MCEN40009 Mechanics 4

Credit Points:	12.50
Level:	4 (Undergraduate)
Dates & Locations:	2010, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
Time Commitment:	Contact Hours: Forty hours of lectures and eight hours of tutorials and laboratory work Total Time Commitment: Estimated 120 hours
Prerequisites:	The prerequisite for this subject is **436-354 Mechanics 3 (/view/2010/436-354)** or equivalent
Corequisites:	N/A
Recommended Background Knowledge:	N/A
Non Allowed Subjects:	N/A
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:	Dr Daniel Riley
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:	Unit 1, Mechanics of Solids:Topics covered include mathematical theory of elasticity in three dimensions; reduction to two dimensions; plane stress and plane strain; Airy's stress function and its application to practical problems; finite difference and finite element methods; and torsion. Unit 2, Dynamics:Topics include vibration of discrete and continuous systems; modal analysis; vibration isolation; torsional and bending vibrations; vibration absorbers; and system identification.
Objectives:	Upon completion, students should be able to # Formulate physical and mathematical models of mechanical systems for stress analysis, # Formulate physical and mathematical models of mechanical systems for vibration analysis, # Obtain solutions using analytical and/or numerical methods and have an increased understanding of the stress analysis of complex structures. # Obtain solutions using analytical and/or numerical methods and have an increased understanding of vibration analysis of complex structures.

Assessment:	Two 2-hour examinations (40% each) and An assignment not exceeding 20 pages including computations, diagrams, tables and computer output (20%).
Prescribed Texts:	None
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	# 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 utilise a systems approach to design and operational performance # Expectation of the need to undertake lifelong learning, capacity to do so # Capacity for independent critical thought, rational inquiry and self-directed learning # Intellectual curiosity and creativity, including understanding of the philosophical and methodological bases of research activity # Openness to new ideas and unconventional critiques of received wisdom # Profound respect for truth and intellectual integrity, and for the ethics of scholarship
Related Course(s):	Bachelor of Engineering (EngineeringManagement)Mechanical&Manufacturing Bachelor of Engineering (Mechanical &Manufacturing) and Bachelor of Arts Bachelor of Engineering (Mechanical &Manufacturing)& Bachelor of Science Bachelor of Engineering (Mechanical &Manufacturing)/Bachelor of Commerce Bachelor of Engineering (Mechanical and Manufacturing Engineering) Bachelor of Engineering (Mechatronics) and Bachelor of Computer Science Bachelor of Engineering(Mechanical & Manufacturing) and Bachelor of Laws