



CIVL3305

Design of Steel and Timber Structures

Session 2, In person-scheduled-weekday, North Ryde 2026

School of Engineering

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General Information

Unit convenor and teaching staff

Unit Convenor & Lecturer

Tohid Ghanbari-Ghazijahani

tohid.ghanbari@mq.edu.au

Contact via Email

9WW

To be confirmed by email.

Credit points

10

Prerequisites

130cp at 1000 level or above and CIVL2301

Corequisites

Co-badged status

Unit description

This unit introduces students to fundamental concepts and design principles for steel and timber structures, focusing on design requirements based on Australian standards (AS 4100 for steel and AS 1720 for timber) and relevant loading standards (AS 1170). Students will learn to design structural steel and timber members for primary loading systems in Civil Engineering, applying ultimate limit state principles and an introduction to serviceability criteria.

Key topics include the types and properties of structural steel elements, the design of steel structures under various loading conditions, the design of steel connections, the characteristics of structural timber, and the design of timber structures.

This unit provides a strong foundation for practical projects and final-year theses for students pursuing further studies in structural engineering.

Learning in this unit enhances student understanding of global challenges identified by the United Nations Sustainable Development Goals ([UNSDGs](#)) Industry, Innovation and Infrastructure; Sustainable Cities and Communities

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: Convey sound knowledge of the theory, concepts and principles for structural steel and timber design.

ULO2: Comprehend the knowledge of the applications of steel and timber design under each specific loading to create safe and accurate design outcomes according to the design requirements set out in Australian Standards.

ULO3: Perform computation-based prediction and assessment of design capacities of structural steel and timber members.

ULO4: Communicate effectively and professionally the outcomes of the structural steel and timber designs, and make meaningful relationships between concepts and the practice.

ULO5: Improve transferable skills such as team player, time-management, self-management, creative thinking, and compliance with codes.

General Assessment Information

See details of the assessments on the iLearn page.

Any request for a late submission must be supported by an approved Special Consideration application with sufficient supporting evidence and will be assessed in accordance with Macquarie University's policies.

Grading and passing requirements for the unit

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

For more details about grading, please refer to the policies and procedures section.

Late submissions

Assignments must be undertaken/submitted at the time indicated in the unit guide. Should these activities be missed due to illness or misadventure, students may apply for Special Consideration.

Late assessments are not accepted in this unit unless a [Special Consideration](#) has been submitted and approved.

Special Consideration

The [Special Consideration Policy](#) aims to support students who have been impacted by short-term circumstances or events that are serious, unavoidable, and significantly disruptive, and which may affect their performance in assessment. If you experience circumstances or events

that affect your ability to complete the written assessments in this unit on time, please inform the convenor and submit a Special Consideration request through ask.mq.edu.au.

Assessment Tasks

Name	Weighting	Hurdle	Due	Groupwork/Individual	Short Extension	AI Approach
Problem set	20%	No	30/10/2026	Individual	Yes	Open
Final Exam	50%	No	TBA	Individual	No	Observed
Design Project	30%	No	06/11/2026	Group	No	Open

Problem set

Assessment Type ¹: Problem-based task

Indicative Time on Task ²: 20 hours

Due: **30/10/2026**

Weighting: **20%**

Groupwork/Individual: Individual

Short extension ³: Yes

AI Approach: Open

Students will be provided with a problem set to be submitted at a single point in time.

On successful completion you will be able to:

- Convey sound knowledge of the theory, concepts and principles for structural steel and timber design.
- Comprehend the knowledge of the applications of steel and timber design under each specific loading to create safe and accurate design outcomes according to the design requirements set out in Australian Standards.
- Perform computation-based prediction and assessment of design capacities of structural steel and timber members.
- Communicate effectively and professionally the outcomes of the structural steel and timber designs, and make meaningful relationships between concepts and the practice.

