Geomatics (Geomatic Engineering) major

Year and Campus:	2012
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Overview:	Geomatic Engineering is the study of the science and technologies of 3D measurement, mapping and visualisation. This major provides the opportunity to acquire skills in modern, sophisticated technologies such as global positioning system (GPS), three dimensional computer visualisations, geographic information systems (GIS), surveying, and satellite and photographic image processing. **Careers and Further Study** Students pursuing a career in Geomatics will complete the Bachelor of Environments with a major in Geomatics, followed by the two-year Master of Engineering (Geomatics). The five-year Bachelor-Master combination leads to professional accreditation by Engineers Australia and the Institution of Surveyors, Australia. For more information on the Masters of Engineering and graduate careers, please visit the Melbourne School of Engineering web site: **http://eng.unimelb.edu.au (http://eng.unimelb.edu.au/)**
Objectives:	By the end of a three year Bachelor of Environments degree with a Geomatics major, students will have developed a sound understanding of technologies used in one of the fastest growing IT industries in the world today. For more information visit: **www.benvs.unimelb.edu.au (http://www.benvs.unimelb.edu.au/)**
Structure & Available Subjects:	112.5 points (9 subjects) of Geomatics subjects.
Majors/Minors/ Specialisations	Course planning for a Geomatics major A major in Geomatics in the Bachelor of Environments consists of: # 112.5 points (9 subjects) of Geomatics subjects; # 25 points (2 subjects) of core first year subjects (Natural Environments and Reshaping Environments); # 12.5 points (1 subject) of mathematics breadth required for the major (either Calculus 1 or Calculus 2). This is in addition to electives and breadth to make up the 300 points required for the degree. Specific details of the Bachelor of Environments course structure can be found at: **https://handbook.unimelb.edu.au/view/current/B-ENVS (../../view/current/B-ENVS)**
Subject Options:	The following description of the Geomatics (Geomatic Engineering) major aligns with the Study Plan Structure viewable on the Portal for students who commenced the Bachelor of Environments in 2011 or later. The components within the structure of this major have been designed to enforce the requirements of both this specific major and of the course overall, e.g. the requirement that at least 62.5 points of Environments discipline subjects (which can include subjects taken within the major) are taken at each of Level 2 and Level 3. It is strongly recommended that students refer to the full description of this major. The layout of this description is not necessarily in the order in which subjects are taken. E.g. breadth subjects should be taken in a student's first year and the information on breadth is displayed at the end of this entry. N.B. The major in Geomatics has been amended from 2011 to 2012. Changes include: # two core Level 3 subjects in the major will not be offered after 2011 (GEOM30010 Programming Geomatics Applications and GEOM30011 Computational Methods in Geomatics). From 2012 these core Level 3 subjects will be replaced by CVEN30008 Risk Analysis and GEOM30013 Land Administration Systems. Students undertaking this major

who have not completed the 2011 subjects will be required to complete the 2012 subjects instead.

a Level 1 statistics subject was required for this major in 2011. From 2012 this is no longer a requirement in this major.
MAST10007 Linear Algebra was listed as a required breadth subject in 2011. From 2012 this subject becomes a required core subject in the Geomatics major.

Students who commenced the Bachelor of Environments prior to 2011 should also refer to this description for the 9 subjects (112.5 points) required for the major. These students will need to complete 225 points of Environments Discipline subjects including a major sequence but are not bound by minimum requirements for total Environments Discipline subjects at Level 2 and Level 3. Refer to the **B-ENVS entry in the 2010 Handbook (../../view/2010/B-ENVS)** for further details.

Level 1 Core subjects - Bachelor of Environments (25 points)

Core subjects that must be taken by all Bachelor of Environments students.

Both of

Subject	Study Period Commencement:	Credit Points:
ENVS10001 Natural Environments	Semester 1, Semester 2	12.50
ENVS10002 Reshaping Environments	Semester 1, Semester 2	12.50

Level 1 Environments Electives (50 points)

Select four of the following subjects.

N.B.

ENVS10006 Mapping Environments must be taken by students intending to undertake the Geomatics (Geomatic Engineering) major.
ENVS10005 Governing Environments is recommended.

