MCEN90024 Mechatronics Design

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2012, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 24 hours of lectures and 24 hours of tutorials, guided design exercises and lab work. Total Time Commitment: 120 hours
Prerequisites:	

Subject	Study Period Commencement:	Credit Points:
ELEN20005 Foundations of Electrical Networks	January, Semester 2	12.50

Plus

Subject	Study Period Commencement:	Credit Points:
MCEN30016 Mechanical Dynamics	Semester 1	12.50

OR

Subject	Study Period Commencement:	Credit Points:
ELEN30012 Signals and Systems	Semester 2	12.50

Corequisites:	N/A
Recommended Background Knowledge:	N/A
Non Allowed Subjects:	436285 Design and Materials 1 436286 Design and Materials 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:	Dr Denny Oetomo
Contact:	**doetomo@unimelb.edu.au (https://mce_host/faces/htdocs/mailto:doetomo@unimelb.edu.au)**
Subject Overview:	Topics covered include - • Mechatronics design concepts - integrative design concepts, analogies between electrical and mechanical systems, analog/digital transducers • Mechatronic system modelling and simulation methods - stochastic discrete event system modelling using Automata, hardware description languages for design, hardware-in-the-loop methods, hardware-software co-designs • Mechatronic system design - optimal division into sub systems, prototype development, market considerations and E-commerce compatibility, appraisal of benefit and cost

	• Evolution of mechatronics design - concepts of MEMS and nanotechnology and design challenges • Case studies - various case studies and hands-on lab modules
Objectives:	At the conclusion of this subject students should be able to - • Evaluate and compare diverse methods of engineering design in constituent disciplines of mechatronics to appreciate their usage in mechatronic product design • Apply systems engineering perspective in designing mechatronic systems • Investigate further evolvement of mechatronics in new directions with the advancement of constituent technologies • Demonstrate hands-on experience in applying mechatronics design
Assessment:	One two-hour end-of-semester examination (50%). A series of assignments (projects and labs), completed throughout the semester not exceeding 5000 words or equivalent per student (50% total). Students must obtain a mark of at least 40% for all continuing assessment tasks in order to pass the subject.
Prescribed Texts:	N/A
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 utilise a systems approach to complex problems and to design and operational performance • Proficiency in engineering design • Capacity for creativity and innovation • 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
Related Majors/Minors/ Specialisations:	Master of Engineering (Mechatronics)