CIVL2301
Structural Analysis
Session 2, Weekday attendance, North Ryde 2021
School of Engineering

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Notice
Some on-campus classes have moved online for the first two weeks of Session, before returning to campus in Week 3. If you are studying a unit outside of the primary Session 2 timetable, please contact your teaching staff team for further details.

Some classes/teaching activities cannot be moved online and must be taught on campus. To find out if you are enrolled in one of these classes/teaching activities, you can check to see if your unit is on the list of units with mandatory on-campus classes/teaching activities. Your Unit Convenor will provide more information via an iLearn announcement when your iLearn unit becomes available.
# General Information

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>Email</th>
<th>Contact</th>
<th>Office Location</th>
<th>Availability</th>
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<tbody>
<tr>
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<td>Friday 3pm - 5pm</td>
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| 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://students.mq.edu.au/important-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 is 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

<table>
<thead>
<tr>
<th>Name</th>
<th>Weighting</th>
<th>Hurdle</th>
<th>Due</th>
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<tbody>
<tr>
<td>Regular problem sets</td>
<td>20%</td>
<td>No</td>
<td>Weekly</td>
</tr>
<tr>
<td>Practical Report</td>
<td>20%</td>
<td>No</td>
<td>Weeks 3, 5, 9 &amp; 12</td>
</tr>
<tr>
<td>Mid session quiz</td>
<td>20%</td>
<td>No</td>
<td>Week 8</td>
</tr>
<tr>
<td>Final Examination</td>
<td>40%</td>
<td>No</td>
<td>TBA</td>
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### Regular problem sets

**Assessment Type**: Problem set  
**Indicative Time on Task**: 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**: Lab report  
**Indicative Time on Task**: 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 1:** Quiz/Test  
**Indicative Time on Task 2:** 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 1:** Examination  
**Indicative Time on Task 2:** 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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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
• the Learning Skills Unit 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

Delivery and Resources

Lectures 2 hours, weekly
Practical and Workshop 2 hours, weekly
Lecture notes will be provided in iLearn
McGraw Hill Connect, Textbooks

Unit Schedule

The weekly schedule will be provided in class.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). 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 (Note: The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)

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

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).
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 or if you are a Global MBA student contact 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) 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 Enquiry Service

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

Equity 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.

IT Help

For help with University computer systems and technology, visit 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 running for the first time.