UNSW Course Outline

ENGG1300 Engineering Mechanics (MERE delivery) - 2024

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General Course Information

Course Code : ENGG1300
Year : 2024
Term : Summer
Teaching Period : U1
Is a multi-term course? : No
Faculty : Faculty of Engineering
Academic Unit : School of Mechanical and Manufacturing Engineering
Delivery Mode : Multimodal
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

This is the foundational mechanics course for students in Aerospace, Civil, Environmental, Manufacturing, Mechanical, Mechatronics and Mining Engineering, with content as follows: Revision of vectors, resultants and components, moments; The free body diagram; Equilibrium of

planar rigid objects; Equilibrium of systems of co-planar multi-force members and planar trusses; Frames and Machines; Springs; Friction; Mass centre, centroids, distributed forces; Internal forces in beams; Introduction to 3-dimensional statics; Plane particle kinematics, including curvilinear and relative motion; Plane particle kinetics, including equations of motion, work-energy-power, friction, impulse-momentum, impact; Kinetics of systems of particles; Introduction to plane kinematics of rigid bodies, types of rigid body motion (translation, rotation about a fixed axis); Mass moment of inertia, parallel axis theorem, moment of inertia for various shapes, Introduction to plane kinetics of rigid bodies, rigid body in plane motion, equations of motion, work-energy for a rigid body.

Course Aims

This is a first course in Engineering Mechanics, which is the study of the interaction of matter and forces in engineering contexts. It is evident that all objects in the world around us are composed of matter, and they are all subject to forces. As such, Engineering Mechanics is the foundational tool for engineers, and forms the underlying basis for understanding more advanced fields such as Solid Mechanics, Fluid Dynamics, Rigid Body Dynamics, Aerodynamics, Structures, Control and many aspects of Advanced Design.

This course is a direct pre-cursor to second stage courses such as ENGG2400 Mechanics of Solids 1 and MMAN2300 Engineering Mechanics 2.

The aim of this course can be stated simply: For everyone involved (staff, students, demonstrators) to progress further towards becoming really good engineers.

Our field of endeavour will be the concepts and applications of Introductory Engineering Mechanics. Additionally, we will not measure our progress as the number of equations or facts or theories that we know. Rather, as our degree of transformation into someone who sees, understands, can make relevant and accurate predictions, and communicates about the world around us through the lens of Engineering Mechanics.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Apply principles of Engineering Mechanics to solve structural problems: forces, moments, equilibrium, structural analysis, and momentum and energy for particles and rigid bodies.
CLO2 : Discern the relevant principles that must be applied to describe the equilibrium or motion of engineering systems and identify necessary information in the context.
CLO3 : Demonstrate an ability to communicate clearly and precisely about technical matters related to Engineering Mechanics.
CLO4 : Accomplish hands on tasks that require the application of knowledge of Engineering Mechanics.
CLO5 : Demonstrate professional communication, both written and oral, that includes mathematical, graphical and diagrammatic elements.
CLO6 : Produce individual work by leveraging a collaborative environment, helping and receiving help from peers professionally and ethically.

Course Learning Outcomes	Assessment Item
CLO1 : Apply principles of Engineering Mechanics to solve structural problems: forces, moments, equilibrium, structural analysis, and momentum and energy for particles and rigid bodies.	• Mid-term Quiz • Lab Report • Final Exam
CLO2 : Discern the relevant principles that must be applied to describe the equilibrium or motion of engineering systems and identify necessary information in the context.	• Mid-term Quiz • Lab Report • Final Exam
CLO3 : Demonstrate an ability to communicate clearly and precisely about technical matters related to Engineering Mechanics.	• Final Exam
CLO4 : Accomplish hands on tasks that require the application of knowledge of Engineering Mechanics.	• Lab Report • Final Exam
CLO5 : Demonstrate professional communication, both written and oral, that includes mathematical, graphical and diagrammatic elements.	• Lab Report
CLO6 : Produce individual work by leveraging a collaborative environment, helping and receiving help from peers professionally and ethically.	• Lab Report

Learning and Teaching Technologies

Moodle - Learning Management System | Microsoft Teams

Additional Course Information

This is a first course in Engineering Mechanics. It is a direct pre-cursor to second stage courses such as ENGG2400 Mechanics of Solids 1 and MMAN2300 Engineering Mechanics 2.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Mid-term Quiz Assessment Format: Individual	20%	Due Date: Week 2: 08 January - 14 January
Lab Report Assessment Format: Individual	30%	Due Date: Week 5: 29 January - 04 February
Final Exam Assessment Format: Individual	50%	

Assessment Details

Mid-term Quiz

Assessment Overview

The quiz will assess the Statics part only. The online quiz will be open on Moodle during a specific time. NO extra time is allowed. Marks will be available immediately after the quiz. Feedbacks will be given in the following tutorial session.

Course Learning Outcomes

- CLO1 : Apply principles of Engineering Mechanics to solve structural problems: forces, moments, equilibrium, structural analysis, and momentum and energy for particles and rigid bodies.
- CLO2 : Discern the relevant principles that must be applied to describe the equilibrium or motion of engineering systems and identify necessary information in the context.

