



ENEC14017 Water Resources Engineering

Term 2 - 2020

Profile information current as at 27/04/2024 02:45 pm

All details in this unit profile for ENEC14017 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 be introduced to the application of the principles of hydraulics and hydrology to solve water engineering problems. You will study the probability, risk and uncertainty concepts governing hydrologic and hydrology design. You are also introduced to groundwater resources, river and reservoir routing, rapid and gradually varying flow in open channels, flood and stormwater control, design of hydraulic structures, and sedimentation and erosion hydraulics. The unit requires you to solve design problems in catchment hydrology and urban flood water management and prepare basic designs. In completing these tasks, you must use appropriate technical language in written communication and work in teams to solve problems.

Details

Career Level: *Undergraduate*

Unit Level: *Level 4*

Credit Points: *12*

Student Contribution Band: *8*

Fraction of Full-Time Student Load: *0.25*

Pre-requisites or Co-requisites

Prerequisite: ENEC13009 Hydraulics or ENEC12010 Hydraulics & 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 2 - 2020

- 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 12-credit Undergraduate 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: 50%

2. **Portfolio**

Weighting: 50%

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 Evaluation

Feedback

Applications of QGIS and TUFLOW, and the excellent resources for the unit in general, were very useful.

Recommendation

The same resources and delivery mode will be used.

Feedback from Unit Evaluation

Feedback

The practice quizzes were beneficial and a great way to learn and develop.

Recommendation

The practice quizzes will be maintained.

Feedback from Unit Evaluation

Feedback

The group assessment task needs to be modified to increase individual contribution, particularly the climate change scenario.

Recommendation

The group assessment task will be modified to increase individual contribution, particularly the climate change scenario.

Unit Learning Outcomes

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

1. Apply skills in hydraulics and hydrology to water engineering design
2. Conduct a hydrology assessment of a catchment
3. Design urban stormwater management systems
4. Prepare team reports for water engineering projects

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

Alignment of Learning Outcomes, Assessment and Graduate Attributes



Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
1 - Portfolio - 50%	•	•		•
2 - Portfolio - 50%	•		•	•

Textbooks and Resources

Textbooks

ENEC14017

Prescribed

Water-Resources Engineering

Third Edition (2013)

Authors: David A. Chin

Pearson Education Limited

Harlow , Essex CM202 2JE , UK

ISBN: ISBN-13: 978-0-273-78591-0

Binding: Paperback

Additional Textbook Information

If you prefer to study with a paper copy, they are available at the CQUni Bookshop here: <http://bookshop.cqu.edu.au> (search on the Unit code). eBooks are available at the publisher's website.

[View textbooks at the CQUniversity Bookshop](#)

IT Resources

You will need access to the following IT resources:

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

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Schedule

Week 1 - 13 Jul 2020

Module/Topic	Chapter	Events and Submissions/Topic
Probability, Risk and Uncertainty Analysis for Hydrologic and Hydraulic Design	Chin: Chapter 8	

Week 2 - 20 Jul 2020

Module/Topic	Chapter	Events and Submissions/Topic
Rainfall Intensity-Frequency-Duration	Chin: Chapter 9	

Week 3 - 27 Jul 2020

Module/Topic	Chapter	Events and Submissions/Topic
Design Rainfall Temporal Patterns and Losses	Chin: Chapter 9	

Week 4 - 03 Aug 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Runoff Routing	Chin: Chapter 10	
Week 5 - 10 Aug 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Reservoir and River Routing	Chin: Chapter 10	
Vacation Week - 17 Aug 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Week 6 - 24 Aug 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Design of Stormwater Collection Systems I	Chin: Chapter 11	Portfolio 1 Due: Week 6 Friday (28 Aug 2020) 9:00 am AEST
Week 7 - 31 Aug 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Design of Stormwater Collection Systems II	Chin: Chapter 11	
Week 8 - 07 Sep 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Design of Stormwater Management Systems I	Chin: Chapter 12	
Week 9 - 14 Sep 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Design of Stormwater Management Systems II	Chin: Chapter 12	
Week 10 - 21 Sep 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Culvert Design	Chin: Chapter 7	
Week 11 - 28 Sep 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Groundwater Systems	Chin: Chapter 14, 15	
Week 12 - 05 Oct 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Project Report		Portfolio 2 Due: Week 12 Friday (9 Oct 2020) 9:00 am AEST
Review/Exam Week - 12 Oct 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Exam Week - 19 Oct 2020		
Module/Topic	Chapter	Events and Submissions/Topic

Assessment Tasks

1 Portfolio 1

Assessment Type

Portfolio

Task Description

Portfolio 1 (50% of total unit marks) has two components:

- Written Assessment 1 (30%)
- Online Test 1 (20%)

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. Further details of various aspects are provided on the unit's Moodle website.

