

# CVEN90050 Geotechnical Engineering

<b>Credit Points:</b>	12.5									
<b>Level:</b>	9 (Graduate/Postgraduate)									
<b>Dates &amp; Locations:</b>	2016, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.									
<b>Time Commitment:</b>	Contact Hours: 50 hours (Lectures: 3 hours per week; Tutorial: 1 hour per week; Laboratory: 2 hours per semester) Total Time Commitment: 200 hours									
<b>Prerequisites:</b>	Students must have completed BOTH of the following subjects, or equivalent to enrol in this subject: <table border="1" data-bbox="387 602 1485 804"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>ENEN20002 Earth Processes for Engineering</td> <td>Semester 2</td> <td>12.50</td> </tr> <tr> <td>CVEN30010 Systems Modelling and Design</td> <td>Semester 2</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	ENEN20002 Earth Processes for Engineering	Semester 2	12.50	CVEN30010 Systems Modelling and Design	Semester 2	12.50
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ENEN20002 Earth Processes for Engineering	Semester 2	12.50								
CVEN30010 Systems Modelling and Design	Semester 2	12.50								
<b>Corequisites:</b>	None									
<b>Recommended Background Knowledge:</b>	Learning in this subject will be assisted by knowledge gained in the following subject: <table border="1" data-bbox="387 956 1485 1104"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>CVEN90044 Engineering Site Characterisation</td> <td>Semester 1</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	CVEN90044 Engineering Site Characterisation	Semester 1	12.50			
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<b>Non Allowed Subjects:</b>	Students cannot gain credit for this subject and: # 421-306 Geotechnical Engineering									
<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>	Dr Mahdi Miri Disfani									
<b>Contact:</b>	Dr Mahdi Miri Disfani <a href="mailto:mahdi.miri@unimelb.edu.au">mahdi.miri@unimelb.edu.au</a> (mailto:mahdi.miri@unimelb.edu.au)									
<b>Subject Overview:</b>	<p><b>AIMS</b></p> <p>Soil and rock are among the most important civil engineering materials. They form the foundations of all structures, can be rearranged to provide a topography to suit particular needs like embankments for road and railways, can form a structure in its own right when used for levee banks or dam walls, or may need to be removed to allow access such as with tunnels and cuttings. Students completing this unit should understand how to make simplifications to complex soil conditions, how to establish strength/deformation characteristics of the soil and how to apply fundamental geomechanics knowledge learned in earlier units to solve problems involving the stability of an earth mass for these various situations. Graduates from this subject will be able to work under the guidance of a chartered engineer to design and supervise</p>									

	<p>construction of a range of geotechnical structures such as foundations, roads, and retaining walls.</p> <p>This subject builds directly on knowledge from a range of undergraduate and postgraduate subjects in the areas of mathematics, statistics, earth processes, soil mechanics and fluid mechanics. It also draws on knowledge of sustainability and management to provide context for problems.</p> <p><b>INDICATIVE CONTENT</b></p> <p>Topics covered include a detailed review of pore-water pressures and effective stress, soil strength and compressibility (tri-axial testing, SPT, and others), consolidation, compaction and their applications to geotechnical design in selected areas, rigid and flexible earth retaining structures, reinforced soil walls, pavements, introduction to liquefaction, and introduction to geothermal energy.</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 Make simplifications to complex soil conditions</li> <li>2 Establish strength/deformation characteristics of soil</li> <li>3 Apply fundamental geomechanics knowledge learned in earlier units to solve problems involving the stability of an earth mass.</li> </ol>
<b>Assessment:</b>	<p>Three 1000 word assignments (30%) due throughout the semester. Each assignment requiring approximately 13-15 hours of work. Two of these assignments use data from laboratory tests. Intended Learning Outcomes (ILOs) 1, 2 and 3 are addressed in these assignments One 3-hour examination (70%) end of semester, ILOs 1, 2 and 3 are addressed in the exam Hurdle requirement: Students must pass the final exam to pass the subject.</p>
<b>Prescribed Texts:</b>	<p>Course notes will be made available in LMS or for purchase from the University Bookroom.</p>
<b>Breadth Options:</b>	<p>This subject is not available as a breadth subject.</p>
<b>Fees Information:</b>	<p>Subject EFTSL, Level, Discipline &amp; Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a></p>
<b>Generic Skills:</b>	<ul style="list-style-type: none"> <li># Ability to apply knowledge of basic science and engineering fundamentals</li> <li># Ability to communicate effectively, not only with engineers but also with the community at large</li> <li># Ability to undertake problem identification, formulation and solution</li> <li># Ability to utilise systems approach to design and operational performance</li> <li># Ability to function effectively as an individual in multi-disciplinary and multicultural teams, with the capacity to be a leader or manager as well as an effective team member</li> <li># Expectation of the need to undertake lifelong learning and the capacity to do so</li> <li># Capacity for independent critical thought, rational inquiry and self-directed learning</li> <li># Intellectual curiosity and creativity, including understanding of the philosophical and methodological bases of research activity.</li> </ul>
<b>Notes:</b>	<p><b>LEARNING AND TEACHING METHODS</b></p> <p>The subject is based principally on lectures and tutorials; and the critical reading of prescribed textbooks, lecture notes, and selected papers. Depending on availability of site constructions with works related to the subject objectives, a site visit co-organised by lecturers and experienced industry professionals is also implemented to reinforce some concepts learnt in the classrooms. A laboratory session is used to complement the fundamentals of strength (tri-axial) and compressibility (consolidation) testing and analysis.</p> <p><b>INDICATIVE KEY LEARNING RESOURCES</b></p> <p>Course notes will be made available in LMS or for purchase from the University Bookroom, as well as selected journal articles, references to relevant AS/NZ and/or ASTM standards.</p> <p><b>CAREERS / INDUSTRY LINKS</b></p> <p>Experienced industry professionals and specialist contractors present during site visits and provide background material about the construction sites and projects (acting as case studies). These site visits are undertaken to enhance students understanding of typical geotechnical works, particularly in excavations and earth retaining structures.</p>
<b>Related Course(s):</b>	<p>Doctor of Philosophy - Engineering Master of Architectural Engineering</p>

	Master of Philosophy - Engineering
<b>Related Majors/Minors/ Specialisations:</b>	B-ENG Civil Engineering stream Master of Engineering (Civil with Business) Master of Engineering (Civil) Master of Engineering (Environmental) Master of Engineering (Structural)