



MECH1001

Introduction to Mechanical Engineering

Session 2, Special circumstances 2021

School of Engineering

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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

Lecturer, Unit convenor

Ming Li

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Contact via +61-2-9850-9532

9 Wally's Walk, Rm324

3-5pm Monday

Credit points

10

Prerequisites

(PHYS1510 or PHYS140) and (MATH135 or MATH132 or MATH1010 or MATH1015)

Corequisites

Co-badged status

Unit description

The unit introduces the broad field of Mechanical engineering concepts. It will cover fundamental mechanics knowledge that is required to analyse forces in both static and dynamic physical system and also to perform fundamental fluid mechanics analysis. At the end of the unit, students are expected to demonstrate the ability to analyse and solve basic mechanics problems fluently.

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: Perform structural analysis of three-dimensional machine frames and structures.

ULO2: Demonstrate proficiency in applying mathematical knowledge to solve fundamental engineering dynamic problems.

ULO3: Solve problems in both static and dynamic systems.

ULO4: Demonstrate proficiency in the presentation of introductory level mechanical engineering solutions.

General Assessment Information

Late submissions

Late submissions of assignments will be subject the following penalty: 1 to 24 hours -20%, 24 hours to 48 hours -40%, greater than 48 hours will result in no mark being awarded. Quizzes cannot be taken late. Missing a tutorial will result in a grade of 0 for that tutorial. Extenuating circumstances will be considered upon lodgement of a formal notice of disruption of studies.

Hurdle Requirement

The final examination is a hurdle requirement because it is the only reliable assessment of individual performance for this unit. A grade of 45% or more in the final examination is a condition of passing this unit. If you are given a second opportunity to sit the final examination as a result of failing to meet the minimum mark required, you will be offered that chance during the supplementary examination period and will be notified of the exact day and time after the publication of final results for the unit. The second attempt at a hurdle assessment is graded as pass fail. The maximum grade for a second attempt is the hurdle threshold grade.

Participation in 10 tutorial sessions is a hurdle requirement. Note that tutorials will start in week 2.

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), and a grade of at least 45% on the final exam, and participate in at least 10 tutorials.

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

Final Examinations

Final examinations will take place at the end of the semester. For further information, please refer to the Examination Timetable website on www.mq.edu.au

Assessment Tasks

Name	Weighting	Hurdle	Due
Workshop Participation	20%	Yes	Every Week
Final Exam	50%	Yes	TBA
Assignments	10%	No	Week 6, Week 11

Name	Weighting	Hurdle	Due
Online quiz	20%	No	Week 4, Week 7, Week 10, Week 12

Workshop Participation

Assessment Type ¹: Quantitative analysis task

Indicative Time on Task ²: 12 hours

Due: **Every Week**

Weighting: **20%**

This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)

This is a hurdle assessment task. 12 workshop sessions are run to assess and assist student learning and deepen engagement. Workshop session will not run in Week 1. Participation in at least 10 workshop sessions is required to pass the unit.

On successful completion you will be able to:

- Perform structural analysis of three-dimensional machine frames and structures.
- Demonstrate proficiency in applying mathematical knowledge to solve fundamental engineering dynamic problems.
- Solve problems in both static and dynamic systems.
- Demonstrate proficiency in the presentation of introductory level mechanical engineering solutions.

Final Exam

Assessment Type ¹: Examination

Indicative Time on Task ²: 20 hours

Due: **TBA**

Weighting: **50%**

This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)

This is a hurdle assessment task. The final exam will be hurdle assessment task testing mechanical concepts.

On successful completion you will be able to:

- Perform structural analysis of three-dimensional machine frames and structures.
- Demonstrate proficiency in applying mathematical knowledge to solve fundamental engineering dynamic problems.
- Solve problems in both static and dynamic systems.
- Demonstrate proficiency in the presentation of introductory level mechanical engineering solutions.

Assignments

Assessment Type ¹: Quantitative analysis task

Indicative Time on Task ²: 16 hours

Due: **Week 6, Week 11**

Weighting: **10%**

There will be two assignments, each worth 5%. A portion of the available grades will be awarded for presentation of work. Markers WILL NOT grade poorly organized or illegible scans or drafts. Well presented work is highly legible, annotated, well structured, and presented with page numbers and student IDs on every page.

On successful completion you will be able to:

- Perform structural analysis of three-dimensional machine frames and structures.
- Demonstrate proficiency in applying mathematical knowledge to solve fundamental engineering dynamic problems.
- Solve problems in both static and dynamic systems.
- Demonstrate proficiency in the presentation of introductory level mechanical engineering solutions.

Online quiz

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 24 hours

Due: **Week 4, Week 7, Week 10, Week 12**

Weighting: **20%**

There will be four online quizzes, each worth 5%. The quiz will be open for a specific time and all students must take the quiz during that time. All students are to ensure that they have their own resources (Computers, tablet, smart phone etc) to take part in the quiz.

On successful completion you will be able to:

- Perform structural analysis of three-dimensional machine frames and structures.
- Demonstrate proficiency in applying mathematical knowledge to solve fundamental engineering dynamic problems.
- Solve problems in both static and dynamic systems.
- Demonstrate proficiency in the presentation of introductory level mechanical engineering solutions.

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 [Writing Centre](#) 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

Text books:

"Vector Mechanics for Engineers: Statics and Dynamics 12th Edition", by Beer, Johnston, Mazurek, Cornwell and Self

Resources Required:

You must bring a log book to tutorial. Tutors will only mark solutions written into this log book. You should obtain a quality scientific calculator and be familiar with its use.

Unit Schedule

- Week 1: Introduction to Engineering Mechanics
- Week 2: 2D and 3D force systems
- Week 3: Moment of force and force coupling
- Week 4: FREE BODY DIAGRAMS
- Week 5: Trusses
- Week 6: Friction
- Week 7: In-lecture Quiz
- Week 8: Centroids
- Week 9: Moment of Inertia
- Week 10: Rectilinear motion of particles
- Week 11: Curvilinear motion of particles

- Week 12: In-lecture Quiz
- Week 13: Review

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 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 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

If you are a Global MBA student contact 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/.

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.