ENEN90027 Energy for Sustainable Development

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	This subject is not offered in 2014.
Time Commitment:	Contact Hours: 36 hours, comprising of two hours of lectures and one hour set task and discussions per week Total Time Commitment: 200 hours
Prerequisites:	None
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
Contact:	Associate Professor Lu Aye **l.aye@unimelb.edu.au (mailto:l.aye@unimelb.edu.au)**
Subject Overview:	**AIMS** This subject provides understanding of the principles of development and sustainability in the context of renewable and non-renewable energy sources. Social, environmental and financial implications of technologies to de-carbonise emissions and technologies that can offer a future non-carbon energy supply are discussed. This subject uses a project based learning where students work in teams to investigate the appropriateness of a selected energy source or a selected technology for a particular country, region or a location. Students learn to apply the principles of sustainability and development. Knowledge gained in this subject will allow graduates to practice in the area of energy policy and planning. The subject complements other subjects offered in the energy theme of the Department such as Solar Energy, Energy Efficiency Technology and Sustainable Infrastructure Engineering. **INDICATIVE CONTENT** # Introduction: What does 'sustainable' mean? What is development? A model for sustainable development # Consumption (needs versus wants), Global perspectives (inequality and resource distribution) # Role of energy in development # Requirements for an sustainable energy supply # Carbon versus non-carbon energy supply - overview (resources, usage) # Problems with past patterns of energy use # Energy efficiency (potential and limits) # Energy Policy # Transport futures and peak oil (resources) # Carbon capture and storage # Nuclear fission and fusion

	# Renewable energy technologies - large and small # Discussion Forum: Reality of Sustainability
Learning Outcomes:	**INTENDED LEARNING OUTCOMES (ILO)** Having completed this subject the student is expected to: 1 Critique energy systems and sources for their sustainability 2 Describe the various technologies that have the potential to provide a sustainable energy supply system 3 Analyse the conflicting outcomes arising from the need for increased energy use in most developing countries and the global and local needs for sustainability and minimal environmental impact 4 Describe and analyse the factors which lead to making an informed choice between energy resources and technologies
Assessment:	One 3-hour written examination at end of semester (50%). Associated with Intended Learning Outcomes (ILOs) 1, 3, 4. One 2000 word (per student) group report, due at the end of semester (35%). Assesses ILO 1, 2, 3 and 4. One presentation for each group of up to 15 minutes, during the semester at a time to be advised (15%). Assesses ILOs 1, 2, 3 and 4.
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:	Students successfully completing this subject should develop the following general 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 # Ability to utilise a systems approach to design and operational performance # Capacity for independent critical thought, rational inquiry and self-directed learning # Ability to communicate effectively, with the engineering team and with the community at large
Notes:	**LEARNING AND TEACHING METHODS** The subject is based on presentations by two lecturers who are experts in the field. In addition each student prepares and presents a research report on an energy and sustainable development topic related to a chosen country, part of a country or a city of their interest. **INDICATIVE KEY LEARNING RESOURCES** Reference book: • Diesendorf, M (2007) Greenhouse Solutions with Sustainable Energy, University of New South Wales Press Journals: • Journal of Energy and Development • Energy Policy • Journal of Sustainable Development **CAREERS / INDUSTRY LINKS** Sustainable Energy Association of Australia (SEA)
Related Course(s):	Master of Engineering Structures Master of Engineering Structures Master of Environmental Engineering Master of Environmental Engineering Master of Philosophy - Engineering Ph.D.- Engineering
Related Majors/Minors/ Specialisations:	Climate Change Climate Change Development Development Energy Studies

	Energy Studies Environmental Science Environmental Science Master of Engineering (Civil) Master of Engineering (Environmental) Master of Engineering (Geomatics) Tailored Specialisation Tailored Specialisation