



# CIVL2101

## Water and Wastewater Engineering

Session 2, In person-scheduled-weekday, North Ryde 2022

*School of Engineering*

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#### **Disclaimer**

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## General Information

Unit convenor and teaching staff

Lecturer

Bandita Mainali

[bandita.mainali@mq.edu.au](mailto:bandita.mainali@mq.edu.au)

Contact via Contact via Email

Room 112, 50 Waterloo Road

Thursday 10 am to 12 pm or Appointment via Email

Credit points

10

Prerequisites

CIVL1001

Corequisites

Co-badged status

Unit description

The objective of this unit is to introduce students to principles and processes involved in contaminants removal from drinking water and wastewater. Theory and conceptual design of systems for treating drinking water and municipal wastewater are discussed. Specific topics in water engineering include introduction to water resources, pollution in different types of water bodies, different water treatment processes, design and implementation, and drinking water regulations. Specific topics in wastewater engineering include introduction to wastewater treatment and process analysis, wastewater characteristics, wastewater flowrates and constituent loadings, physical, chemical, biological unit processes, disinfection, and wastewater treatment process selection, design and implementation. As a part of this unit, students will complete various design tasks in team projects for developing engineering solutions in designing water and wastewater treatment facilities.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

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

**ULO1:** Use parameters to characterize the constituents of drinking water and municipal

wastewater.

**ULO2:** Explain physical, chemical and biological unit operations in treatment processes.

**ULO3:** Select and apply appropriate options to design processes for treating drinking water and municipal wastewater based on engineering concepts.

**ULO4:** Communicate outcomes of analysing and designing different water and wastewater treatment processes in professionally varied ways.

## General Assessment Information

### Grading and passing requirement for unit

In order to pass this unit a student must obtain a mark of 50 or more for the unit (i.e. obtain a passing grade P/ CR/ D/ HD).

For further details about grading, please refer below in the policies and procedures section.

### Late Assessment Submission Penalty

In-class activities, or scheduled tests and exam must be undertaken at the time indicated in the unit guide. Should these activities be missed due to illness or misadventure, students may apply for Special Consideration.

From 1 July 2022, Students enrolled in Session based units with written assessments will have the following university standard late penalty applied. Please see <https://students.mq.edu.au/study/assessment-exams/assessments> for more information.

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark) will be applied each day a written assessment is not submitted, up until the 7<sup>th</sup> day (including weekends). After the 7<sup>th</sup> day, a grade of '0' will be awarded even if the assessment is submitted. Submission time for all written assessments is set at **11:55 pm**. A 1-hour grace period is provided to students who experience a technical concern.

For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, students need to submit an application for [Special Consideration](#).

### Assessments where Late Submissions will be accepted

In this unit, late submissions will accepted as follows:

- Mid-Semester Test/Quiz – NO, unless Special Consideration is Granted
- Project Report- YES, Standard Late Penalty applies
- Final Exam - NO, unless Special Consideration is Granted

### Final Examinations

Final examinations will typically take place at the end of the semester. If you receive [special consideration](#) for the final exam, a supplementary exam will be scheduled by the faculty during a supplementary exam period, typically about 3 to 4 weeks after the normal exam period. By

making a special consideration application for the final exam you are declaring yourself available for a resit during the supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure you are familiar with the policy prior to submitting an application. Approved applicants will receive an individual notification one week prior to the exam with the exact date and time of their supplementary examination.

EA Competency Standard		Unit Learning Outcomes
Knowledge and Skill Base	1.1 Comprehensive, theory-based understanding of the underpinning fundamentals applicable to the engineering discipline.	ULO1, ULO2
	1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing.	ULO2
	1.3 In-depth understanding of specialist bodies of knowledge	ULO1, ULO2
	1.4 Discernment of knowledge development and research directions	
	1.5 Knowledge of engineering design practice	ULO3
	1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice.	ULO3
Engineering Application Ability	2.1 Application of established engineering methods to complex problem solving	ULO2,ULO3
	2.2 Fluent application of engineering techniques, tools and resources.	
	2.3 Application of systematic engineering synthesis and design processes.	ULO3
	2.4 Application of systematic approaches to the conduct and management of engineering projects.	ULO3
Professional and Personal Attributes	3.1 Ethical conduct and professional accountability.	ULO3
	3.2 Effective oral and written communication in professional and lay domains.	ULO4
	3.3 Creative, innovative and pro-active demeanour.	
	3.4 Professional use and management of information.	
	3.5 Orderly management of self, and professional conduct.	
	3.6 Effective team membership and team leadership	ULO3,ULO4

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Mid-session quiz</a>	20%	No	Week 7, 5th of September
<a href="#">Project report</a>	40%	No	Week 12, 28th October
<a href="#">Final examination</a>	40%	No	Exam period

### Mid-session quiz

Assessment Type <sup>1</sup>: Quiz/Test

Indicative Time on Task <sup>2</sup>: 15 hours

Due: **Week 7, 5th of September**

Weighting: **20%**

Mid-session quiz

On successful completion you will be able to:

- Use parameters to characterize the constituents of drinking water and municipal wastewater.
- Explain physical, chemical and biological unit operations in treatment processes.

### Project report

Assessment Type <sup>1</sup>: Project

Indicative Time on Task <sup>2</sup>: 35 hours

Due: **Week 12, 28th October**

Weighting: **40%**

Water and wastewater projects

On successful completion you will be able to:

- Use parameters to characterize the constituents of drinking water and municipal wastewater.
- Explain physical, chemical and biological unit operations in treatment processes.
- Select and apply appropriate options to design processes for treating drinking water and

municipal wastewater based on engineering concepts.

- Communicate outcomes of analysing and designing different water and wastewater treatment processes in professionally varied ways.

## Final examination

Assessment Type <sup>1</sup>: Examination

Indicative Time on Task <sup>2</sup>: 35 hours

Due: **Exam period**

Weighting: **40%**

Final examination

On successful completion you will be able to:

- Use parameters to characterize the constituents of drinking water and municipal wastewater.
- Explain physical, chemical and biological unit operations in treatment processes.

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<sup>1</sup> If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Writing Centre](#) for academic skills support.

<sup>2</sup> Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

## Delivery and Resources

Textbook: Wastewater Engineering: Treatment and Resources Recovery by Metcalf & Eddy (Fifth Edition)

Lecture Slides, In class examples and Tutorials

## Unit Schedule

Refer to iLearn

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to

Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies](https://students.mq.edu.au/support/study/policies) (<https://students.mq.edu.au/support/study/policies>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit [Policy Central](https://policies.mq.edu.au) (<https://policies.mq.edu.au>) and use the [search tool](#).

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/student-conduct>

## Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](http://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

## The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

## Student Services and Support

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support including information about finances, tenancy and legal issues](#)

## Student Enquiries

Got a question? Ask us via [AskMQ](#), or contact [Service Connect](#).

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.