

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

Year and Campus:	2008
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Level:	Undergraduate
Duration & Credit Points:	
Contact:	-
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), 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 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>

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.

Second Year

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

Semester 1

Subject	Study Period Commencement:	Credit Points:
436-202 Mechanics 1	1	12.500
436-285 Engineering Design and Materials 1	Semester 1	12.50

620-231 Vector Calculus	Semester 1, Semester 2	12.50
640-251 Instrumentation for Scientists	Not offered 2008	12.50

Semester 2

Subject	Study Period Commencement:	Credit Points:
436-286 Engineering Design & Materials 2	Semester 2	12.50
436-201 Thermofluids 1	Semester 2	12.50
620-232 Mathematical Methods	Semester 2	12.50
620-159 Data Analysis 1	Semester 2	12.50

Students planning to undertake computer science as the science major in the combined degree will be required to complete 433-172 Algorithmic Problem Solving or 433-152 Algorithmic Problem Solving (Advanced) for science points prior to commencing second-year computer science subjects.

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	12.50
436-353 Mechanics 2	Semester 1	12.50
620-331 Applied Partial Differential Equations	Semester 1	12.50

Science subject as required (12.5 points)

Semester 2

Subject	Study Period Commencement:	Credit Points:
436-311 Engineering Design & Processes 2	Semester 2	12.50
436-204 Systems Modelling	Semester 2	12.50

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	12.50
436-284 Organisational Engineering	Semester 1	12.50
436-382 Control Systems 1	Semester 1	12.50

Science subject(s) as required (12.5 points)

Semester 2

Subject	Study Period Commencement:	Credit Points:
436-352 Thermofluids 3	Semester 2	12.50
436-354 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:
436-492 Major Project and Professional Practice	Year Long	25

Semester 1

Subject	Study Period Commencement:	Credit Points:
436-431 Mechanics 4	Semester 1	12.50
436-432 Thermofluids 4	Semester 1	12.50
436-470 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:
436-415 Quality Engineering	Semester 2	12.50
436-414 Optimisation	Semester 2	12.50
436-436 Advanced Computational Mechanics	Semester 2	12.50
436-460 Advanced Engineering Materials	Semester 2	12.50
436-465 Advanced Fluid Mechanics	Semester 2	12.50
436-421 Power Generation Systems	Semester 2	12.50
436-419 Computational Biomechanics	Semester 2	12.50
436-459 Advanced Control and Automation	Semester 2	12.50
436-439 Dynamics of Rotors	Not offered 2008	12.500

For students who followed the recommended course outline in 2006. All other students should seek departmental course advice.

Core Participation Requirements:

<p>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.</p> <p>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: http://services.unimelb.edu.au/disability</p>