

## Master of Engineering (Mechatronics)

<b>Year and Campus:</b>	2013
<b>Coordinator:</b>	Dr Chris Manzie
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<b>Overview:</b>	<p>Mechatronics engineering blends the disciplines of mechanical, electrical and software engineering around the principles of control systems and automation. Mechatronic engineers create and work with systems that have various degrees of automation, which is increasingly a factor of everyday life with examples including robots, automobiles and CNC machines all featuring levels of computer control.</p> <p>Objectives:</p>
<b>Objectives:</b>	<p>This objectives of the course are that graduates should -</p> <ul style="list-style-type: none"> <li># Have a sound fundamental understanding of the scientific principles underlying technology</li> <li># Have acquired the educational and professional standards of the professional institutions and boards with which the School's courses are accredited</li> <li># Possess a broad knowledge base of their chosen discipline, and of other disciplines so as to facilitate effective communication with those other professionals with whom engineers routinely communicate</li> <li># Understand the basic principles underlying the management of physical, human and financial resources</li> <li># Have acquired the mathematical and computational skills necessary for the solution of theoretical and practical problems for further professional development and for meeting future changes in technology</li> <li># Possess analytical, problem-solving and, where relevant, design skills, including those appropriate for sustainable development</li> <li># Have verbal and written communication skills that enable them to make a meaningful contribution to the changes facing our society</li> <li># Have developed professional ethics and responsibility towards the profession and the community</li> <li># Have an appreciation of the interpersonal and management skills required by engineers in undertaking professional activities and</li> <li># Understand the social, cultural, global and environmental responsibilities of the professional engineer, and the need for sustainable development</li> </ul>
<b>Structure &amp; Available Subjects:</b>	<p>The Master of Engineering (Mechatronics) consists of 300 points of study - 287.5 points core and 12.5 points elective subjects as detailed below.</p> <p>Advanced standing will be awarded for equivalent subjects taken in prior study to applicants on the following basis:</p> <ul style="list-style-type: none"> <li># a maximum of 100 points for applicants with a 4 year Bachelor of Engineering or equivalent.</li> <li># a maximum of 100 points for applicants with a 3 year undergraduate degree. Students entering with a three year bachelor degree must complete at least 200 points of study within the Masters of Engineering. In cases where applicants have completed the equivalent of more than 100 points of core masters subjects, discipline specific electives must be taken to fulfill the 200 minimum masters study requirement.</li> </ul> <p>Note: applicants from the University of Melbourne with:</p> <ul style="list-style-type: none"> <li># An appropriate "Engineering System" major will receive 100 points of advanced standing. Applicants who have completed more than 100 points of core subjects in their</li> </ul>

undergraduate degree will obtain exemption for the cores taken but will need to replace the points in excess of 100 points with elective subjects.

**Subject Options:**

Total 300 points - 287.5 points core (compulsory) and 12.5 points elective subjects from the lists below. Students must complete all 300 points of subjects, including all core subjects, or have advanced standing or exemption.

The core and elective subjects are those listed below. The order of subjects is one way of progressing through the course - students who meet subject requisites may tailor their individual study plan to take into account advanced standing and their preferred study load. Students plan their study on-line, however Melbourne School of Engineering course advisors are available to assist students with individual study plans.

Students who enter without advanced standing for Engineering Mechanics should commence in Summer Semester or in Semester 2 to assist with course planning.

**Suggested first 100 points:**

Suggested study plan for the first 100 points:

# 100 points Core

Core (Total 100 points)

Subject	Study Period Commencement:	Credit Points:
MAST20029 Engineering Mathematics	Not offered 2013	12.50
ENGR20004 Engineering Mechanics	Not offered 2013	12.50
ELEN20005 Foundations of Electrical Networks	Not offered 2013	12.50
COMP20005 Engineering Computation	Semester 1	12.50
MCEN30017 Mechanics & Materials	Not offered 2013	12.50
MCEN30016 Mechanical Dynamics	Not offered 2013	12.50
MCEN30018 Thermodynamics and Fluid Mechanics	Semester 1	12.50
ENGR90021 Engineering Communication	Not offered 2013	12.50

**Suggested second 100 points:**

Suggested study plan for the second 100 points:

# 100 points Core

Core (Total 100 points)

Subject	Study Period Commencement:	Credit Points:
ELEN90055 Control Systems	Not offered 2013	12.50
ELEN30009 Electrical Network Analysis and Design	Not offered 2013	12.50
ELEN30010 Digital System Design	Not offered 2013	12.50
SWEN30006 Software Modelling and Design	Not offered 2013	12.50
COMP90041 Programming and Software Development	Not offered 2013	12.50
MCEN90024 Mechatronics Design	Not offered 2013	12.50
ELEN90066 Embedded System Design	Not offered 2013	12.50
MCEN90009 Dynamics of Machines	Not offered 2013	12.50

**Suggested third 100 points:**

Suggested study plan for the third 100 points:

- # 87.5 points Core
- # 12.5 points Mechatronics Elective from the list below

Core (Total 87.5 points)

Subject	Study Period Commencement:	Credit Points:
MCEN90022 Capstone Project	Semester 1	25
MCEN90011 Manufacturing Systems	Not offered 2013	12.50
MCEN90015 Thermodynamics	Not offered 2013	12.50
COMP90038 Algorithms and Complexity	Not offered 2013	12.50
MCEN90017 Advanced Motion Control	Semester 2	12.50
ELEN90064 Advanced Control Systems	Semester 2	12.50

### Mechatronics Electives

Total 12.5 points

Students must select at least one of these electives -

Subject	Study Period Commencement:	Credit Points:
MCEN90028 Robotics and Automation Systems	Not offered 2013	12.50
MCEN90027 Simulation Of Mechatronic Systems	Not offered 2013	12.50
MCEN90032 Sensor Systems	Not offered 2013	12.50
MCEN90037 Advanced Dynamics	Not offered 2013	12.50

Students may also select any remaining electives from the appropriate level of the Masters of Mechanical, Electrical and Software Engineering programs.

**Links to further information:**

[http://www.eng.unimelb.edu.au/Postgrad/MEng/me\\_mechatronics.html](http://www.eng.unimelb.edu.au/Postgrad/MEng/me_mechatronics.html)

**Related Course(s):**

Master of Engineering