Mechanical and Manufacturing Engineering

Course Outline

1. Staff contact details

Contact details for Course Convenor

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Summary and Aims of the course

This is your 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.

For many of you, this course is a direct pre-cursor to two Year 2 courses: MMAN2400 . 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 high-quality 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.

Student learning outcomes

This course is designed to address the learning outcomes below and the corresponding Engineers Australia Stage 1 Competency Standards for Professional Engineers as shown.

The full list of Stage 1 Competency Standards may be found in Appendix A.

After successfully completing this course, you should be able to:

Learning Outcome		EA Stage 1 Competencies
1.	Explain, describe and apply principles and components of Engineering Mechanics. Principles and components include: vectors, forces, torques, mass and inertia, particles and rigid bodies in two dimensions, equilibrium conditions, linear momentum and impact, kinetic and potential energy and internal forces and bending moments in beams.	1.1, 1.2, 2.1, 3.2
2.	Define engineering systems in a mechanically useful way and describe their equilibrium or motion in mathematical and graphical fashion and be able to relate this description to the principles of engineering mechanics.	1.1, 1.2, 2.1, 2.2, 3.2
3.	Discern the relevant principles that must be applied to describe the equilibrium or motion of engineering systems and discriminate between relevant and irrelevant information in the context.	1.1, 1.2, 2.1

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4.

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For some assessment items, a late penalty may not be appropriate. These are clearly indicated in the course outline, and such assessments receive a mark of zero if not

7. Expected resources for students

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))

Students are strongly recommended to purchase both these textbooks as they will be used both in this course and in later mechanics courses.

UNSW Library website: https://www.library.unsw.edu.au/
Moodle: https://moodle.telt.unsw.edu.au/login/index.php

8. Course evaluation and development