



ENEC20005 *Advanced Water Engineering*

Term 2 - 2019

Profile information current as at 20/04/2024 01:46 am

All details in this unit profile for ENEC20005 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

Advanced Water Engineering will introduce you to different components of the hydrologic cycle that are essential for designing complex water infrastructures. In this unit, you will discuss concepts of probability and uncertainty governing water resources projects. You will estimate design rainfall and losses, and peak flows and volumes for engineering design. You will also be introduced to the design of pipe networks for water supply and collection of wastewater and stormwater. You will also be designing hydraulic structures necessary to control urban stormwater. In completing these tasks, you must use appropriate technical language in written communication and work in teams to solve problems.

Details

Career Level: *Postgraduate*

Unit Level: *Level 9*

Credit Points: *12*

Student Contribution Band: *8*

Fraction of Full-Time Student Load: *0.25*

Pre-requisites or Co-requisites

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 - 2019

- Melbourne
- Online
- Perth
- 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 12-credit Postgraduate unit at CQUniversity requires an overall time commitment of an average of 25 hours of study per week, making a total of 300 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. **Portfolio**

Weighting: 35%

2. **Portfolio**

Weighting: 35%

3. **Examination**

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 Have your Say

Feedback

More workshop and software classes.

Recommendation

Students will be asked during the class if they need additional workshop sessions. Additional drop-in sessions will be offered if requested by students.

Unit Learning Outcomes

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

1. Formulate, plan, manage and complete projects individually or in teams in an ethical and professional manner considering stakeholder requirements and principals of sustainable development
2. Design urban water distribution networks
3. Design urban wastewater collection networks
4. Assess the hydrology of a catchment and estimate design floods for a given annual exceedance probability
5. Design urban stormwater collection and treatment systems
6. Demonstrate a professional level of communication and leadership.

The Learning Outcomes for this unit are linked with **Engineers Australia's Stage 1 Competency Standard for Professional Engineers**.

Alignment of Learning Outcomes, Assessment and Graduate Attributes



Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes					
	1	2	3	4	5	6
1 - Portfolio - 35%	•	•	•			•
2 - Portfolio - 35%	•			•	•	•
3 - Examination - 30%		•	•	•	•	

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes					
	1	2	3	4	5	6
1 - Knowledge	○	○	○	○	○	○

Graduate Attributes	Learning Outcomes					
	1	2	3	4	5	6
2 - Communication	○	○	○	○	○	○
3 - Cognitive, technical and creative skills	○	○	○	○	○	○
4 - Research	○	○	○	○	○	○
5 - Self-management	○	○	○	○	○	○
6 - Ethical and Professional Responsibility	○	○	○	○	○	○
7 - Leadership	○					○
8 - 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
1 - Portfolio - 35%	○	○	○	○	○	○		
2 - Portfolio - 35%	○	○	○	○	○	○	○	
3 - Examination - 30%	○	○	○		○	○		

Textbooks and Resources

Textbooks

ENEC20005

Supplementary

Water-Resources Engineering

Edition: Third (2013)

Authors: David A. Chin

Pearson

Binding: eBook

[View textbooks at the CQUniversity Bookshop](#)

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- EPANET Software
- Personal Computer
- QGIS Software
- TUFLOW Software

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
r.sharma@cqu.edu.au

Schedule

Week 1 - 15 Jul 2019

Module/Topic	Chapter	Events and Submissions/Topic
Fundamental of flow in closed conduits	Chapter 2	

Week 2 - 22 Jul 2019

Module/Topic	Chapter	Events and Submissions/Topic
Design of water distribution system I	Chapter 3	Weekly Quiz 2

Week 3 - 29 Jul 2019

Module/Topic	Chapter	Events and Submissions/Topic
Design of water distribution system II	Chapter 3	Weekly Quiz 3

Week 4 - 05 Aug 2019

Module/Topic	Chapter	Events and Submissions/Topic
Design of wastewater collection system I	Chapter 6	Weekly Quiz 4

