

# GEOM30009 Imaging the Environment

<b>Credit Points:</b>	12.5
<b>Level:</b>	3 (Undergraduate)
<b>Dates &amp; Locations:</b>	2015, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
<b>Time Commitment:</b>	Contact Hours: 48 hours, comprising of two hours of lectures and two hours of practical work per week Total Time Commitment: 170 hours
<b>Prerequisites:</b>	None
<b>Corequisites:</b>	None
<b>Recommended Background Knowledge:</b>	None
<b>Non Allowed Subjects:</b>	None
<b>Core Participation Requirements:</b>	<p>&lt;p&gt;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.&lt;/p&gt;         &lt;p&gt;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: &lt;a href="http://services.unimelb.edu.au/disability"&gt;http://services.unimelb.edu.au/disability&lt;/a&gt;&lt;/p&gt;</p>
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<b>Subject Overview:</b>	<p><b>AIMS</b></p> <p>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.</p> <p>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.</p> <p><b>INDICATIVE CONTENT</b></p> <ul style="list-style-type: none"> <li># Image interpretation basics</li> <li># Image acquisition and formation</li> <li># Fundamentals of image processing and measurement</li> <li># 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.</li> </ul>
<b>Learning Outcomes:</b>	<b>INTENDED LEARNING OUTCOMES (ILO)</b>

	<p>Having completed this unit the student is expected to:</p> <ol style="list-style-type: none"> <li>1 Describe those characteristics of different image techniques which allow information to be extracted from the image</li> <li>2 Extract data from images</li> <li>3 Applying image data to the creation of maps</li> <li>4 Analyse image data to monitoring both human and natural environments</li> <li>5 Interpret image data to inform management of human and natural environments.</li> </ol>
<b>Assessment:</b>	Four short practical reports, totalling no more than 2400 words, due across the semester, each requiring approximately 10 hours of work (10% each, 40%), Addresses Intended Learning Outcomes (ILOs) 1 to 5. 3-hour end-of-semester examination (60%). Addresses ILOs 1, 4 and 5.
<b>Prescribed Texts:</b>	Karl Krauss, de Gruyter, 2007 Photogrammetry 2nd Ed Lillesand, Kiefer and Chipman, 2003 Remote Sensing and Image Interpretation 5th Ed., Wiley and Sons
<b>Breadth Options:</b>	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> <li># <b>Bachelor of Arts</b> (<a href="https://handbook.unimelb.edu.au/view/2015/B-ARTS">https://handbook.unimelb.edu.au/view/2015/B-ARTS</a>)</li> <li># <b>Bachelor of Commerce</b> (<a href="https://handbook.unimelb.edu.au/view/2015/B-COM">https://handbook.unimelb.edu.au/view/2015/B-COM</a>)</li> <li># <b>Bachelor of Environments</b> (<a href="https://handbook.unimelb.edu.au/view/2015/B-ENVS">https://handbook.unimelb.edu.au/view/2015/B-ENVS</a>)</li> <li># <b>Bachelor of Music</b> (<a href="https://handbook.unimelb.edu.au/view/2015/B-MUS">https://handbook.unimelb.edu.au/view/2015/B-MUS</a>)</li> </ul> <p>You should visit <a href="http://breadth.unimelb.edu.au/breadth/info/index.html">learn more about breadth subjects (http://breadth.unimelb.edu.au/breadth/info/index.html)</a> and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.</p>
<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>Generic Skills:</b>	<p>On completion of this subject students should have:</p> <ul style="list-style-type: none"> <li># The ability to apply knowledge of basic science fundamentals</li> <li># The ability to communicate effectively, not only with other scientists but also with the community at large</li> <li># The ability to undertake problem identification, formulation and solution</li> <li># 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</li> <li># An expectation of the need to undertake lifelong learning, capacity to do so</li> <li># The capacity for independent critical thought, rational inquiry and self-directed learning</li> <li># Openness to new ideas and unconventional critiques of received wisdom.</li> </ul>
<b>Notes:</b>	<p><b>LEARNING AND TEACHING METHODS</b></p> <p>Lecturers and individual practical assignments.</p> <p><b>INDICATIVE KEY LEARNING RESOURCES</b></p> <p>Krauss, K., 2007. <i>Photogrammetry</i>. 2nd Edition. Walter de Gruyter/Berlin.  Lilles, T., Kiefer, R.W. and Chipman, J., 2007 <i>Remote Sensing and Image Interpretation</i> 6th Edition. Wiley and Sons.</p> <p>Online interactive tutorials.</p> <p><b>CAREERS / INDUSTRY LINKS</b></p> <p>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.</p>
<b>Related Majors/Minors/Specialisations:</b>	<p>Engineering Systems  Environmental Engineering Systems major  Environmental Science  Environmental Science major  Environments Discipline subjects  Geomatics (Geomatic Engineering) major  Marine Biology</p>

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