



MECH2001

Engineering Dynamics

Session 2, Weekday attendance, North Ryde 2021

School of Engineering

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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.

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

Dr Nazmul Huda

nazmul.huda@mq.edu.au

Contact via 02 9850 2249

44 Waterloo Road, Room 118

Wednesday 12.00 - 1.00 PM/ Thursday 12.00 - 1.00/ Otherwise via Appointment

Credit points

10

Prerequisites

(MECH1001 or ENGG150 or ENGG1050) and (MATH1020 or MATH1025 or MATH136 or MATH133)

Corequisites

Co-badged status

Unit description

The unit examines Newton's laws in the context of engineering dynamics. The unit leads students to an understanding of Newton's laws as applied to the effect of force on solids in engineering. The unit initially examines the issues of work and energy, with a focus on impulse, momentum and impact. The unit assesses the roles of particle kinematics, particle kinetics, rigid body dynamics, plane kinematics and plane kinetics.

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: Develop an understanding of Newton's laws applied to the effect of force on solids in engineering applications

ULO2: Apply mathematical skills to solve engineering dynamics problems

ULO3: Build problem-solving skills for a range of real-world engineering dynamics applications

ULO4: Develop effective communication skills through written reports and group work

activity

General Assessment Information

Student Responsibilities

Be familiar with University policy and College procedures and act in accordance with those policies and procedures.

It is the responsibility of the student to retain a copy of any work submitted. Students must produce these documents upon request. Copies should be retained until the end of the grade appeal period each term.

The student is to perform the required due diligence for their assessment grade and rectify as soon as possible upon finding any errors.

Notifications

Formal notification of assessment tasks, grading rubrics, and due dates will be posted on iLearn. Although all reasonable measures to ensure the information is accurate, The University reserves the right to make changes without notice. Each student is responsible for checking iLearn for changes and updates.

Report and Assignment Tasks

Assignment Problems will be posted on iLearn at least one week before their submission date. Assignment solutions will be posted within a week after the submission date. Submissions will not be accepted once the solution is posted.

Assignment submissions and plagiarism policies

All assignments and reports must be submitted electronically through iLearn (in pdf format). Submissions will undergo plagiarism checkers using the Turnitin software and any work deemed to have a 30% or higher similarity score may incur an academic penalty. For more details on the policies of academic penalties relating to academic honesty, please refer to the policies and procedures section below.

Submissions are expected to be typed set in a logical layout and sequence. Markers WILL NOT grade poorly organized or illegible scans or drafts. The expected workload includes the preparation of final copies and clear diagrams.

Late submissions

Late submissions of the assessment tasks will not be accepted without prior arrangements made at least one week before the submission date. Extenuating circumstances will be considered upon lodgement of a formal notice of disruption of studies.

Grading and passing requirement for unit

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

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).

The unit will be graded according to the Macquarie University Grading policy. The following grades will be used according to the listed numerical range:

ASSESSMENT GRADES AND STATUS

GRADE	RANGE	STATUS ('Standard Grade' in AMIS)	DESCRIPTION
HD	85-100	Pass	Provides consistent evidence of deep and critical understanding in relation to the learning outcomes. There is substantial originality, insight, or creativity in identifying, generating, and communicating competing arguments, perspectives or problem-solving approaches; critical evaluation of problems, their solutions, and their implications; creativity in the application as appropriate to the program.
D	75-84	Pass	Provides evidence of integration and evaluation of critical ideas, principles, and theories, distinctive insight, and ability in applying relevant skills and concepts in relation to learning outcomes. There is a demonstration of frequent originality or creativity in defining and analyzing issues or problems and providing solutions; and the use of means of communication appropriate to the program and the audience.
CR	65-74	Pass	Provides evidence of learning that goes beyond replication of content knowledge or skills relevant to the learning outcomes. There is a demonstration of substantial understanding of fundamental concepts in the field of study and the ability to apply these concepts in a variety of contexts; convincing argumentation with appropriate coherent justification; communication of ideas fluently and clearly in terms of the conventions of the program.
P	50-64	Pass	Provides sufficient evidence of the achievement of learning outcomes. There is a demonstration of understanding and application of fundamental concepts of the program; routine argumentation with acceptable justification; communication of information and ideas adequately in terms of the conventions of the program. The learning attainment is considered satisfactory or adequate or competent or capable in relation to the specified outcomes.
F	0-49	Fail	Does not provide evidence of attainment of learning outcomes. There is missing or partial or superficial or faulty understanding and application of the fundamental concepts in the field of study; missing, undeveloped, inappropriate or confusing argumentation; incomplete, confusing, or lacking communication of ideas in ways that give little attention to the conventions of the program.

Final Examinations

Final examinations will typically 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
<u>Lab report</u>	18%	No	Week 8, Week 10, Week 13
<u>Assignments</u>	20%	No	Week 7 and Week 12
<u>Practice-based task on weekly tutorials</u>	12%	No	Week 3, 5, 7, 9, 11, 13
<u>Final Exam</u>	50%	No	TBA - Final Exam Week

Lab report

Assessment Type **1**: Lab report

Indicative Time on Task **2**: 21 hours

Due: **Week 8, Week 10, Week 13**

Weighting: **18%**

Lab report for each laboratory-based activity on week 5, 8 and 13

On successful completion you will be able to:

- Build problem-solving skills for a range of real-world engineering dynamics applications
- Develop effective communication skills through written reports and group work activity

Assignments

Assessment Type **1**: Practice-based task

Indicative Time on Task **2**: 20 hours

Due: **Week 7 and Week 12**

Weighting: **20%**

Two assignments on problem-solving activity, 10% each.

On successful completion you will be able to:

- Develop an understanding of Newton's laws applied to the effect of force on solids in engineering applications
- Apply mathematical skills to solve engineering dynamics problems
- Build problem-solving skills for a range of real-world engineering dynamics applications

Practice-based task on weekly tutorials

Assessment Type ¹: Participatory task

Indicative Time on Task ²: 15 hours

Due: **Week 3, 5, 7, 9, 11, 13**

Weighting: **12%**

Practice-based task every fortnight, six problems, 2 marks each

On successful completion you will be able to:

- Develop an understanding of Newton's laws applied to the effect of force on solids in engineering applications
- Apply mathematical skills to solve engineering dynamics problems
- Build problem-solving skills for a range of real-world engineering dynamics applications

Final Exam

Assessment Type ¹: Examination

Indicative Time on Task ²: 35 hours

Due: **TBA - Final Exam Week**

Weighting: **50%**

Final Examination to be conducted at the end of the semester.

On successful completion you will be able to:

- Develop an understanding of Newton's laws applied to the effect of force on solids in engineering applications
- Apply mathematical skills to solve engineering dynamics problems
- Build problem-solving skills for a range of real-world engineering dynamics applications

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

Primary Text: Vector Mechanics for Engineers: Dynamics - 10th Edition in SI Units by Beer, Johnston, and Cornwell.

Supporting Text: Mechanics for Engineers: Dynamics - 13th Edition by R. C. Hibbeler and K. B. Yap

The technology used and required: All course-related materials, lecture slides, tutorial problems, assignments will be posted in ilearn. Students are required to check ilearn on a regular basis.

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.