

## 355-AR Bachelor of Engineering (Environmental Engineering)

<b>Year and Campus:</b>	2008
<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>	Nghiem Tran Course Advisor Melbourne School of Engineering T: + 61 3 8344 4628 F: + 61 3 9349 2182 E <a href="mailto:n.tran@unimelb.edu.au">n.tran@unimelb.edu.au</a>
<b>Course Overview:</b>	<p>The Environmental Engineering degree course is underpinned by a 40-year tradition of teaching and research in land and water management and environmental issues.</p> <p>The objective of the course in environmental engineering is to graduate professional engineers with leadership qualities in engineering aspects of land and water management and environmental assessment, and skills in surface and groundwater hydrology, hydrogeology, irrigation engineering and water supply, land reclamation and sediment, nutrient and solute transport. Such engineers should be able to converse scientifically with biologists, ecologists and resource managers, have analytical, synthesis and numerical skills, and have experience in computing, field and laboratory techniques relating to natural resources. With these skills, graduates will be able to play a leading role in developing engineering solutions to a wide range of problems and opportunities within an ecologically sustainable context.</p> <p>The first year of the environmental engineering stream is flexible, but contains a solid grounding in mathematics, chemistry and basic engineering science. Engineering projects are introduced as a vehicle to discover the diverse nature of engineering inputs and the relationship of engineering to the natural environment and a sustainable world. A feature of first year is a field trip to assist the cohort of students to develop social links as well as discover a range of environmental engineering issues. Second year develops themes from first year to introduce basic engineering science and design. Links between environmental engineering and the natural sciences are developed in the areas of biology, earth sciences and chemistry. Management principles applicable to the natural environment are also introduced. In third year the course has an emphasis on hydraulics, hydrology and design. A practical course, including a one-week field trip covering techniques for gathering the data required for design, appears at this level. Analysis of spatial systems is introduced, while management and political aspects and interactions are further developed.</p> <p>At fourth-year level, in addition to design and a major research project, four themes are developed in management and communication, hydrology, water management and land management. Advanced learning in analysis and modeling of the physical processes provides students with an exclusive skill set to take to the workforce or postgraduate education.</p>
<b>Objectives:</b>	-
<b>Course Structure &amp; Available Subjects:</b>	<p>The course structure below represents the core content for the BE degree. All students should check that they have taken the listed subjects, or equivalent.</p> <p>Students should regularly check the Department of Civil and Environmental Engineering's course advice page for additional information and up-to-date course advice on the web.</p> <p>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 departmental guidelines on electives are satisfied (see <a href="http://www.civenv.unimelb.edu.au/undergraduate">http://www.civenv.unimelb.edu.au/undergraduate</a>). Moreover, electives should be chosen so as to develop a specialisation, while ensuring a logical progression of year level and prerequisites. Students should also avoid timetable clashes in choosing their electives. 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>
<b>Subject Options:</b>	<p>THE COURSE STRUCTURE BELOW ONLY APPLIES TO RE-ENROLLING STUDENTS WHO COMMENCED THEIR STUDIES PRIOR TO 2008</p> <p><b>Second Year</b></p> <p>Subjects listed below <b>MUST</b> be taken in this approved order, regardless of availability.</p>

**Semester 1**

Subject	Study Period Commencement:	Credit Points:
121-018 Geomorphology	Semester 1	12.50
431-201 Engineering Analysis A	Semester 1	12.50
421-210 Environmental Engineering - Basics	Semester 1	12.50
421-255 Management for Engineers 1	Semester 1	12.50

**Semester 2**

Subject	Study Period Commencement:	Credit Points:
421-209 Geomechanics 1	Semester 2	12.50
431-202 Engineering Analysis B	Summer, 1, 2	12.500
610-280 Environmental Chemistry	Semester 2	12.50

Elective (12.5 points) - *electives should be chosen from the list approved and published on the Department website. Requests to take subjects in addition can be made to the head of department.*

**Third Year**

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

**Semester 1**

Subject	Study Period Commencement:	Credit Points:
421-305 Engineering Hydraulics 1	1	12.500
421-325 Field Data Acquisition and Analysis	Semester 1	12.50
421-355 Management for Engineers 2	Semester 1	12.50

Elective (12.5 points) - *electives should be chosen from the list approved and published on the Department website. Requests to take subjects in addition can be made to the head of department.*

**Semester 2**

Subject	Study Period Commencement:	Credit Points:
421-316 Engineering Hydraulics & Hydrology	Semester 2	12.50
421-322 Environmental Engineering Design 1	2	12.500
421-327 Computing for Land and Spatial Systems	Semester 2	12.50
121-021 Environmental Politics and Management	Semester 2	12.50

**Fourth Year**

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

**Semester 1**

Subject	Study Period Commencement:	Credit Points:
421-405 Management for Engineers 3	Semester 1	12.50
421-490 Quantification of Physical Processes A	Semester 1	12.50
421-491 Quantification of Physical Processes B	Semester 1	12.50

Elective (12.5 points) - *electives should be chosen from the list approved and published on the Department website. Requests to take subjects in addition can be made to the head of department.*

### Semester 2

Subject	Study Period Commencement:	Credit Points:
421-477 Research Project	Semester 2	12.50
Subject	Study Period Commencement:	Credit Points:
421-482 Analysis & Design-Environmental Systems	Semester 2	12.50
421-442 Integrated Design	Semester 2	12.50

Elective (12.5 points) - *electives should be chosen from the list approved and published on the Department website. Requests to take subjects in addition can be made to the head of department.*

#### Core Participation Requirements:

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#### Graduate Attributes:

The undergraduate degree streams are accredited by Engineers Australia. In order to achieve this accreditation we aim to develop the following attributes in our graduates: Ability to apply knowledge of basic science and engineering fundamentals; Ability to communicate effectively, not only with engineers but also with the community at large; In-depth technical competence in at least one engineering discipline; Ability to undertake problem identification, formulation and solution; Ability to utilise a systems approach to design and operational performance; Ability to function effectively as an individual and in multi-disciplinary and multicultural teams, with the capacity to be a leader or manager as well as an effective team member; Understanding of the social, cultural, global and environmental responsibilities of the professional engineer, and the need for sustainable development; Understanding of the principles of sustainable design and development; Understanding of and commitment to professional and ethical responsibilities; and Expectation and capacity to undertake life-long learning.

#### Generic Skills:

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