GEOM90038 Advanced Imaging

Credit Points:	12.5
Level:	9 (Graduate/Postgraduate)
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: 24 hours per semester; Labs/assignments: 24 hours per semester) Total Time Commitment: 200 hours
Prerequisites:	Successful completion of the following subject is required:

Subject	Study Period Commencement:	Credit Points:
GEOM30009 Imaging the Environment	Semester 1	12.50

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
Coordinator:	Dr Kourosh Khoshelham
Contact:	Dr Kourosh Khoshelham **k.khoshelham@unimelb.edu.au (mailto:k.khoshelham@unimelb.edu.au)**
Subject Overview:	**AIMS** To introduce students to advanced and esoteric imaging technologies and the methods for extracting quantitative information from multi-source imagery. This subject builds on the knowledge of subjects such as imaging the environment, by considering multi-source images of the target to provide additional information such as the distance from the target to object from which a three dimensional representation can be constructed. It also considers imaging of targets where illumination is provided by the instrument rather than natural light reflection or radiation from the target. Students who successfully complete this subject may find work in a variety of remote sensing or specialist consultancies or agencies. The techniques learnt may also be applied to other industries such as quality control in manufacturing or recording of archaeological sites. **INDICATIVE CONTENT** The subject covers the characteristics of specialised imaging techniques and instruments including LIDAR, photogrammetry, and high resolution satellite imagery, as well as processing techniques for generating products such as orthoimages and digital terrain models. It also discusses considerations, inherent errors, and limitations of each of these techniques.

Learning Outcomes:	**INTENDED LEARNING OUTCOMES (ILO)** On completion of this subejct the student is expected to: 1 Describe the acquisition and characteristics of specialized image data 2 Identify the appropriate combination of imaging techniques to meet a particular need 3 Apply image processing to solve extract quantitative information from imagery 4 Evaluate the accuracy of image processing and the derived products.
Assessment:	One 3 hour written examination (50%) at the end of semester. Intended Learning Outcomes (ILOs) 1 and 2 are addressed in the examination Four written assignments (10% each, 40% in total) each requiring approximately 13-15 hours of work and partly completed in laboratory classes, due througout the semester. ILOs 3 and 4 are addressed in the assignments One 1 hour mid-semester class test (10%). ILO 2 is addressed in the test Hurdle requirement: Students must pass the written examination at the end of the semester in order to pass the subject.
Prescribed Texts:	None
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	# Ability to apply knowledge of science and engineering fundamentals # Ability to undertake problem identification, formulation and solutions # Ability to communicate effectively, with the engineering team and with the community at large # Ability to manage information and documentation.
Notes:	**LEARNING AND TEACHING METHODS** Lectures and guided practical assignments. **INDICATIVE KEY LEARNING RESOURCES** Online interactive tutorials. **CAREERS / INDUSTRY LINKS** Practical context and industry links are provided in the problem-based learning exercises.
Related Course(s):	Doctor of Philosophy - Engineering Master of Philosophy - Engineering
Related Majors/Minors/ Specialisations:	Master of Engineering (Spatial)