Final Exam

Assessment Type ¹: Examination

Indicative Time on Task ²: 30 hours

Due: **TBA**

Weighting: **50%**

Groupwork/Individual: Individual

Short extension ³: No

AI Approach: Observed

You will undertake a final examination during the formal examination period.

On successful completion you will be able to:

- Convey sound knowledge of the theory, concepts and principles for structural steel and timber design.
- Comprehend the knowledge of the applications of steel and timber design under each specific loading to create safe and accurate design outcomes according to the design requirements set out in Australian Standards.
- Perform computation-based prediction and assessment of design capacities of structural steel and timber members.
- Communicate effectively and professionally the outcomes of the structural steel and timber designs, and make meaningful relationships between concepts and the practice.

Design Project

Assessment Type ¹: Professional task

Indicative Time on Task ²: 20 hours

Due: **06/11/2026**

Weighting: **30%**

Groupwork/Individual: Group

Short extension ³: No

AI Approach: Open

Students will submit a report about designing steel and timber structures incorporating major learning contents and also will include and discuss their observations and insight about the designed steel and timber structures.

On successful completion you will be able to:

- Convey sound knowledge of the theory, concepts and principles for structural steel and timber design.
- Comprehend the knowledge of the applications of steel and timber design under each specific loading to create safe and accurate design outcomes according to the design requirements set out in Australian Standards.
- Perform computation-based prediction and assessment of design capacities of structural steel and timber members.
- Communicate effectively and professionally the outcomes of the structural steel and timber designs, and make meaningful relationships between concepts and the practice.
- Improve transferable skills such as team player, time-management, self-management, creative thinking, and compliance with codes.

¹ 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
- [Academic Success](#) for academic skills support.

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

³ An automatic short extension is available for some assessments. Apply through the [Service Connect Portal](#).

Delivery and Resources

Delivery: Lecture and Workshop sessions

Methods of Communication: Communication for this unit will be conducted through your Macquarie University email account and announcements posted on iLearn. If you have any questions, please contact the unit convenor directly via the email address provided on the iLearn site.

Resources: Class Lecture Notes and Australian standards for steel and timber design and loading, detailed in the Lecture Notes.

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 connect.mq.edu.au or if you are a Global MBA student contact 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/>

Academic Success

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

- [Ask a Study Coach](#)
- [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 Advocacy](#) provides independent advice on MQ policies, procedures, and processes

Student Enquiries

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

IT Help

For help with University computer systems and technology, visit <https://students.mq.edu.au/support/technology/service-desk>.

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

There are no significant changes compared with previous offerings of the unit. However, any updates or improvements made during the session will be clearly communicated to students via iLearn. Students are expected to regularly monitor iLearn and ensure they follow the most up-to-date information and learning materials provided for the current offering of the unit.

Engineers Australia Competencies Mapping

EA Competency Standard	Competency Element	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, ULO3
	1.3 In-depth understanding of specialist bodies of knowledge.	ULO1, ULO2, ULO3
	1.4 Discernment of knowledge development and research directions.	
	1.5 Knowledge of engineering design practice.	ULO2, ULO3, ULO4
	1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice.	ULO2, ULO5
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.	ULO2, ULO3
	2.3 Application of systematic engineering synthesis and design processes.	ULO2, ULO3, ULO4
	2.4 Application of systematic approaches to the conduct and management of engineering projects.	ULO5

EA Competency Standard	Competency Element	Unit Learning Outcomes
Professional and Personal Attributes	3.1 Ethical conduct and professional accountability.	ULO2, ULO5
	3.2 Effective oral and written communication in professional and lay domains.	ULO4
	3.3 Creative, innovative and pro-active demeanour.	ULO4, ULO5
	3.4 Professional use and management of information.	ULO2, ULO3, ULO4
	3.5 Orderly management of self, and professional conduct.	ULO5
	3.6 Effective team membership and team leadership.	ULO5

Unit information based on version 2026.02 of the [Handbook](#)