

MCEN30016 Mechanical Dynamics

Credit Points:	12.50															
Level:	3 (Undergraduate)															
Dates & Locations:	2011, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.															
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:	<p>Postgraduate -</p> <p># Admission into an engineering coursework Masters degree</p> <p>Undergraduate -</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>ENGR20004 Engineering Mechanics</td> <td>January, Semester 1, Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p>AND one of the following:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MAST20029 Engineering Mathematics</td> <td>Summer Term, Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>MAST30023 Differential Equations for Engineers</td> <td>Semester 1</td> <td>12.50</td> </tr> </tbody> </table> <p>Note: MAST30023 may also be taken concurrently.</p>	Subject	Study Period Commencement:	Credit Points:	ENGR20004 Engineering Mechanics	January, Semester 1, Semester 2	12.50	Subject	Study Period Commencement:	Credit Points:	MAST20029 Engineering Mathematics	Summer Term, Semester 1, Semester 2	12.50	MAST30023 Differential Equations for Engineers	Semester 1	12.50
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Corequisites:	None															
Recommended Background Knowledge:	<table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>PHYC10003 Physics 1</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>PHYC10004 Physics 2: Physical Science & Technology</td> <td>Semester 2</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	PHYC10003 Physics 1	Semester 1	12.50	PHYC10004 Physics 2: Physical Science & Technology	Semester 2	12.50						
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Non Allowed Subjects:	436-353 Mechanics 2															
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:	Prof Saman Halgamuge															
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															

	<ul style="list-style-type: none"> # 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 # Analyse vibrations of higher order systems
Assessment:	Four assignments totalling no more than 5000 words (equally weighted 30% total). Up to two of the above assignments will be based on laboratory practical exercises. One 3 hour end of semester written examination (70%).
Prescribed Texts:	TBA
Recommended Texts:	N/A
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/2011/B-ARTS) # Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2011/B-COM) # Bachelor of Environments (https://handbook.unimelb.edu.au/view/2011/B-ENVS) # Bachelor of Music (https://handbook.unimelb.edu.au/view/2011/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 this subject, students should have developed the following skills -</p> <ul style="list-style-type: none"> # Ability to apply knowledge of science and engineering fundamentals # Ability to undertake problem identification, formulation, and solution # Ability to utilise a systems approach to complex problems and to design and operational performance # Ability to undertake problem identification, formulation, and solution
Related Course(s):	Bachelor of Science
Related Majors/Minors/Specialisations:	<p>B-ENG Mechanical Engineering stream Master of Engineering (Mechanical) Master of Engineering (Mechatronics) Mechanical Systems</p>