



# CIVL2301

## Structural Analysis

Session 2, Special circumstances, North Ryde 2021

*School of Engineering*

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#### **Disclaimer**

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#### **Session 2 Learning and Teaching Update**

The decision has been made to conduct study online for the remainder of Session 2 for all units WITHOUT mandatory on-campus learning activities. Exams for Session 2 will also be online where possible to do so.

This is due to the extension of the lockdown orders and to provide certainty around arrangements for the remainder of Session 2. We hope to return to campus beyond Session 2 as soon as it is safe and appropriate to do so.

Some classes/teaching activities cannot be moved online and must be taught on campus. You should already know if you are in one of these classes/teaching activities and your unit convenor will provide you with more information via iLearn. If you want to confirm, see the list of [units with mandatory on-campus classes/teaching activities](#).

Visit the [MQ COVID-19 information page](#) for more detail.

## General Information

Unit convenor and teaching staff

Convenor, Lecturer

Sorn Vimonsatit

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Contact via (02) 9850 9145; [sorn.vimonsatit@mq.edu.au](mailto:sorn.vimonsatit@mq.edu.au)

44 Waterloo Rd

Thursday 3pm-5pm, or other time by pre-appointment

Lab Demonstration, Tutor

Rajab Abousnina

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G60, 44 Waterloo Rd

Thursday 3pm - 5pm

Lecturer, Tutor

Hyuk Lee

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44 Waterloo Rd

Friday 3pm - 5pm

Credit points

10

Prerequisites

CIVL1001

Corequisites

Co-badged status

### Unit description

In this unit, students will be introduced to different aspects of mechanics of solids and structural analysis of trusses, beams and frames. This provides the students with the skills to analyse structures as a foundation skill to different structural designs. Students will develop their understanding of the physical performance of solid structural members, which are associated with a variety of structural systems in Civil Engineering. They also gain an understanding of the theory and application of structural analysis as it applies to trusses, beams and frames. Specific topics include basic concept of deformation compatibility; stresses and strains in structural elements, states of stress such as shear, bending, and torsion, displacements and deformations, energy methods for bar and beam structures; simple buckling; deformation of simple frames and cell box beams, response of linear elastic structures under different mechanical and environmental effects, and structural behaviour considering the distribution of internal forces.

This unit provides an essential foundation for subsequent structural design subjects such as Structural Design 1 and Structural Design 2 in the third year

## 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 a sound knowledge of the theory, concepts, and principles in solid mechanics
- ULO2:** Analyse reactions, axial forces, bending moments, shear forces, deflection, and stresses in structural elements and systems
- ULO3:** Perform qualitative and quantitative structural analysis and structural behaviour of different vertical and lateral loads
- ULO4:** Report the structural analysis process and outcomes to a professional standard in both oral and written forms

## 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 submissions and Resubmissions

For assignments handed in late, the following penalties apply 0-48hrs: -50%, >48hrs: -100%. Extenuating circumstances will be considered upon lodgement of a formal notice of disruption of studies. Resubmissions of work are generally allowed unless stated prior or otherwise.

### Additional information

1. The only invigilated assessment is an in-class test to take place in the Week-8 lecture. 2. Hurdle assessments: Attendance of >80% of the practicals and workshops are required, which are 2 hours weekly. 3. Rubrics for all assessments are standards-based and will be made available on iLearn by Week 1.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Regular problem sets</u>	20%	No	Weekly
<u>Practical Report</u>	20%	No	Weeks 3, 5, 9, & 12
<u>Mid session quiz</u>	20%	No	Week 8
<u>Final Examination</u>	40%	No	TBA

### Regular problem sets

Assessment Type <sup>1</sup>: Problem set

Indicative Time on Task <sup>2</sup>: 14 hours

Due: **Weekly**

Weighting: **20%**

Students will be provided with regular problem sets to complete. Five in total

On successful completion you will be able to:

- Convey a sound knowledge of the theory, concepts, and principles in solid mechanics
- Analyse reactions, axial forces, bending moments, shear forces, deflection, and stresses in structural elements and systems
- Perform qualitative and quantitative structural analysis and structural behaviour of different vertical and lateral loads

### Practical Report

Assessment Type <sup>1</sup>: Lab report

Indicative Time on Task <sup>2</sup>: 14 hours

Due: **Weeks 3, 5, 9, & 12**

Weighting: **20%**

Report on practical work completed, including written and oral report.

On successful completion you will be able to:

- Convey a sound knowledge of the theory, concepts, and principles in solid mechanics
- Analyse reactions, axial forces, bending moments, shear forces, deflection, and stresses in structural elements and systems
- Perform qualitative and quantitative structural analysis and structural behaviour of different vertical and lateral loads
- Report the structural analysis process and outcomes to a professional standard in both oral and written forms

## Mid session quiz

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

Indicative Time on Task <sup>2</sup>: 13 hours

Due: **Week 8**

Weighting: **20%**

Mid session quiz

On successful completion you will be able to:

- Convey a sound knowledge of the theory, concepts, and principles in solid mechanics
- Analyse reactions, axial forces, bending moments, shear forces, deflection, and stresses in structural elements and systems

## Final Examination

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

Indicative Time on Task <sup>2</sup>: 28 hours

Due: **TBA**

Weighting: **40%**

Final examination assessing content throughout semester

On successful completion you will be able to:

- Convey a sound knowledge of the theory, concepts, and principles in solid mechanics
- Analyse reactions, axial forces, bending moments, shear forces, deflection, and stresses in structural elements and systems
- Perform qualitative and quantitative structural analysis and structural behaviour of different vertical and lateral loads

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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

Lectures 2 hours, weekly

Practical and workshop 2 hours, weekly

Notes are provided in iLearn

Access to McGraw Hill Connect, Text books

## Unit Schedule

Weekly Schedule to be provided in class

## 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](#)
- [Grade Appeal Policy](#)
- [Complaint Management 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](mailto:ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## Student Support

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

## Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- [Getting help with your assignment](#)
- [Workshops](#)
- [StudyWise](#)
- [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

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](mailto:ask.mq.edu.au)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## 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

Not applicable. This Unit is offered for the first time.

