2021

Module/Topic	Chapter	Events and Submissions/Topic
Revision		**Online Test** Due: Week 12 Friday (4 June 2021) 5:00 pm AEST

Review/Exam Week - 07 Jun 2021

Module/Topic	Chapter	Events and Submissions/Topic

Exam Week - 14 Jun 2021

Module/Topic	Chapter	Events and Submissions/Topic

Assessment Tasks

1 Design and analysis of water distribution system

Assessment Type
Written Assessment

Task Description
You are required to design a water distribution system for a given area. Information related to the project area such as topography and population is provided. You may need to collect relevant information from suppliers, councils and market survey as appropriate. Additional information on the assignment is available on the Moodle website.

Assessment Due Date
Week 6 Monday (19 Apr 2021) 9:00 am AEST

Return Date to Students

Two weeks after the submission due date.

Weighting
30%

Minimum mark or grade
50%

Assessment Criteria
Assessment of the design report will be done based on

1. Valid and Verified assumptions [Max 20%; All values and statements should be properly referenced an supportable.]
2. Accuracy in calculations [Max 80%]
3. Appropriate and Professional level of Communication [Pass/Fail - All the design steps should be explained in full detail. You should get a Pass from this criteria to get marks from the others.]

Referencing Style

- Harvard (author-date)

Submission
Online

Learning Outcomes Assessed

- Design water distribution and wastewater collection networks
- Demonstrate a level of communication expected of professional engineers.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology Competence
- Ethical practice

2 Design and analysis of sewer system

Assessment Type
Written Assessment

Task Description
You are required to design a sewer network for a given area. Information related to the project area such as topography and population is provided. You may need to collect relevant information from suppliers, councils and market survey as appropriate. Additional information on the assignment is available on the Moodle website.

Assessment Due Date
Week 10 Monday (17 May 2021) 9:00 am AEST

Return Date to Students

Two weeks after the submission due date.

Weighting
30%

Minimum mark or grade
50%

Assessment Criteria
Assessment of the design report will be done based on

1. Valid and Verified assumptions [Max 20%; All values and statements should be properly referenced an supportable.]
2. Accuracy in calculations [Max 80%]
3. Appropriate and Professional level of Communication [Pass/Fail - All the design steps should be explained in full detail. You should get a Pass from this criteria to get marks from the others.]

Referencing Style

- Harvard (author-date)

Submission
Online

Learning Outcomes Assessed

- Characterise the quality parameters of potable water and wastewater
- Formulate a preliminary design of water and wastewater treatment plants
- Demonstrate a level of communication expected of professional engineers.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology Competence
- Ethical practice

3 Online Test

Assessment Type
Online Test

Task Description
This assessment task consists of one Online Test . The main characteristics of the Online Test are:

1. The test will be open from 09:00am AEST Monday of Week 12 to 09:00 am AEST Monday of the Week 13.
2. You will have 120 minutes from when you start your attempt to submit your answers.
3. You will be allowed to attempt the test two times within a given time frame. The highest of the two attempts will be your final score of the test.
4. There shall be minimum of four hours between the two attempts.
5. There will be 20 to 30 numerical type questions. There can be a few multiple choice type of questions also. Questions may vary from student to student and may change on each attempt with different correct numerical responses.
6. The test will contribute 40% towards your final grade.

Assessment Due Date
Week 12 Friday (4 June 2021) 5:00 pm AEST

Return Date to Students

After the certification of grades.

Weighting
40%

Minimum mark or grade
50%

Assessment Criteria
Answers will be automatically marked correct or incorrect.

Referencing Style

- Harvard (author-date)

Submission
Online

Learning Outcomes Assessed

- Characterise the quality parameters of potable water and wastewater
- Formulate a preliminary design of water and wastewater treatment plants
- Design water distribution and wastewater collection networks

Graduate Attributes

- Critical Thinking
- 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