Week 5 - 12 Aug 2019

Module/Topic	Chapter	Events and Submissions/Topic
Design of wastewater collection system II	Chapter 6	Weekly Quiz 5

Vacation Week - 19 Aug 2019

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

Week 6 - 26 Aug 2019

Module/Topic	Chapter	Events and Submissions/Topic
Probability and statistics in water resources engineering	Chapter 8	

Week 7 - 02 Sep 2019

Module/Topic	Chapter	Events and Submissions/Topic
Fundamentals of surface water hydrology I	Chapter 9	Weekly Quiz 7

Week 8 - 09 Sep 2019

Module/Topic	Chapter	Events and Submissions/Topic
Fundamentals of surface water hydrology II	Chapter 10	Weekly Quiz 8
		Portfolio I Due: Week 8 Monday (9 Sept 2019) 11:45 pm AEST

Week 9 - 16 Sep 2019

Module/Topic	Chapter	Events and Submissions/Topic
Design of storm water collection system I	Chapter 11	Weekly Quiz 9
Week 10 - 23 Sep 2019		
Module/Topic	Chapter	Events and Submissions/Topic
Design of storm water collection system II	Chapter 11	Weekly Quiz 10
Week 11 - 30 Sep 2019		
Module/Topic	Chapter	Events and Submissions/Topic
Introduction to storm water management system	Chapter 12	
Week 12 - 07 Oct 2019		
Module/Topic	Chapter	Events and Submissions/Topic
		Portfolio II Due: Week 12 Tuesday (8 Oct 2019) 5:00 pm AEST
Review/Exam Week - 14 Oct 2019		
Module/Topic	Chapter	Events and Submissions/Topic
Exam Week - 21 Oct 2019		
Module/Topic	Chapter	Events and Submissions/Topic

Assessment Tasks

1 Portfolio I

Assessment Type

Portfolio

Task Description

Portfolio 1 (35% of total unit marks) has three components:

- Weekly online tests (15 marks)
- Team Report (10 marks)
- Individual Viva-voce (10 marks)

The omission of any of the above-mentioned items from Portfolio 1 will automatically result in a Fail grade. The aim of Portfolio 1 is to allow students to demonstrate their understanding of the various concepts, theories and processes presented during Weeks 1-5.

Weekly online tests:

This assessment task is designed to allow students to demonstrate their understanding of the topics covered during the week. The main characteristics of the weekly tests are:

- There are four weekly tests from week two to week five. You should attempt at least three tests and the fourth test is optional;
- Each test carries five marks;
- Total marks from the four tests will be your final score with a maximum score of 15;
- You are allowed to attempt each test only once;
- You have to be present in class to attempt the tests;
- There will be five numerical questions in each test;
- You have 15 minutes from when you start your attempt to submit your answers;
- Feedback is immediate as to whether the correct or wrong answer has been entered but no detailed information is given on the processes.

Team Report

This assessment task is designed to allow students to demonstrate their understanding of the topics covered during the first five weeks. You will work in a team to design and analysis of water-distribution and wastewater collection systems.

Some information related to the project area is provided and you need to collect other relevant information from suppliers, councils and market survey as appropriate. This team-based project is by design open-ended, and you are to make several assumptions. Your individual marks from the report depend on your contribution to the project. Additional information on the project and assessment criteria is available on the unit website.

Individual Viva-voce

After the submission of the team report, you will be invited for an interview. This will be an opportunity to demonstrate your understanding of the topics covered during the first five weeks including the team project.

Assessment Due Date

Week 8 Monday (9 Sept 2019) 11:45 pm AEST

Return Date to Students

Week 10 Monday (23 Sept 2019)

Within two weeks after submission.

