

ENGR20004 Engineering Mechanics

Credit Points:	12.50
Level:	2 (Undergraduate)
Dates & Locations:	2010, Parkville This subject commences in the following study period/s: January, Parkville - Taught on campus. Semester 1, Parkville - Taught on campus. Semester 2, Parkville - Taught on campus. On campus only
Time Commitment:	Contact Hours: 36 hours of lectures and 24 hours of lab/tutorials. Total Time Commitment: 120 hours
Prerequisites:	Postgraduate - # Enrolment in a Master of Engineering program Undergraduate - # 800-002 Engineering Systems Design 2 (/view/2010/800-002) , Summer Semester or Semester 2, 12.50 Cr Pts OR # 880-103 Constructing Environments (/view/2010/880-103) , Semester 1 or Semester 2, 12.50 Cr Pts
Corequisites:	None
Recommended Background Knowledge:	640-131 Physics 1 (/view/2010/640-131) , 620-155 Calculus 2 (/view/2010/620-155) , 620-156 Linear Algebra (/view/2010/620-156)
Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: http://www.services.unimelb.edu.au/disability/
Coordinator:	Assoc Prof Chris Manzie
Contact:	Melbourne School of Engineering Office Building 173, Grattan Street The University of Melbourne VIC 3010 Australia General telephone enquiries + 61 3 8344 6703 + 61 3 8344 6507 Facsimiles + 61 3 9349 2182 + 61 3 8344 7707 Email eng-info@unimelb.edu.au (eng-info@unimelb.edu.au)
Subject Overview:	This subject provides an introduction to modelling the stresses and deformations that occur when axial, torsional and flexural loads are applied to a body in static equilibrium; as well as the translational and rotational motions that eventuate in a body upon different load applications. Topics to be covered include free-body diagrams; equilibrium; force systems; stresses, moments and energy; coordinate systems; deflections, kinetics and vibration.

	This material will be complemented with laboratory and project based approaches to learning.
Objectives:	<p>Upon completion of this subject students should be able to:</p> <ul style="list-style-type: none"> # Formulate problems in statics and dynamics by choosing suitable system boundaries and identifying relevant forces and coordinate system # Analyse the equilibrium of systems of forces in two and three dimensions # Determine the loads and stresses experienced by components of common engineering structures such as trusses, frames and beams # Describe and analyse the motion of particles and rigid bodies using three-dimensional vectors # Apply the principles of impulse-momentum and work-energy to solve problems in the dynamics of simple machines and vibrating structures
Assessment:	<p>Assessment includes: Two one hour midsemester tests, one in each of weeks 5 and 10 (2 x 5%). Assignments and laboratories (4 x 7.5%) due in weeks 3,6, 9 and 12 of the semester. The total length of the assignments will not be more than 5000 words. One three hour end of semester exam (60%) Students will need to get a mark of at least 50% in the exam to pass this subject.</p>
Prescribed Texts:	None
Breadth Options:	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> # Bachelor of Arts (https://handbook.unimelb.edu.au/view/2010/B-ARTS) # Bachelor of Music (https://handbook.unimelb.edu.au/view/2010/B-MUS) <p>You should visit learn more about breadth subjects (http://breadth.unimelb.edu.au/breadth/info/index.html) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.</p>
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	<p>On completion of the subject students should have the following skills:</p> <ul style="list-style-type: none"> # Ability to apply knowledge of basic science and engineering fundamentals # Ability to communicate effectively, not only with engineers but also with the community at large # In-depth technical competence in at least one engineering discipline # Ability to undertake problem identification, formulation and solution; # Ability to function effectively as an individual and in multi-disciplinary and multi-cultural teams, with the capacity to be leader or manager as well as an effective team member
Notes:	Students intending to continue with Civil Engineering are encouraged to enrol in semester 1, all other students in Semester 2.
Related Course(s):	<p>Bachelor of Engineering Bachelor of Engineering (Environmental) and Bachelor of Arts Bachelor of Engineering (Environmental) and Bachelor of Commerce Bachelor of Science</p>
Related Majors/Minors/Specialisations:	<p>Civil (Engineering) Systems Master of Engineering (Civil) Master of Engineering (Environmental) Master of Engineering (Mechanical) Master of Engineering (Mechatronics) Master of Engineering (Structural) Physical (Environmental Engineering) Systems</p>