Assignment submission Turnitin type

Not Applicable

Lab Report

Assessment Overview

Lab report instruction and criteria for assessment will be published on Moodle before the lab sessions. The completed lab reports must be submitted online using Moodle within by deadline. Resubmission opportunities may be provided at the discretion of the course convenor. Late submission without approved special considerations will be panelised by losing 5% of the marks

per day after the due date.

Course Learning Outcomes

- CLO1 : Apply principles of Engineering Mechanics to solve structural problems: forces, moments, equilibrium, structural analysis, and momentum and energy for particles and rigid bodies.
- CLO2 : Discern the relevant principles that must be applied to describe the equilibrium or motion of engineering systems and identify necessary information in the context.
- CLO4 : Accomplish hands on tasks that require the application of knowledge of Engineering Mechanics.
- CLO5 : Demonstrate professional communication, both written and oral, that includes mathematical, graphical and diagrammatic elements.
- CLO6 : Produce individual work by leveraging a collaborative environment, helping and receiving help from peers professionally and ethically.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

Final Exam

Assessment Overview

Final examination will be held on Moodle. Detailed instructions will be available before the exam.

Course Learning Outcomes

- CLO1 : Apply principles of Engineering Mechanics to solve structural problems: forces, moments, equilibrium, structural analysis, and momentum and energy for particles and rigid bodies.
- CLO2 : Discern the relevant principles that must be applied to describe the equilibrium or motion of engineering systems and identify necessary information in the context.
- CLO3 : Demonstrate an ability to communicate clearly and precisely about technical matters related to Engineering Mechanics.
- CLO4 : Accomplish hands on tasks that require the application of knowledge of Engineering Mechanics.

Assignment submission Turnitin type

Not Applicable

General Assessment Information

Grading Basis

Standard

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 1 January - 7 January	Lecture	Tuesday, Wednesday, Friday 11:00 - 14:00
	Workshop	Tuesday, Wednesday, Friday 18:00 - 20:00
Week 2 : 8 January - 14 January	Lecture	Monday 11:00 - 14:00
	Workshop	Monday 18:00 - 20:00
	Laboratory	Wednesday, Thursday, Friday 9:00 - 17: 00
Week 3 : 15 January - 21 January	Lecture	Monday, Wednesday, Friday 11:00 - 14:00
	Workshop	Monday, Wednesday, Friday 18:00 - 20:00
Week 4 : 22 January - 28 January	Lecture	Monday, Wednesday, Friday 11:00 - 14:00
	Workshop	Monday, Wednesday, Friday 18:00 - 20:00
Week 5 : 29 January - 4 February	Workshop	Monday 11:00 - 12:00

Attendance Requirements

Attendance is paramount in student learning. Where possible, students should attend ALL scheduled classes.

For prolonged and extended periods of absences due to illness, students may apply for special consideration through myUNSW.

Course Resources

Prescribed Resources

MS Teams and Moodle are the core online platforms in this course.

Online lectures and workshops will be held on MS Teams. Lectures will be recorded and recording links will be shared on both platforms.

All core course information and materials can be found on Moodle. Lecture slides and workshop materials will be uploaded on regular basis.

Due dates, assessment details and announcements will be leased on Moodle and MS Teams. It is the students' responsibility to consistently check these two platforms and stay up to date with course progression and requirements.

Recommended Resources

Lecture notes and workshop materials will be available on Moodle. These are essential resources for this course.

Recommended textbooks (available through the UNSW bookshop).

Meriam J.L., Kraige L.G. Engineering Mechanics:

- Vol. 1 – Statics, 7th Edition, SI Version. Wiley. (referred to as M&K(S))
- Vol. 2 – Dynamics, 7th Edition, SI Version. Wiley. (referred to as M&K(D))

Course Evaluation and Development

Feedback on the course is gathered periodically using various means, including the UNSW myExperience process, informal discussion in the final class for the course, and the School's Student/Staff meetings. Your feedback is taken seriously, and continual improvements are made to the course based, in part, on such feedback.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Yu Jing				Teams	No	Yes

Other Useful Information

Academic Information

I. Special consideration and supplementary assessment

If you have experienced an illness or misadventure beyond your control that will interfere with your assessment performance, you are eligible to apply for Special Consideration prior to, or within 3 working days of, submitting an assessment or sitting an exam.

Please note that UNSW has a Fit to Sit / Submit rule, which means that if you sit an exam or submit a piece of assessment, you are declaring yourself fit enough to do so and cannot later apply for Special Consideration.

For details of applying for Special Consideration and conditions for the award of supplementary assessment, please see the information on UNSW's Special Consideration page.

II. Administrative matters and links

All students are expected to read and be familiar with UNSW guidelines and polices. In particular, students should be familiar with the following:

- Attendance
- UNSW Email Address
- Special Consideration
- Exams
- Approved Calculators
- Academic Honesty and Plagiarism
- Equitable Learning Services

III. Equity and diversity

Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course convener prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equitable Learning Services. Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.

