

## 985-AM Bachelor of Engineering (Mechanical & Manufacturing) & Bachelor of Science

<b>Year and Campus:</b>	2009
<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>Level:</b>	Undergraduate
<b>Duration &amp; Credit Points:</b>	
<b>Contact:</b>	<p>Engineering Student Centre  Ground Floor, Old Engineering Building  The University of Melbourne  Victoria 3010 AUSTRALIA  Tel: +61 3 8344 6703  Fax: +61 3 9349 2182  Email <a href="http://eng-unimelb.custhelp.com">http://eng-unimelb.custhelp.com</a> (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>
<b>Course Overview:</b>	<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>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) and materials.</p> <p>Third year students continue engineering science, engineering design, manufacturing studies and electro-mechanical system modelling, as well as their science specialisation.</p> <p>Fourth year has further studies in thermodynamics, fluid mechanics and applied mechanics, as well as control. Science subjects are also required to be chosen.</p> <p>Fifth 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>
<b>Objectives:</b>	-

**Course Structure & Available Subjects:**

The standard BE/BSc combined degrees require a total of 500 points, within which students must take a minimum of 300 engineering points and 237.5 science points. The total points of a standard course can be kept to 500 as at least 50 points of core material within the various streams of engineering also earn science points.

**BE/BSc course structure**

To satisfy course requirements students must:

take the set of core engineering subjects prescribed for the branch of engineering being studied. This will include the professional study requirements in one of chemical engineering, civil engineering, environmental engineering, mechanical engineering; and either electrical, computer or software engineering;

accumulate a minimum of 237.5 science points, which must include:

between 75 and 125 points at 100-level;

completion of 50 points of a prescribed science major at the 300-level. Detailed information on the science majors available is contained within the course entry for the Bachelor of Science (**course code 755-BB** ([/view/2008/755-BB](#)))

With regard to the science component note that:

There are no specific requirements at the 200-level.

Science points are awarded for the completion of science subjects listed in the Faculty of Science section of this Handbook. The majority of subjects listed in this section earn science credit, although there are exceptions. Some subjects offered by the Department of Information Systems, Department of Mathematics and Statistics, and School of Earth Sciences do not earn science credit. If a subject does not earn science credit it is labelled as non-science in the subject description. Any subject that does not appear in the science section of this Handbook is a non-science subject.

The engineering component may require the completion of specific (generally 100-level) science subjects. These subjects are detailed in the requirements of the various engineering courses that follow in the departmental entries.

A science major in computer science is not available to students undertaking the Software Engineering stream in the BE. These students will be required to undertake a major in an alternative science discipline (e.g. mathematics and statistics).

Students will not normally be permitted to complete more than 237.5 science points.

**Selection of science subjects**

Students are normally able to enrol in any subjects earning science credit where they have satisfied the prerequisite and corequisite requirements. These requirements are included in individual subject descriptions. Note that some science subjects are quota-restricted as the demand for the subject exceeds the number of places available. Selection into quota subjects is based on academic merit. Refer to the Faculty of Science section Quota subjects

**Students who commenced prior to 1999**

Students who first enrolled in the combined engineering/science course before 1999 must complete the requirements set out above with the exception that they do not need to complete a prescribed science major, but rather 50 points at 300-level made up of science subjects of their choice.

The courses shown below are based on a structure being adopted by all faculties, in which most subjects carry 12.5 points.

The mathematics, statistics and physics listed in the following structure will gain credit towards the BSc. Students wanting to pursue engineering mathematics will receive no such credit.

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.

**Subject Options:**

THERE WILL BE NO FIRST YEAR ENTRY INTO THIS COURSE 2008.

**Third Year**Subjects listed below **MUST** be taken in this approved order, regardless of semester availability.**Semester 1**

Subject	Study Period Commencement:	Credit Points:
436-384 Engineering Design & Processes 1	Semester 1	12.500
436-353 Mechanics 2	Semester 1	12.500
620-331 Applied Partial Differential Equations	Semester 1	12.500

Science subject as required (12.5 points)

**Semester 2**

Subject	Study Period Commencement:	Credit Points:
436-311 Engineering Design & Processes 2	Semester 2	12.500
436-204 Systems Modelling	Semester 2	12.500

Science subject(s) as required (25 points)

