ENEN90006 Solid Wastes to Sustainable Resources

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	This subject is not offered in 2014.
Time Commitment:	Contact Hours: Lectures: 24 hours per semester, Tutorials/Seminars: 12 hours per semester, Site visits: 2 visits per semester Total Time Commitment: 200 hours
Prerequisites:	None
Corequisites:	None
Recommended Background Knowledge:	Admission to post graduate studies in engineering or equivalent.
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
Contact:	Associate Professor Graham Moore **grahamam@unimelb.edu.au (mailto:grahamam@unimelb.edu.au)**
Subject Overview:	**AIMS** In this subject students will learn about the fundamentals of the solid waste stream in modern society. Emphasis will be placed on the life cycle aspects of waste and the prospect of minimizing waste and maximizing the economic value of waste streams. Interaction between solid wastes and liquid and gaseous waste streams will also be considered. The subject builds on knowledge from subjects such as CVEN90043 Sustainable Infrastructure Engineering where general principles of sustainability are discussed. Student knowledge of systems and material cycles, learnt in subjects such as ENEN90031 Quantitative Environmental Modelling and CVEN30010 Systems Modelling and Design or their equivalent in other subjects forms the basic grounding for the subject. The subject is of particular relevance to students wishing to establish a career in waste management, but is also relevant to a range of engineering design disciplines where design for the total life cycle of the product or infrastructure should be considered. **INDICATIVE CONTENT** Regulatory aspects of waste management, sustainability programs in government and private sector, life cycle assessment, organic waste treatment and management, inorganic waste treatment and management, landfill hydrology and design, cleaner production strategies, hazardous waste management, collection and transport logistics.
Learning Outcomes:	**INTENDED LEARNING OUTCOMES (ILO)** Having completed this subject the student is expected to: 1 Describe the major environmental problems caused by inappropriate production and disposal of solid by-products manufacturing and consumption 2 Identify and describe the role of various systems of treatment of hazardous wastes 3 Classify and model sources of solid wastes 4 Conduct life cycle analysis and cleaner production assessments 5 Apply principles of sustainable development to the management of solid by-products 6 Identity design inputs to enable the avoidance, minimization, recycling, re-use and treatment of solid by-products

	7 Analyse the role of regulatory systems in solid wastes management
Assessment:	Two 1500 word group reports, due weeks 5 and 10 (30%). Associated with Intended Learning Outcomes (ILOs) 2, 6 and 7. Two 2000 word individual reports, due week 3 and 7 (50%). Associated with ILOs 3, 4, 5, 6 and 7 Five electronic journal entries, each of approximately 200 words, to be submitted during the semester (10%). Associated with ILOs 1 and 6 One 10 minute seminar presentation to be given during the semester and participation in seminars (10%). Associated with ILO 6. Hurdle requirement: Attendance at two site visits is a hurdle requirement to pass this 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 undertake problem identification, formulation, and solution # Understanding of social, cultural, global, and environmental responsibilities and the need to employ principles of sustainable development # Capacity for creativity and innovation # Understanding of professional and ethical responsibilities, and commitment to them # Capacity for lifelong learning and professional development
Notes:	**Safety boots, high visibility vests and safety spectacles are required for site visits** **LEARNING AND TEACHING METHODS** The subject is based principally on presentations by experienced industry professionals who present case studies in their area of expertise. In addition each student prepares and presents a tutorial research paper on a topic of their interest selected from an extensive list. A computer laboratory is used to investigate the potential environment impact of a landfill due to leachate movement. Several site visits to industrial and waste management facilities form the basis of journal entries where students reflect on their changing understanding of waste avoidance and management. **INDICATIVE KEY LEARNING RESOURCES** Guidelines accessed from **http://www.epa.vic.gov.au/business-and-industry/guidelines (http://www.epa.vic.gov.au/business-and-industry/guidelines)** Policies and legislation accessed from **http://www.epa.vic.gov.au/about-us/legislation-and-policy/state-environment-protection-policies (http://www.epa.vic.gov.au/about-us/legislation-and-policy/state-environment-protection-policies)** **CAREERS / INDUSTRY LINKS** Presenters from government agencies and the waste management industry present case studies. Students who are already working in the industry can base their tutorial papers on topics related to their workplace. Site visits are undertaken to enhance students understanding of operating environment within waste management operations.
Related Course(s):	Master of Environmental Engineering 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 (Environmental) Tailored Specialisation Tailored Specialisation Waste Management Waste Management