GEOM30009 Imaging the Environment

Credit Points:	12.5
Level:	3 (Undergraduate)
Dates & Locations:	2016, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 48 hours (Lectures: 2 hours per week; Practical Work: 2 hours per week) Total Time Commitment: 170 hours
Prerequisites:	None
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	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. 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
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Subject Overview:	**AIMS** This subject will introduce students to the use of imagery in the mapping of both human and natural environments. Imagery is often the cheapest way to gain spatial information about the environment, especially for large areas, but analysis and interpretation of the data requires sophisticated techniques. Usually the light or other electromagnetic radiation being emitted or reflected from the surface being imaged needs to be interpreted into another variable of interest, such as the type of vegetation on the surface. Once interpreted, the information must be communicated to others; usually in the form of maps or reports. This subject builds on a student’s knowledge of the physical and built environment relevant to their discipline and allows them to interpret and communicate that knowledge. On completion of the subject students should have the skills to perform routine image analysis tasks in the workplace using industry standard software. This subject partners with others to the Spatial Systems majors of the undergraduate science and environments degrees to allow the student to progress to the Master of Engineering (Spatial) or to enter the workforce in a paraprofessional role. **INDICATIVE CONTENT** # Image interpretation basics # Image acquisition and formation # Fundamentals of image processing and measurement # Both aerial photography and satellite imagery will be used to illustrate the techniques of measurement and interpretation by which both spatial position and semantic content can be extracted from image data.

Learning Outcomes:	**INTENDED LEARNING OUTCOMES (ILO)** On completion of this subject the student is expected to: 1 Describe those characteristics of different imaging techniques which allow information to be extracted from the image 2 Extract information from images 3 Apply image data to the creation of maps 4 Analyse image data to monitor both human and natural environments 5 Interpret image data to inform management of human and natural environments.
Assessment:	Four short practical reports (10% each, 40% total) totalling no more than 2400 words, due across the semester, each requiring approximately 10 hours of work. Intended Learning Outcomes (ILOs) 2 to 5 are addressed in the reports One 3-hour end-of-semester examination (60%). ILOs 1, 4 and 5 are addressed in the examination.
Prescribed Texts:	John R. Jensen (2007) Remote Sensing of the Environment: An Earth Resource Perspective, 2nd Edition. Prentice Hall.
Breadth Options:	This subject potentially can be taken as a breadth subject component for the following courses: # **Bachelor of Arts (https://handbook.unimelb.edu.au/view/2016/B-ARTS)** # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2016/B-COM)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2016/B-ENVS)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2016/B-MUS)** You should visit **learn more about breadth subjects (http://breadth.unimelb.edu.au/breadth/info/index.html)** and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	On completion of this subject students should have: # The ability to apply knowledge of basic science fundamentals # The ability to communicate effectively, not only with other scientists but also with the community at large # The ability to undertake problem identification, formulation and solution # The ability to function effectively as an individual and in multi-disciplinary and multi-cultural teams, with the capacity to be a leader or manager as well as an effective team member # An expectation of the need to undertake lifelong learning, capacity to do so # The capacity for independent critical thought, rational inquiry and self-directed learning # Openness to new ideas and unconventional critiques of received wisdom.
Notes:	**LEARNING AND TEACHING METHODS** Lectures and guided practical assignments. **INDICATIVE KEY LEARNING RESOURCES** John R. Jensen (2007) *Remote Sensing of the Environment: An Earth Resource Perspective,* 2nd Edition. Prentice Hall. Online interactive tutorials. **CAREERS / INDUSTRY LINKS** This subject uses industry standard software for image analysis and accesses industry databases of imagery, such as that provided by NASA, as the basis of practical work.
Related Majors/Minors/ Specialisations:	Engineering Systems Environmental Engineering Systems major Environmental Science Environmental Science major Environments Discipline subjects Geomatics (Geomatic Engineering) major

	Marine Biology Master of Engineering (Spatial) Science-credited subjects - new generation B-SCI and B-ENG. Selective subjects for B-BMED Spatial Systems Spatial Systems
Related Breadth Track(s):	Understanding Location