

375AA Bachelor of Engineering (Mechatronics) and Bachelor of Computer Science

Year and Campus:	2010 - Parkville
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Level:	Undergraduate
Duration & Credit Points:	500 credit points taken over 60 months full time. This course is available as full or part time.
Coordinator:	A/Prof. Andrew Seng Hock Ooi
Contact:	<p>Melbourne School of Engineering Office Building 173, Grattan Street The University of Melbourne VIC 3010 Australia General telephone enquiries + 61 3 8344 6703 + 61 3 8344 6507 Facsimiles + 61 3 9349 2182 + 61 3 8344 7707 Email eng-info@unimelb.edu.au (mailto:eng-info@unimelb.edu.au) (Engineering%20Student%20Centre%20%20Ground%20Floor,%20Old %20Engineering%20Building%20The%20University%20of%20Melbourne%20Victoria %203010%20AUSTRALIA%20%20Tel:%20+61%203%208344%206703%20Fax: %20+61%203%209349%202182%20%20Email%20http://eng-unimelb.custhelp.com)</p>
Course Overview:	<p>The department was first established after the Second World War, although the course in mechanical engineering began in 1907 as a Faculty stream. An industrial engineering degree was added in the late 1950s. In 1988 an extensive review of the curriculum led to the undergraduate courses being restructured into a new, single degree course in mechanical and manufacturing engineering with students having the option to choose specialisations in their last year. A 1995 review of the department by a team from the US and UK ranked its research and teaching at the highest international standards. In 1996, the five-year combined degree in mechatronics commenced. Mechanical and manufacturing engineering applies human and material resources to the design, construction, operation and maintenance of machines (supported increasingly by sophisticated computer technology) to move people, goods and materials; generate energy; produce goods and services; and control pollution and dispose of wastes. It interacts with all other branches of engineering including the medical sciences.</p> <p>Student are required to complete 500 points in the Bachelor of Engineering (Mechatronics)/ Bachelor of Computer Science degree.</p> <p>First-year students acquire a flexible, broad scientific training in mathematics, computing and physics and an introduction to engineering.</p> <p>Second-year students continue with mathematics and are introduced to engineering design plus basic mechanical engineering sciences (thermodynamics, fluid mechanics, mechanics and machine dynamics), materials and electro-mechanical system modelling.</p> <p>Third year students continue engineering science, engineering design, manufacturing studies and control systems.</p> <p>Fourth year includes a major project and electives in advanced engineering; in manufacturing, bioengineering, applied mechanics, fluids, energy, mechatronics and management. Students planning to enter industry directly after graduating can choose how best to prepare for their careers, bearing in mind that many design and research engineers move into management. Many students participate in industry challenges such as the Formula SAE-A competition, or other build and demonstrate projects that are world competitive.</p> <p>In laboratory, research and design work students have access to specialised facilities for materials testing, wind tunnels, engine test cells and a heavy engineering workshop for the manufacture of testing facilities and experimental equipment.</p>

	<p>Engineering design, which draws on the Faculty's extensive computer facilities and computational mechanics, is now established as an area of study and research in conjunction with computer science.</p> <p>Graduate research programs are available in aspects of mechanical, mechatronics, manufacturing and bioengineering. The department is internationally regarded in fluid mechanics, advanced automotive engineering technology, machine dynamics, mechatronics and biomedical engineering.</p>																																							
Objectives:	-																																							
Course Structure & Available Subjects:	<p>THE COURSE STRUCTURE BELOW ONLY APPLIES TO RE-ENROLLING STUDENTS WHO COMMENCED THEIR STUDIES PRIOR TO 2008</p> <p>The recommended or standard course structures are listed below. When setting the timetable every effort will be made to avoid clashes between the times of classes associated with these sets of subjects. Students should be aware however, that if it proves to be impossible to achieve a timetable without clashes in these sets of subjects, the Faculty reserves the right to modify course structures in order to eliminate the conflicts. Students will be advised during the enrolment period of the semester if the recommended courses need to be varied. Where the courses include elective subjects these should be chosen so that timetable clashes are avoided. In particular, students in combined degrees should plan their courses so that the subjects chosen in the other faculty do not clash with those recommended for the engineering component.</p> <p>Note: Students must not undertake Science Mathematics in place of 431-201 Engineering Analysis A and 431-202 Engineering Analysis B without first obtaining course advice.</p>																																							
Subject Options:	<p>THERE WILL BE NO FIRST TO THIRD YEAR ENTRY INTO THIS COURSE.</p> <p>Note: Students who commenced 3rd year in 2009 and have not completed (or who have failed) the third year subjects required in the Bachelor of Engineering degree please see a course adviser.</p> <p>The following Third year Engineering subjects are available in 2010</p> <table border="1" data-bbox="389 1120 1485 1608"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>433-252 Software Engineering Principles & Tools</td> <td>Not offered 2010</td> <td></td> </tr> <tr> <td>431-210 Electrical Circuits 2</td> <td>Not offered 2010</td> <td></td> </tr> <tr> <td>MCEN30008 Control Systems 1</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>COMP20006 Programming the Machine</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>SWEN20003 Object Oriented Software Development</td> <td>Semester 2</td> <td>12.50</td> </tr> <tr> <td>COMP20003 Algorithms and Data Structures</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>MAST30015 Statistics for Mechanical Engineers</td> <td>Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p>Fourth Year</p> <p>Subjects listed below MUST be taken in this approved order, regardless of semester availability.</p> <p>Semester 1</p> <table border="1" data-bbox="389 1733 1485 2042"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>433-332 Operating Systems</td> <td>Not offered 2010</td> <td></td> </tr> <tr> <td>433-341 Software Engineering Process & Practice</td> <td>Not offered 2010</td> <td></td> </tr> <tr> <td>MCEN30009 Engineering Design & Processes 1</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>MCEN30004 Thermofluids 2</td> <td>Semester 1</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	433-252 Software Engineering Principles & Tools	Not offered 2010		431-210 Electrical Circuits 2	Not offered 2010		MCEN30008 Control Systems 1	Semester 1	12.50	COMP20006 Programming the Machine	Semester 1, Semester 2	12.50	SWEN20003 Object Oriented Software Development	Semester 2	12.50	COMP20003 Algorithms and Data Structures	Semester 1, Semester 2	12.50	MAST30015 Statistics for Mechanical Engineers	Semester 2	12.50	Subject	Study Period Commencement:	Credit Points:	433-332 Operating Systems	Not offered 2010		433-341 Software Engineering Process & Practice	Not offered 2010		MCEN30009 Engineering Design & Processes 1	Semester 1	12.50	MCEN30004 Thermofluids 2	Semester 1	12.50
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COMP30017 Operating Systems and Network Services	Semester 1	12.50
SWEN30006 Software Modelling and Design	Semester 1	12.50

