

985AM Bachelor of Engineering (Mechanical & Manufacturing) & Bachelor of 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.
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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>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</p>

	mechanics, advanced automotive engineering technology, machine dynamics, mechatronics and biomedical engineering.
Objectives:	-
Course Structure & Available Subjects:	<p>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.</p> <p>BE/BSc course structure</p> <p>To satisfy course requirements students must:</p> <p>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;</p> <p>accumulate a minimum of 237.5 science points, which must include:</p> <p>between 75 and 125 points at 100-level;</p> <p>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))</p> <p>With regard to the science component note that:</p> <p>There are no specific requirements at the 200-level.</p> <p>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.</p> <p>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.</p> <p>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).</p> <p>Students will not normally be permitted to complete more than 237.5 science points.</p> <p>Selection of science subjects</p> <p>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</p> <p>Students who commenced prior to 1999</p> <p>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.</p> <p>The courses shown below are based on a structure being adopted by all faculties, in which most subjects carry 12.5 points.</p> <p>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.</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</p>

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 to Third year Entry into this course.

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.

Fourth Year

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

Semester 1

Subject	Study Period Commencement:	Credit Points:
MCEN30008 Control Systems 1	Semester 1	12.50
MCEN30004 Thermofluids 2	Semester 1	12.50
MCEN90010 Finance & Human Resources for Engineers	Semester 1	12.50

Science subject(s) as required (12.5 points)

Credit may not be obtained for:

both 436-201 Thermofluids 1 and 436-301 Thermofluids,

both 436-353 Mechanics 2 and 436-302 Mechanical Dynamics,

both 436-285 Design and Materials 1 and 436-303 Mechanics and Materials

both 436-286 Design and materials 2 and 436-304 Mechanical Design

both 436-284 organisational Engineering and 436-640 Finance & Human Resources for Engineers

Semester 2

Subject	Study Period Commencement:	Credit Points:
MCEN30005 Thermofluids 3	Semester 2	12.50
MCEN30007 Mechanics 3	Semester 2	12.50

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:
MCEN40020 Major Project and Professional Practice	Year Long	25

Semester 1

Subject	Study Period Commencement:	Credit Points:
MCEN40009 Mechanics 4	Semester 1	12.50
MCEN40010 Thermofluids 4	Semester 1	12.50
MCEN40018 Control Systems 2	Semester 1	12.50

Semester 2

Elective (12.5 points) - *Mechanical 400-level*

Science subject(s) as required (25 points)

Mechanical 400-level electives

Select one of the following electives:

Subject	Study Period Commencement:	Credit Points:
MCEN40003 Quality Engineering	Semester 2	12.50
MCEN40002 Optimisation	Semester 2	12.50
MCEN40011 Advanced Computational Mechanics	Semester 2	12.50
MCEN40015 Advanced Engineering Materials	Semester 2	12.50
MCEN40006 Computational Biomechanics	Semester 2	12.50

Entry Requirements:

There will be 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>