

# MCEN30019 Mechatronic Systems Design

<b>Credit Points:</b>	12.5											
<b>Level:</b>	3 (Undergraduate)											
<b>Dates &amp; Locations:</b>	2016, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.											
<b>Time Commitment:</b>	Contact Hours: 24 hours of lectures, 24 hours of workshops and tutes Total Time Commitment: Estimated 170 hours											
<b>Prerequisites:</b>	<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>12.5</td> </tr> <tr> <td>ELEN20005 Foundations of Electrical Networks</td> <td>January, Semester 2</td> <td>12.5</td> </tr> </tbody> </table>			Subject	Study Period Commencement:	Credit Points:	ENGR20004 Engineering Mechanics	January, Semester 1, Semester 2	12.5	ELEN20005 Foundations of Electrical Networks	January, Semester 2	12.5
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ELEN20005 Foundations of Electrical Networks	January, Semester 2	12.5										
<b>Corequisites:</b>	None											
<b>Recommended Background Knowledge:</b>	None											
<b>Non Allowed Subjects:</b>	<table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MCEN90024 Mechatronics Design</td> <td>Semester 2</td> <td>12.5</td> </tr> </tbody> </table>			Subject	Study Period Commencement:	Credit Points:	MCEN90024 Mechatronics Design	Semester 2	12.5			
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<b>Core Participation Requirements:</b>	<p>&lt;p&gt;For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry.&lt;/p&gt; &lt;p&gt;It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: &lt;a href="http://services.unimelb.edu.au/disability"&gt;http://services.unimelb.edu.au/disability&lt;/a&gt;&lt;/p&gt;</p>											
<b>Coordinator:</b>	Assoc Prof Denny Oetomo											
<b>Contact:</b>	Dr Denny Oetomo doetomo@unimelb.edu.au											
<b>Subject Overview:</b>	<p>Mechatronics Design aims to provide students with knowledge, skills, and exposure to the integrated design process of mechatronics systems.</p> <p>It provides the appreciation of the components of mechatronics systems, such as sensors and actuators, the fundamental principal of operation for these components, their strengths and weaknesses, and its operational characteristics. This leads into the design process of integrated iterative design, division of a system into sub-systems, component selection and sizing, and the inclusion of various considerations into a quantifiably justified design.</p> <p>The subject also provides wider background knowledge of mechatronics, exposing students to current state-of-the-arts and challenges. Design exercises with increasing degrees of complexity will form the continuous assessment in this subject to put the material covered in the lecture into practice.</p> <p>Topics covered include:</p> <ul style="list-style-type: none"> <li># Mechatronics design concepts:</li> </ul>											

	<ul style="list-style-type: none"> <li># Evolution of mechatronics design and challenges</li> <li># Case studies.</li> </ul>
<b>Learning Outcomes:</b>	<p><b>INTENDED LEARNING OUTCOMES (ILOs)</b></p> <p>At the conclusion of this subject students should have the skills to:</p> <ol style="list-style-type: none"> <li>1. Evaluate and compare diverse methods of engineering design in constituent disciplines of mechatronics to appreciate their usage in mechatronic product design</li> <li>2. Apply systems engineering perspective in designing mechatronic systems</li> <li>3. Investigate further evolvement of mechatronics in new directions with the advancement of constituent technologies.</li> </ol>
<b>Assessment:</b>	Attendance and participation in weekly workshops in weeks 3 to 10, with written assessments not exceeding 25 pages per student in total (approx 36 hours of work), worth 30%. ILOs 1-3 are addressed in these reports. Design reports weeks 6 to 11, not exceeding 25 pages per student, approximately 20 to 30 hours of work (20%). ILOs 1-3 are addressed in these reports. One written 2 hour end of semester closed book examination (50%). The examination is a hurdle and must be passed to pass the subject. ILOs 1-3 are addressed in the exam.
<b>Prescribed Texts:</b>	None
<b>Breadth Options:</b>	This subject is not available as a breadth subject.
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Generic Skills:</b>	<p>On completion of this subject students should have developed the following skills:</p> <ul style="list-style-type: none"> <li>• Ability to utilise a systems approach to complex problems and to design and operational performance</li> <li>• Proficiency in engineering design</li> <li>• Capacity for creativity and innovation</li> <li>• Ability to function effectively as an individual and in multidisciplinary and multicultural teams, as a team leader or manager as well as an effective team member.</li> </ul>
<b>Related Majors/Minors/Specialisations:</b>	<p>Master of Engineering (Mechatronics)</p> <p>Mechatronics Systems</p> <p>Science-credited subjects - new generation B-SCI and B-ENG.</p> <p>Selective subjects for B-BMED</p>