# MCEN90040 Mechatronics Capstone Project

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| **Credit Points:** | 25 |
| **Level:** | 9 (Graduate/Postgraduate) |
| **Dates & Locations:** | 2016, Parkville<br>This subject commences in the following study period/s:<br>Year Long, Parkville - Taught on campus.<br>Semester 1, Parkville - Taught on campus.<br>Semester 2, Parkville - Taught on campus. |
| **Time Commitment:** | Contact Hours: 12 x 1 hour lectures plus regular meetings with supervisors Total Time Commitment: Estimated 400 hours per student |
| **Prerequisites:** | **MCEN30019 Mechatronics Systems Design (../../view/2016/MCEN30019)**<br>OR<br>**MCEN90024 Mechatronics Design (../../view/2016/MCEN90024)**<br>Plus any 3 900 level eng subjects |
| **Corequisites:** | None |
| **Recommended Background Knowledge:** | None |
| **Non Allowed Subjects:** | |

| Subject | Study Period Commencement: | Credit Points: |
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| MCEN90022 Capstone Project | Year Long, Semester 1 | 25 |
| ELEN90067 Electrical Engineering Capstone Project | Year Long, Semester 1 | 25 |
| ELEN90070 Electrical Engineering Capstone ProjectA | Semester 1, Semester 2 | 12.5 |

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| **Core Participation Requirements:** | 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. 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: <a href="http://services.unimelb.edu.au/disability">http://services.unimelb.edu.au/disability</a> |
| **Coordinator:** | Prof Chris Manzie |
| **Contact:** | Prof Chris Manzie<br>Email: manziec@unimelb.edu.au |
| **Subject Overview:** | The subject involves undertaking a substantial project conducted in a small group (typically 2-3 students) requiring an independent investigation on an approved topic in advanced engineering design or research. Students will present their findings in a conference podium presentation format, held at the end of semester two.<br>The emphasis of the project can be associated with either:<br>• A well-defined project description, often based on a task required by an external, industrial client. Students will be tutored in the synthesis of practical solutions to complex technical problems within a structured working environment, as if they were professional engineering practitioners; or |

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| | • A project description that will require an explorative approach, where students will pursue outcomes associated with new knowledge or understanding, within the mechanical science disciplines, often as an adjunct to existing academic research initiatives.<br>It is expected that the Mechatronics Capstone Project will incorporate findings associated with both well-defined professional practice and research principles. |
| **Learning Outcomes:** | Intended Learning Outcomes (ILOs)<br>Having completed this subject it is expected that the student be able to:<br>1 Conduct a mechatronic engineering project<br>2 Effectively communicate the outcomes of various stages of an engineering project<br>3 Apply standard engineering project management tools<br>4 Identify standard organisational structures and the relative merits of different approaches<br>5 Describe the role of standards in engineering projects. |
| **Assessment:** | Final report not exceeding 15 pages per student plus 30 pages, (excluding appendices) due in the end-of-semester 2 at the beginning of examination period (approximately 180-200 hours of working per student) (50%) Continuous assessment of the lecture component of the subject, comprising submitted work not exceeding 25 pages over semester 1 (approximately 75-80 hours of working per student) (20%) Oral examination not exceeding 60 minutes towards the end of semester 2 (approximately 75-80 hours of working per student) (20%) Public display of project outcomes towards the end of semester 2 (approximately 35-40 hours of working per student) (10%). Intended Learning Outcomes (ILOs) 1, 2, and 3 are assessed in all assessment components. ILOs 4 and 5 are primarily assessed in the continuous assessment of the project management component of the course. |
| **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:** | On completion of this subject students should have the following skills:<br>• Critical thinking and critical judgement of assumptions adopted<br>• Interpretation and analysis of data<br>• Application of theory to practice<br>• Ability to communicate effectively, not only with engineers but also with the community at large<br>• Ability to utilise a systems approach to design and operational performance<br>• Ability to function effectively as an individual and in multi-disciplinary and multi-cultural teams, with the capacity to be a leader or manager as well as an effective team member<br>• Understanding of the social, cultural, global and environmental responsibilities of the professional engineer, and the need for sustainable development<br>• Understanding of the principles of sustainable design and development<br>• Understanding of professional and ethical responsibilities and commitment to them<br>• Capacity for independent critical thought, rational inquiry and self-directed learning<br>• Openness to new ideas and unconventional critiques of received wisdom<br>• Ability to apply knowledge of basic science and engineering fundamentals<br>• Ability to undertake problem identification, formulation and solution. |
| **Related Majors/Minors/ Specialisations:** | Master of Engineering (Mechatronics) |