

# GEOM90008 Foundations of Spatial Information

|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Credit Points:</b>                    | 12.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Level:</b>                            | 9 (Graduate/Postgraduate)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Dates &amp; Locations:</b>            | 2016, Parkville<br>This subject commences in the following study period/s:<br>Semester 1, Parkville - Taught on campus.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Time Commitment:</b>                  | Contact Hours: 48 hours (Lectures: 2 hours per week; Practicals 2 hours per week) Total Time Commitment: 200 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>                                                                                                                                                                                                                                                                                                                                         |
| <b>Coordinator:</b>                      | Prof Stephan Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Contact:</b>                          | Professor Stephan Winter<br><a href="mailto:winter@unimelb.edu.au">winter@unimelb.edu.au</a> (mailto:winter@unimelb.edu.au)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Subject Overview:</b>                 | <p><b>AIMS</b></p> <p>Spatial information is ubiquitous in decision making. Be it in urban planning, in traffic or disaster management, in way-finding, in issues of environment, public health and sustainability, or in economic contexts: the question of 'where' is a fundamental one. Spatial information is also special in many respects, such as its dimensionality and autocorrelation, its volume, its links to the Internet of Things (which are located), social networks (which exist in space and time), streaming data from sensors everywhere, or intelligent (location-aware) systems. The subject provides the foundations for more specialized subjects on spatial data management, spatial data analysis and spatial data visualization, and is of particular relevance to people wishing to establish a career in the spatial information industry, the environmental or planning industry.</p> <p><b>INDICATIVE CONTENT</b></p> <p>We will discuss representations and analysis of this information in spatial information technologies, from location-based services to geographic information systems. Topics addressed are observing the environment; spatial and spatiotemporal data representations, spatial analysis and spatial communication.</p> |
| <b>Learning Outcomes:</b>                | <p><b>INTENDED LEARNING OUTCOMES (ILO)</b></p> <p>On completion of this subject the student is expected to:</p> <ol style="list-style-type: none"> <li>1 Describe and discuss the process from observing the environment to representing information about the environment</li> <li>2 Identify and assess fundamental data structures and analysis procedures associated with spatial information</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                    | <p>3 Discuss the use of geographic information in decision making</p> <p>4 Apply basic practical skills in the use of Geographic Information Systems software.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Assessment:</b>                                 | In-semester assignments (40%) requiring 50-55 hours of work in total, consisting of: Four practical assignment reports of about 5 pages length each (500 words plus figures), due evenly throughout the semester. Intended Learning Outcome (ILO) 4 is addressed in these assignments Two oral presentations, 5 minutes each, presented during two of the lectures. ILO 3 is addressed in these presentations A written examination in two parts: Mid-semester 30-minute exam (10%). ILOs 1, 2 and 3 are address in this exam End of semester 2-hour exam (50%). ILOs 1, 2 and 3 are addressed in the exam.                                                                                                                                                                                                             |
| <b>Prescribed Texts:</b>                           | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Breadth Options:</b>                            | This subject is not available as a breadth subject.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <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 successful completion, students will have:</p> <ul style="list-style-type: none"> <li># The ability to apply knowledge of science and engineering fundamentals</li> <li># The ability to undertake problem identification, formulation, and solution</li> <li># The ability to communicate effectively, with the engineering team and with the community at large</li> <li># An understanding of professional and ethical responsibilities, and a commitment to them</li> <li># A capacity for lifelong learning and professional development.</li> </ul>                                                                                                                                                                                                                                                         |
| <b>Notes:</b>                                      | <p><b>LEARNING AND TEACHING METHODS</b></p> <p>The subject is based on traditional lectures conveying the foundations of the discipline, and a range of diverse student activities. Students individually will track and critically review the use of spatial information in the media, in teams they will develop novel spatial information services and study the feasibility of their ideas, and in computer labs they will get basic training in spatial analysis.</p> <p><b>INDICATIVE KEY LEARNING RESOURCES</b></p> <p>The students have free access to ESRI ArcGIS via a campus licence. Lectures are recorded (voice and slides).</p> <p><b>CAREERS / INDUSTRY LINKS</b></p> <p>Industry members are regularly invited on the judgement panel for the presentations of the students' team work assignment.</p> |
| <b>Related Course(s):</b>                          | <p>Doctor of Philosophy - Engineering</p> <p>Master of Environmental Engineering</p> <p>Master of Geographic Information Technology</p> <p>Master of Information Systems</p> <p>Master of Information Systems</p> <p>Master of Information Systems</p> <p>Master of Information Technology</p> <p>Master of Philosophy - Engineering</p> <p>Master of Science (Geography)</p> <p>Master of Spatial Information Science</p>                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Related Majors/Minors/<br/>Specialisations:</b> | <p>Climate Change</p> <p>Climate Change</p> <p>Conservation and Restoration</p> <p>Conservation and Restoration</p> <p>Development</p> <p>Development</p> <p>Energy Studies</p> <p>Energy Studies</p> <p>Environmental Science</p> <p>Environmental Science</p> <p>Integrated Water Catchment Management</p> <p>Integrated Water Catchment Management</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

MIS Professional Specialisation  
MIS Research Specialisation  
MIT Spatial Specialisation  
Master of Engineering (Spatial)  
Sustainable Cities, Sustainable Regions  
Sustainable Cities, Sustainable Regions  
Sustainable Forests  
Sustainable Forests  
Tailored Specialisation  
Tailored Specialisation