Subject	Study Period Commencement:	Credit Points:
ENVS10003 Constructing Environments	Semester 1, Semester 2	12.50
ENVS10004 Designing Environments	Semester 1, Semester 2	12.50
ENVS10005 Governing Environments	Semester 2	12.50
ENVS10006 Mapping Environments	Semester 1	12.50
ENVS10007 Urban Environments	Semester 1, Semester 2	12.50
ENVS10008 Virtual Environments	Semester 1, Semester 2	12.50

Geomatics (Geomatic Engineering) major - core subjects (112.5 points)

All of

Subject	Study Period Commencement:	Credit Points:
MAST10007 Linear Algebra	Summer Term, Semester 1, Semester 2	12.50
COMP20005 Engineering Computation	Semester 1, Semester 2	12.50
GEOG20003 Environmental Politics and Management	Semester 2	12.50
GEOM20013 Applications of GIS	Semester 1	12.50
GEOM20015 Surveying and Mapping	Semester 2	12.50
CVEN30008 Risk Analysis	Semester 1	12.50

GEOM30009 Imaging the Environment	Semester 1	12.50
GEOM30012 Integrated Spatial Systems	Semester 2	12.50
GEOM30013 Land Administration Systems	Semester 2	12.50

Level 2 Environments elective subject (12.5 points)

Select one x 12.5 point subject at Level 2 from the list of **Environments Discipline subjects (../../view/current/%21B-ENVS-SPC%2B1000)**

Level 3 Environments elective subject (12.5 points)

Select one x 12.5 point subject at Level 3 from the list of **Environments Discipline subjects (../../view/current/%21B-ENVS-SPC%2B1000)**

Level 2 or Level 3 Environments elective subject (12.5 points)

Select one x 12.5 point subject at Level 2 or Level 3 from the list of **Environments Discipline subjects (../../view/current/%21B-ENVS-SPC%2B1000)**

Breadth subjects

Bachelor of Environments students must complete between 50 and 75 credit points of subjects selected from those available as breadth for Bachelor of Environments students; with no more than 37.5 points at Level 1. For a complete listing of available subjects please click the 'Find breadth subjects' link on the **Handbook homepage (../../)** and perform a search.

The breadth requirements for the Bachelor of Environments include the restriction of some subjects as breadth options, depending on an individual student's choice of major. Subjects in the Handbook that are marked as available as breadth in the Bachelor of Environments may be subject to further restrictions, depending up which major a student is completing in that course. Detailed information on these **Restrictions for Breadth Options (../../view/CURRENT/%21B-ENVS-SPC%2B1001)** is available.

Required Level 1 breadth subjects

Please note the following regarding the mathematics sequence of subjects that are essential to the Geomatics (Geomatic Engineering) major (students must check the prerequisite requirements of subjects before enrolling to ensure it is appropriate and should consult a student advisor if they are unsure):

Students who have completed VCE Mathematical Methods Units 1 and 2 only, should enrol in MAST10012 Introduction to Mathematics, followed by MAST10005 Calculus 1 as breadth subjects.
Students who have completed VCE Mathematical Methods Units 3 and 4 with a study score of 25 or more should enrol in MAST10005 Calculus 1 as a breadth subject.
Students who have completed VCE Specialist Maths Units 3 and 4 with a study score of 27 or more are not permitted to enrol in MAST10005 Calculus 1 but should instead enrol in MAST10006 Calculus 2 as a breadth subject.

Subject	Study Period Commencement:	Credit Points:
MAST10012 Introduction to Mathematics	Semester 1	12.50
MAST10005 Calculus 1	Semester 1, Semester 2	12.50
MAST10006 Calculus 2	Semester 1, Semester 2	12.50

N.B. From 2012 the Level 1 mathematics subject MAST10007 Linear Algebra is not considered breadth in the Geomatics major. It is a core subject within the major.

Notes:	For more information on this major and to view a sample course plan please visit: **http://www.benvs.unimelb.edu.au/current-students/course-info/geomatics.html (http://www.benvs.unimelb.edu.au/current-students/course-info/geomatics.html)**
Related Course(s):	Bachelor of Environments