Weighting

35%

Minimum mark or grade

50%

Assessment Criteria

Assessment of the Team report will be done based on

1. Valid and Verified assumptions: All values and statements should be properly referenced and supported.
2. Explanation of the work: All design steps should be explained in full detail. This covers the presentation of appropriate diagrams, statement of the principles and formulas in the correct order, presentation of all necessary steps in the analysis in the correct order and clear presentation of workings with links to the desired results.
3. Accuracy in calculations and correct results.
4. Appropriate and professional level of Communication: The report should show step by step process of the design and should be reported in a professional way.

Referencing Style

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

Submission

Online

Learning Outcomes Assessed

- Formulate, plan, manage and complete projects individually or in teams in an ethical and professional manner considering stakeholder requirements and principals of sustainable development
- Design urban water distribution networks
- Design urban wastewater collection networks
- Demonstrate a professional level of communication and leadership.

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Research
- Self-management
- Ethical and Professional Responsibility

2 Portfolio II

Assessment Type

Portfolio

Task Description

Portfolio 2 (35% of total unit marks) has three components:

- Weekly online tests (15 marks)
- Team Report (10 marks)
- Individual Viva-voce (10 marks)

The omission of any of the above-mentioned items from Portfolio 1 will automatically result in a Fail grade. The aim of Portfolio 2 is to allow students to demonstrate their understanding of the various concepts, theories and processes

presented during Weeks 6-11.

Weekly online tests:

This assessment task is designed to allow students to demonstrate their understanding of the topics covered during the week. The main characteristics of the weekly tests are:

- There are four weekly tests from week seven to week ten. You should attempt at least three tests and the fourth test is optional;
- Each test carries five marks;
- Total marks from the four tests will be your final score with a maximum score of 15;
- You are allowed to attempt each test only once;
- You have to be present in class to attempt the tests;
- There will be five numerical questions in each test;
- You have 15 minutes from when you start your attempt to submit your answers;
- Feedback is immediate as to whether the correct or wrong answer has been entered but no detailed information is given on the processes.

Team Report

This assessment task is designed to allow students to demonstrate their understanding of the topics covered during weeks 6-11. You will work in a team to on the design of a stormwater drainage system for a sub-division using industry standard software. Some of the input data relevant to the chosen location of the project will be sourced from ARR2016, QUDM and other sources. This team-based project is by design open-ended, and you are to make several assumptions. Your individual marks from the report depend on your contribution to the project. Details of the Team Project will be provided on the course website.

Individual Viva-voce

After the submission of the team report, you will be invited for an interview. This will be an opportunity to demonstrate your understanding of the topics covered during the first five weeks including the team project.

Assessment Due Date

Week 12 Tuesday (8 Oct 2019) 5:00 pm AEST

Return Date to Students

After certification of grades.

Weighting

35%

Minimum mark or grade

50%

Assessment Criteria

Assessment of the Team report will be done based on

1. Valid and Verified assumptions: All values and statements should be properly referenced and supported.
2. Explanation of the work: All design steps should be explained in full detail. This covers the presentation of appropriate diagrams, statement of the principles and formulas in the correct order, presentation of all necessary steps in the analysis in the correct order and clear presentation of workings with links to the desired results.
3. Accuracy in calculations and correct results.
4. Appropriate and professional level of Communication. The report should show step by step process of the design and should be reported in a professional way.

Referencing Style

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

Submission

Online

Learning Outcomes Assessed

- Formulate, plan, manage and complete projects individually or in teams in an ethical and professional manner considering stakeholder requirements and principals of sustainable development
- Assess the hydrology of a catchment and estimate design floods for a given annual exceedance probability
- Design urban stormwater collection and treatment systems
- Demonstrate a professional level of communication and leadership.

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Research
- Self-management
- Ethical and Professional Responsibility
- Leadership

Examination

Outline

Complete an invigilated examination.

Date

During the examination period at a CQUniversity examination centre.

Weighting

30%

Length

120 minutes

Minimum mark or grade

50%

Exam Conditions

Open Book.

Materials

Dictionary - non-electronic, concise, direct translation only (dictionary must not contain any notes or comments).

Calculator - all non-communicable calculators, including scientific, programmable and graphics calculators are authorised

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