Written Assessment 1

This assessment task is designed to allow students to demonstrate their understanding of the topics covered during the first five weeks and covers LOs 1 and 2. The questions require demonstration of adequate presentation of water resources engineering problems, and the topics may include:

- Probability, Risk and Uncertainty Analysis for Hydrologic and Hydraulic Design
- Rainfall Intensity-Frequency-Duration
- Design Rainfall Temporal Patterns and Losses
- Runoff, Reservoir and River Routing

Online Test 1

This assessment task consists of one online Test (Quizzes) covering topics of Weeks 1-5. The main characteristics of the online Test are:

- You are allowed to attempt the test only two times within a given time frame as specified in the unit Schedule on Moodle website, the due date of the online Test is different from the rest of the Portfolio Items;
- There will be between 10 and 20 numerical questions;
- You have 90-180 minutes from when you start your attempt to submit your answers;
- On each attempt, all questions must be answered;
- The average score of the two attempts will be used, and if only one attempt that score will be used;
- Feedback is immediate as to whether the correct or wrong answer has been entered but no detailed information is given on the processes.
- The test opens on Monday of the submission week.

Assessment Due Date

Week 6 Friday (28 Aug 2020) 9:00 am AEST

Return Date to Students

Two weeks after submission

Weighting

50%

Minimum mark or grade

50%

Assessment Criteria

Assessment of the portfolio will be based on the assessment outcomes of the 2 different portfolio items. Each question of Written Assessment 1 will be assessed using three key criteria.

- problem formulation which covers clarity of the data given, clarity of the desired result, and assumptions stated;
- solution process which covers 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, clear presentation of workings with links to the desired results, and use of correct units;
- accuracy and correct results.

Referencing Style

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

Submission

Online

Learning Outcomes Assessed

- Apply skills in hydraulics and hydrology to water engineering design
- Conduct a hydrology assessment of a catchment

- Prepare team reports for water engineering projects

Graduate Attributes

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

2 Portfolio 2

Assessment Type

Portfolio

Task Description

Portfolio 2 (50% of total unit marks) has two components:

- Team Project Report (30%)
- Online Test (20%)

Omission of any of the above mentioned items from Portfolio 2 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 in this unit.

Team Project

The Team Project is on the design of a stormwater drainage system for a sub-division. It covers LOs 1, 2, 3 and 4. You will use TUFLOW software for the design. Some of the input data relevant to the chosen location of the project will be sourced from ARR2016 and QUDM. This team-based project is by design open-ended, and you are to make several assumptions. Details of the Team Project will be provided.

Online Test 2

This assessment task consists of one online Test (Quizzes) covering topics of Weeks 6-11. The main characteristics of the online Test are:

- You are allowed to attempt the test only two times within a given time frame as specified in the unit Schedule on Moodle website, the due date of the online Test is different from that of the rest of the Portfolio Items;
- There will be between 10 and 20 numerical questions;
- You have 90-180 minutes from when you start your attempt to submit your answers.
- On each attempt, all questions must be answered;
- The average score of the two attempts will be used, and if only one attempt that score will be used;
- Feedback is immediate as to whether the correct or wrong answer has been entered but no detailed information is given on the processes.
- The test opens on Monday of the submission week.

Assessment Due Date

Week 12 Friday (9 Oct 2020) 9:00 am AEST

Return Date to Students

The assessment will be returned after the certification of grades.

Weighting

50%

Minimum mark or grade

50%

Assessment Criteria

Assessment of the portfolio will be based on the assessment outcomes of the two different portfolio items. Assessment Criteria of each of the individual items are available on the unit's Moodle website. All Individual and team items must be considered acceptable (based on readability and presentation) by the unit coordinator to be eligible for grading. Each question of the project report will be assessed using three key criteria;

- problem formulation which covers clarity of the data given, clarity of the desired result, and assumptions stated;
- solution process which covers 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, clear presentation of

- workings with links to the desired results, and use of correct units;
- accuracy and correct results.

Referencing Style

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

Submission

Online Group

Submission Instructions

Group submission is for the Team Project only.

Learning Outcomes Assessed

- Apply skills in hydraulics and hydrology to water engineering design
- Design urban stormwater management systems
- Prepare team reports for water engineering projects

Graduate Attributes

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

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