Semester 2

Subject	Study Period Commencement:	Credit Points:
433-255 Logic and Computation	Not offered 2010	12.50
433-353 Networks and Communications	Not offered 2010	
MCEN30001 Engineering Design & Processes 2	Semester 2	12.50
COMP20004 Discrete Structures	Semester 2	12.50

433-353 will be replaced with a CSSE 300 level Elective (12.5 Points)

Elective (12.5 points)

Fifth Year

Subjects listed below **MUST** be taken in this approved order, regardless of semester availability.

Year Long

Subject	Study Period Commencement:	Credit Points:
MCEN40020 Major Project and Professional Practice	Year Long	25

Semester 1

Subject	Study Period Commencement:	Credit Points:
MCEN40018 Control Systems 2	Semester 1	12.50

Elective(s) (25 points)

Semester 2

Elective(s) (37.5 points)

Note: Electives taken in the last three semesters of the course must include 37.5 points of BCS electives and 37.5 points of BE electives taken from the subjects listed below. The BE electives must include at least one management subject, as well as 436-431 OR BOTH 436-352 and 436-432.

BCS Electives

Choose a total of 37.5 points to be taken for the course from the list below:

Subject	Study Period Commencement:	Credit Points:
ELEN40010 Digital Systems 4: High Speed Systems	Semester 2	12.50
433-303 Artificial Intelligence	Not offered 2010	
433-330 Theory of Computation	Not offered 2010	
433-342 Software Engineering Methods	Not offered 2010	
433-351 Database Systems	Not offered 2010	
433-361 Programming Language Implementation	Not offered 2010	
433-371 Interactive System Design	Not offered 2010	
433-380 Graphics and Computation	Not offered 2010	
COMP30017 Operating Systems and Network Services	Semester 1	12.50

Engineering Electives

Must include 436-431 or both 436-352 and 436-431 and one management subject.

Subject	Study Period Commencement:	Credit Points:
431-328 Digital Systems 3: Circuits and Systems	Not offered 2010	
ELEN30007 Electronic Circuit Design 2	Semester 1	12.50
433-483 Computer Vision and Image Processing	Not offered 2010	
MCEN30005 Thermofluids 3	Semester 2	12.50
MCEN40009 Mechanics 4	Semester 1	12.50
MCEN40010 Thermofluids 4	Semester 1	12.50
MCEN40006 Computational Biomechanics	Semester 2	12.50
MCEN40011 Advanced Computational Mechanics	Semester 2	12.50
MCEN40015 Advanced Engineering Materials	Semester 2	12.50

Management Electives

Choose at least one elective from the list below:

Subject	Study Period Commencement:	Credit Points:
MGMT20001 Organisational Behaviour	Semester 1, Semester 2	12.50
MGMT20004 Human Resource Management	Semester 1, Semester 2	12.50
325-211 Principles of Marketing	Not offered 2010	12.50
325-302 Strategic Marketing	Not offered 2010	12.50
325-308 Industrial Relations	Not offered 2010	
MCEN40002 Optimisation	Semester 2	12.50
MCEN40003 Quality Engineering	Semester 2	12.50

Entry Requirements:	There is no further entry into this course.
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/
Graduate Attributes:	The Bachelor of Engineering is a professional degree. Graduates can obtain professional recognition by joining Engineers Australia who has accredited these programs. The Bachelor of Engineering also delivers on the University graduate attribute http://www.unimelb.edu.au/about/attributes.html