CVEN90027 Geotechnical Applications

Credit Points:	12.5
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2015, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 48 hours; comprising of 44 hours of Lectures/Tutorials and 4 hours of Computer Labs per semester Total Time Commitment: 200 hours
Prerequisites:	Successful completion of the following subject is required:

Subject	Study Period Commencement:	Credit Points:
CVEN90050 Geotechnical Engineering	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 Sam Yuen
Contact:	Dr Sam Yuen **stsy@unimelb.edu.au (mailto:stsy@unimelb.edu.au)**
Subject Overview:	**AIMS** This is a geotechnical engineering elective subject in which student will be introduced to geo-environmental related topics including the assessment and design of waste disposal containment systems, and the investigation and remediation of contaminated sites. The subject also covers the design of shallow and deep foundations, bearing capacity solutions and foundation settlement prediction, as well as soil improvement and stabilisation. Deep basement excavation and earth dam designs are also featured. This practically oriented elective subject builds on the fundamental material learned earlier in ENEN2002 Earth Processes for Engineering and CVEN30010 System Modelling and Design, and fully integrates with the knowledge gained from the two core subjects CVEN90044 Engineering Site Characterisation and CVEN90050 Geotechnical Engineering. This subject is of particular interest to students intending to establish a career in geotechnical engineering; it is also relevant to a range of engineering disciplines in which a good knowledge of geotechnical engineering offers an advantage. **INDICATIVE CONTENT** Landfill design and management including waste biodegradation and pollutants, liner/leachate collection systems, prediction of landfill settlement and computer-aided design; Contaminated land – site assessment and design; Deep excavation and earth dams – analysis and design;

	Shallow foundations - bearing capacity and settlement; Piled foundations - types, function, bearing capacity and settlement; Soil stabilisation and improvements.
Learning Outcomes:	**INTENDED LEARNING OUTCOMES (ILO)** Having completed this subject the student is expected to: 1 Analyse for both the bearing capacity and settlement characteristics of foundations subjected to a variety of loadings 2 Apply geotechnical engineering principles to solve contaminated sites and waste disposal problems 3 Appreciate the design and construction considerations of earth dams 4 Recognise the construction methods related to foundations and deep excavation.
Assessment:	One 3-hour examination, end of semester (60%) Three assignments, due throughout the semester, each a minimum of 1000 words (maximum of 2000 words) and each requiring 15 to 20 hours of work (40%). Intended Learning Outcomes (ILOs) 1 - 4 are assessed in the examination; ILOs 1, 2 and 4 are assessed in the assignments.
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 undertake problem identification, formulation, and solution # Ability to utilise a systems approach to complex problems and to design and operational performance # Ability to manage information and documentation # Understanding environmental responsibilities and the need for sustainable development # Critical thinking and judgement # Ability to communicate effectively # Ability to function effectively as an individual with the capacity to be an effective team member.
Notes:	**LEARNING AND TEACHING METHODS** The subject is based principally on presentations by experienced academic staff and industry practitioners who deliver the subject contents using extensive case studies in their area of expertise. Problem-based learning is a key feature aiming to enrich students' appreciation of the subject contents and their engineering relevance and practical applications. For example, an industry bench-mark computer program is used to investigate the potential environmental impact of a landfill due to leachate movement; the experience is augmented by a site visit to relevant waste management facilities together with a related assignment. The subject also allows students to develop their teamwork skills by collaborating on two group assignments. **INDICATIVE KEY LEARNING RESOURCES** This subject does not require students to purchase any particular prescribed textbooks but learning material is provided online via a series of relevant web links and downloadable documents. **CAREERS / INDUSTRY LINKS** All the presenters including the guest lecturers have extensive industry experience and links, and have specific expertise in the areas in which they are delivering. Practical context and industry relevance are also provided in the problem-based learning exercises and the extensive use of case studies.
Related Course(s):	Master of Engineering Structures Master of Environmental Engineering Master of Philosophy - Engineering Ph.D.- Engineering
Related Majors/Minors/ Specialisations:	B-ENG Civil Engineering stream Master of Engineering (Civil) Master of Engineering (Structural) Tailored Specialisation

	Tailored Specialisation