



# CIVL3101

## Hydraulics and Hydrology

Session 1, In person-scheduled-weekday, North Ryde 2022

*School of Engineering*

### Contents

<u>General Information</u>	2
<u>Learning Outcomes</u>	2
<u>General Assessment Information</u>	3
<u>Assessment Tasks</u>	3
<u>Delivery and Resources</u>	5
<u>Unit Schedule</u>	5
<u>Policies and Procedures</u>	5
<u>Changes from Previous Offering</u>	7
<u>Engineers Australia Competency Mapping</u>	7

#### Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

## General Information

Unit convenor and teaching staff

Unit Convenor

Fatemeh Salehi

[fatemeh.salehi@mq.edu.au](mailto:fatemeh.salehi@mq.edu.au)

Contact via Email

Room 121, 44 WR

Appointment via Email

Credit points

10

Prerequisites

130cp at 1000 level or above including MECH2002 or MECH202

Corequisites

Co-badged status

Unit description

The objective of this unit is to provide students with the scientific foundations and basic principles of hydraulic and hydrological methods in engineering applications. This unit requires the fundamental knowledge gained through successful completion of Fluid Mechanics in the second year. Specific topics in open channel hydraulics include uniform flow, gradually varied flow, changes in channel cross section, hydraulic structures, and rapidly varied flow. Specific topics in hydrology include fundamentals of hydrology and water resources, Hydrologic cycle, hyetograph and hydrograph analysis, rainfall-runoff relationships and flood routing, hydrologic statistics, and flood frequency analysis.

## 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:** Demonstrate an in-depth understanding of the basic principles of hydraulics and hydrology used in civil engineering.

**ULO2:** Analyse and design open channels including estimating water surface profiles, and hydraulic structures such as weirs and culverts.

**ULO3:** Carry out hydrological investigations of natural and urban catchments.

**ULO4:** Analyse and estimate floods for engineering design and forecasting.

## General Assessment Information

There are no Pracs or SGTA sessions in Week 1.

The on-campus activities start in Week 2. Students should contact the convenor asap if they are unable to get back to campus in time.

### 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.

### 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.

### Late submissions

Online quizzes, 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.

All other assessments must be submitted by 5:00 pm on their due date.

Should these assessments be missed due to illness or misadventure, students should apply for Special Consideration.

Assessments not submitted by the due date will receive a mark of zero.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Final Exam</u>	50%	No	TBA
<u>Assignment</u>	30%	No	See iLearn
<u>Midterm Exam</u>	20%	No	Week 7

## Final Exam

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

Indicative Time on Task <sup>2</sup>: 40 hours

Due: **TBA**

Weighting: **50%**

Final Examination assessing all material delivered throughout the unit.

On successful completion you will be able to:

- Demonstrate an in-depth understanding of the basic principles of hydraulics and hydrology used in civil engineering.
- Analyse and design open channels including estimating water surface profiles, and hydraulic structures such as weirs and culverts.
- Carry out hydrological investigations of natural and urban catchments.
- Analyse and estimate floods for engineering design and forecasting.

## Assignment

Assessment Type <sup>1</sup>: Quantitative analysis task

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

Due: **See iLearn**

Weighting: **30%**

Four assignments considered in the unit with a total weighting of 30%.

On successful completion you will be able to:

- Demonstrate an in-depth understanding of the basic principles of hydraulics and hydrology used in civil engineering.
- Analyse and design open channels including estimating water surface profiles, and hydraulic structures such as weirs and culverts.
- Carry out hydrological investigations of natural and urban catchments.
- Analyse and estimate floods for engineering design and forecasting.

## Midterm Exam

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

Indicative Time on Task <sup>2</sup>: 25 hours

Due: **Week 7**

Weighting: **20%**

This is a two-hours test assessing material delivered prior to this assessment.

On successful completion you will be able to:

- Demonstrate an in-depth understanding of the basic principles of hydraulics and hydrology used in civil engineering.
- Analyse and design open channels including estimating water surface profiles, and hydraulic structures such as weirs and culverts.

---

<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

Teaching materials provided on iLearn.

Scientific calculators

## Unit Schedule

Refer to iLearn and lecture notes for the unit schedule

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](https://policies.smq.edu.au) (<https://policies.smq.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.

## Changes from Previous Offering

N/A

## Engineers Australia Competency Mapping

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, ULO3
	1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing.	ULO1, ULO2, ULO3, ULO4
	1.3 In-depth understanding of specialist bodies of knowledge	ULO1, ULO3
	1.4 Discernment of knowledge development and research directions	
	1.5 Knowledge of engineering design practice	ULO1, ULO3

	1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice.	ULO1, ULO3
Engineering Application Ability	2.1 Application of established engineering methods to complex problem solving	ULO2, ULO4
	2.2 Fluent application of engineering techniques, tools and resources.	ULO2, ULO4
	2.3 Application of systematic engineering synthesis and design processes.	
	2.4 Application of systematic approaches to the conduct and management of engineering projects.	ULO2, ULO4
Professional and Personal Attributes	3.1 Ethical conduct and professional accountability.	
	3.2 Effective oral and written communication in professional and lay domains.	ULO2, ULO4
	3.3 Creative, innovative and pro-active demeanour.	
	3.4 Professional use and management of information.	ULO2, ULO4
	3.5 Orderly management of self, and professional conduct.	ULO2, ULO4
	3.6 Effective team membership and team leadership	