**Fourth Year**Subjects listed below **MUST** be taken in this approved order, regardless of semester availability.**Semester 1**

Subject	Study Period Commencement:	Credit Points:
436-351 Thermofluids 2	Semester 1	12.500
436-284 Organisational Engineering	Semester 1	12.500
436-382 Control Systems 1	Semester 1	12.500

Science subject(s) as required (12.5 points)

**Semester 2**

Subject	Study Period Commencement:	Credit Points:
436-352 Thermofluids 3	Semester 2	12.500
436-354 Mechanics 3	Semester 2	12.500

Science subject(s) as required (25 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:
436-492 Major Project and Professional Practice	Year Long	25.000

**Semester 1**

Subject	Study Period Commencement:	Credit Points:
436-431 Mechanics 4	Semester 1	12.500
436-432 Thermofluids 4	Semester 1	12.500

	436-470 Control Systems 2	Semester 1	12.500																														
	<p><b>Semester 2</b></p> <p>Elective (12.5 points) - <i>Mechanical 400-level</i></p> <p>Science subject(s) as required (25 points)</p> <p><b>Mechanical 400-level electives</b></p> <p>Select one of the following electives:</p> <table border="1" data-bbox="389 374 1485 976"> <thead> <tr> <th data-bbox="389 374 1074 463">Subject</th> <th data-bbox="1074 374 1350 463">Study Period Commencement:</th> <th data-bbox="1350 374 1485 463">Credit Points:</th> </tr> </thead> <tbody> <tr> <td data-bbox="389 463 1074 519">436-415 Quality Engineering</td> <td data-bbox="1074 463 1350 519">Semester 2</td> <td data-bbox="1350 463 1485 519">12.500</td> </tr> <tr> <td data-bbox="389 519 1074 575">436-414 Optimisation</td> <td data-bbox="1074 519 1350 575">Semester 2</td> <td data-bbox="1350 519 1485 575">12.500</td> </tr> <tr> <td data-bbox="389 575 1074 631">436-436 Advanced Computational Mechanics</td> <td data-bbox="1074 575 1350 631">Semester 2</td> <td data-bbox="1350 575 1485 631">12.500</td> </tr> <tr> <td data-bbox="389 631 1074 687">436-460 Advanced Engineering Materials</td> <td data-bbox="1074 631 1350 687">Semester 2</td> <td data-bbox="1350 631 1485 687">12.500</td> </tr> <tr> <td data-bbox="389 687 1074 743">436-465 Advanced Fluid Mechanics</td> <td data-bbox="1074 687 1350 743">Semester 2</td> <td data-bbox="1350 687 1485 743">12.500</td> </tr> <tr> <td data-bbox="389 743 1074 799">436-421 Power Generation Systems</td> <td data-bbox="1074 743 1350 799">Not offered 2009</td> <td data-bbox="1350 743 1485 799">12.500</td> </tr> <tr> <td data-bbox="389 799 1074 855">436-419 Computational Biomechanics</td> <td data-bbox="1074 799 1350 855">Semester 2</td> <td data-bbox="1350 799 1485 855">12.500</td> </tr> <tr> <td data-bbox="389 855 1074 911">436-459 Advanced Control and Automation</td> <td data-bbox="1074 855 1350 911">Semester 2</td> <td data-bbox="1350 855 1485 911">12.500</td> </tr> <tr> <td data-bbox="389 911 1074 976">436-439 Dynamics of Rotors</td> <td data-bbox="1074 911 1350 976">Not offered 2009</td> <td data-bbox="1350 911 1485 976">12.50</td> </tr> </tbody> </table> <p>For students who followed the recommended course outline in 2006. All other students should seek departmental course advice.</p>			Subject	Study Period Commencement:	Credit Points:	436-415 Quality Engineering	Semester 2	12.500	436-414 Optimisation	Semester 2	12.500	436-436 Advanced Computational Mechanics	Semester 2	12.500	436-460 Advanced Engineering Materials	Semester 2	12.500	436-465 Advanced Fluid Mechanics	Semester 2	12.500	436-421 Power Generation Systems	Not offered 2009	12.500	436-419 Computational Biomechanics	Semester 2	12.500	436-459 Advanced Control and Automation	Semester 2	12.500	436-439 Dynamics of Rotors	Not offered 2009	12.50
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<p><b>Core Participation Requirements:</b></p>	<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>																																