Note: This course outline sets out the description of classes at the date the Course Outline is published. The nature of classes may change during the Term after the Course Outline is published. Moodle or your primary learning management system (LMS) should be consulted for the up-to-date class descriptions. If there is any inconsistency in the description of activities between the University timetable and the Course Outline/Moodle/LMS, the description in the Course Outline/ Moodle/LMS applies.

Academic Honesty and Plagarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. *Plagiarism at UNSW is defined as using the words or ideas of others and passing them off as your own.*

Plagiarism is a type of intellectual theft. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement. UNSW has produced a website with a wealth of resources to support students to understand and avoid plagiarism, visit:

student.unsw.edu.au/plagiarism. The Learning Centre assists students with understanding academic integrity and how not to plagiarise. They also hold workshops and can help students one-on-one.

You are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting and the proper referencing of sources in preparing all assessment tasks.

Repeated plagiarism (even in first year), plagiarism after first year, or serious instances, may also be investigated under the Student Misconduct Procedures. The penalties under the procedures can include a reduction in marks, failing a course or for the most serious matters (like plagiarism in an honours thesis or contract cheating) even suspension from the university. The Student Misconduct Procedures are available here:

www.gs.unsw.edu.au/policy/documents/studentmisconductprocedures.pdf

Submission of Assessment Tasks

Work submitted late without an approved extension by the course coordinator or delegated authority is subject to a late penalty of five percent (5%) of the maximum mark possible for that assessment item, per calendar day.

The late penalty is applied per calendar day (including weekends and public holidays) that the assessment is overdue. There is no pro-rata of the late penalty for submissions made part way through a day. This is for all assessments where a penalty applies.

Work submitted after five days (120 hours) will not be accepted and a mark of zero will be awarded for that assessment item.

For some assessment items, a late penalty may not be appropriate. These will be clearly indicated in the course outline, and such assessments will receive a mark of zero if not completed by the specified date. Examples include:

- Weekly online tests or laboratory work worth a small proportion of the subject mark;
- Exams, peer feedback and team evaluation surveys;
- Online quizzes where answers are released to students on completion;
- Professional assessment tasks, where the intention is to create an authentic assessment that has an absolute submission date; and,

- Pass/Fail assessment tasks.

Faculty-specific Information

Engineering Student Support Services – The Nucleus - enrolment, progression checks, clash requests, course issues or program-related queries

Engineering Industrial Training – Industrial training questions

UNSW Study Abroad – study abroad student enquiries (for inbound students)

UNSW Exchange – student exchange enquiries (for inbound students)

UNSW Future Students – potential student enquiries e.g. admissions, fees, programs, credit transfer

Phone

(+61 2) 9385 8500 – Nucleus Student Hub

(+61 2) 9385 7661 – Engineering Industrial Training

(+61 2) 9385 3179 – UNSW Study Abroad and UNSW Exchange (for inbound students)

School-specific Information

Review of Results

The purpose of a review of results is if there was a marking error. Review of results is for when you have cause to believe that there is a marking error. Review of Results cannot be used to get feedback. If you would like feedback for assessments prior to the final exam, you are welcome to contact the course convenor directly. No feedback will be provided on final exams.

Use of AI

The use of AI is prohibited unless explicitly permitted by the course convenor. Please respect this and be aware that penalties will apply when unauthorised use is detected, such as through Turnitin. If the use of generative AI, such as ChatGPT, is allowed in a specific assessment, they must be properly credited, and your submissions must be substantially your own work.

School Contact Information

Location

UNSW Mechanical and Manufacturing Engineering

Ainsworth building J17, Level 1

Above Coffee on Campus

Hours

9:00–5:00pm, Monday–Friday*

*Closed on public holidays, School scheduled events and University Shutdown

Web

School of Mechanical and Manufacturing Engineering

Engineering Student Support Services

Engineering Industrial Training

UNSW Study Abroad and Exchange (for inbound students)

UNSW Future Students

Phone

(+61 2) 9385 8500 – Nucleus Student Hub

(+61 2) 9385 7661 – Engineering Industrial Training

(+61 2) 9385 3179 – UNSW Study Abroad and UNSW Exchange (for inbound students)

(+61 2) 9385 4097 – School Office**

**Please note that the School Office will not know when/if your course convenor is on campus or available

Email

Engineering Student Support Services – current student enquiries

- e.g. enrolment, progression, clash requests, course issues or program-related queries

Engineering Industrial Training – Industrial training questions

UNSW Study Abroad – study abroad student enquiries (for inbound students)

UNSW Exchange – student exchange enquiries (for inbound students)

UNSW Future Students – potential student enquiries

- e.g. admissions, fees, programs, credit transfer

School Office – School general office administration enquiries

- NB: the relevant teams listed above must be contacted for all student enquiries. The School will only be able to refer students on to the relevant team if contacted

Important Links

- Student Wellbeing
- Urgent Mental Health & Support
- Equitable Learning Services
- Faculty Transitional Arrangements for COVID-19
- Moodle
- Lab Access
- Computing Facilities
- Student Resources
- Course Outlines
- Makerspace
- UNSW Timetable
- UNSW Handbook