MCEN30016 Mechanical Dynamics

Credit Points:	12.50
Level:	3 (Undergraduate)
Dates & Locations:	This subject is not offered in 2013.
Time Commitment:	Contact Hours: 36 hours of lectures, up to 12 hours of tutorials and 6 hours of laboratory sessions. Total Time Commitment: 120 hours
Prerequisites:	**Postgraduate -** Admission into an engineering coursework Masters degree **Undergraduate -** **Subject** / **Study Period Commencement:** / **Credit Points:** ENGR20004 Engineering Mechanics — Not offered 2013 — 12.50 AND either **Subject** / **Study Period Commencement:** / **Credit Points:** MAST20029 Engineering Mathematics — Not offered 2013 — 12.50 OR both of the following subjects **Subject** / **Study Period Commencement:** / **Credit Points:** MAST20009 Vector Calculus — Not offered 2013 — 12.50 MAST20030 Differential Equations — Not offered 2013 — 12.50
Corequisites:	Note: MAST20030 Differential Equations may also be taken concurrently.
Recommended Background Knowledge:	**Subject** / **Study Period Commencement:** / **Credit Points:** PHYC10003 Physics 1 — Not offered 2013 — 12.50 PHYC10004 Physics 2: Physical Science & Technology — Not offered 2013 — 12.50
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
Contact:	saman@unimelb.edu.au

Subject Overview:	This subject is concerned with the three-dimensional dynamics of rigid bodies, and with the modelling of a variety of mechanical devices as linear time-invariant systems, and the calculation of their responses in the time and frequency domains.
Objectives:	At the conclusion of this subject students should be able to - # derive mathematical models of mechanical and electro-mechanical systems; # perform basic system analysis of mechanical systems using tools in time and frequency domains; # derive equations of motion considering dynamics of rigid bodies in 3-D; # analyise vibrations of higher order systems.
Assessment:	Four assignments totalling no more than 5000 words (equally weighted 30% total). Up to two of the assignments will be based on laboratory practical exercises. One 3 hour end of semester written examination (70%).
Prescribed Texts:	None
Breadth Options:	This subject potentially can be taken as a breadth subject component for the following courses: # **Bachelor of Arts (https://handbook.unimelb.edu.au/view/2013/B-ARTS)** # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2013/B-COM)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2013/B-ENVS)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2013/B-MUS)** 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.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	On completion of this subject, students should have developed the following skills - # The ability to apply knowledge of science and engineering fundamentals. # The ability to undertake problem identification, formulation, and solution. # The ability to utilise a systems approach to complex problems and to design and operational performance. # The ability to undertake problem identification, formulation, and solution.
Related Majors/Minors/ Specialisations:	B-ENG Mechanical Engineering stream Master of Engineering (Mechanical) Master of Engineering (Mechatronics) Mechanical Systems Science-credited subjects - new generation B-SCI and B-ENG. Core selective subjects for B-BMED.