ENEN90014 Sustainable Buildings

Credit Points:	12.5
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2015, Parkville This subject commences in the following study period/s: September, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 36 hours: This is a week long intensive subject held in the mid-semester break of Semester 2, with an introductory lecture in orientation week. During the mid-semester break there will be 30 hours of lectures and 5 hours of tutorials. Total Time Commitment: 140 hours
Prerequisites:	None
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	This subject is delivered in conjunction with:

Subject	Study Period Commencement:	Credit Points:
ABPL90120 Building Sustainability	September	12.50

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:	Assoc Prof Lu Aye
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Subject Overview:	**AIMS** This subject provides a multi-disciplinary overview of the design of sustainable buildings and considers the design from an architectural, services engineering, facade engineering, environmental engineering and structural engineering, tenants and owners perspective. A number of industry based case study examples will be introduced to complement the lectures. This subject uses a project based learning project where students work in teams to design a new or refurbished commercial building to improve the environmental and social performance of the building. Students learn to apply sustainability-rating tools used in industry to their solutions. Students in the subject come from different disciplinary backgrounds, principally engineering and architecture, and are expected to share their knowledge and learn from each other to successfully complete the project work. This stands them in good stead for entering professional practice in the area of sustainability. **INDICATIVE CONTENT** Topics include: ecological sustainable design, life cycle analysis, planning for sustainable buildings and cities, regulatory environment, barriers to green buildings, green building rating tools, material selection, embodied energy, operating energy, indoor environmental quality (noise, light and air), facade systems, ventilation systems, transportation, water treatment

	systems, water efficiency, building economics, and staff productivity. These will be covered in the following thematic areas: # Sustainable Cities # Sustainable Precincts # Building Envelope # Building services - Heating, Ventilation and Air Conditioning # Building services - Energy # Building Services - water # Existing Buildings # Green Building Rating Tools # ESD Drivers and Barriers # ESD Economics # the process of a green building - 60L CH2 # Business Perspective # Case Studies.
Learning Outcomes:	**INTENDED LEARNING OUTCOMES (ILO)** Having completed this subject the student is expected to: 1 Identify the critical sustainability issues that should be addressed in planning a building or new development 2 Estimate the green star rating of a new building 3 Identify the issues effecting indoor environmental quality 4 Select different heating and cooling ventilation systems and justify the selection 5 Calculate the embodied energy of different structural systems including recycled material 6 Calculate the utilisation energy and greenhouse gas production of different building conceptual designs 7 Carry out conceptual designs for the design of a water supply system for a building with a focus on water conservation and recycling measures and estimate the expected water consumption requirements 8 Undertake cost studies of different green star rated buildings using life cycle cost analysis techniques.
Assessment:	One 2-hour written exam conducted during the second semester examination period (40%). Associated with Intended Learning Outcomes (ILOs) 1 to 8 A test on pre-reading that occurs one week prior to the mid semester break (10%) Written group assignments of approximately 3000 words per person in total, or equivalent. Requires approximately 75 hours of work per student (50%); due 4 weeks after the September contact time; peer assessment is used. Associated with ILOs 1 to 8.
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:	# Understanding of social, cultural, global and environmental responsibilities and the need to employ principles of sustainable development # Ability to utilise a systems approach to complex problems and to design for operational performance # Capacity for lifelong learning and professional development # Understanding of professional and ethical responsibilities, and commitment to them.
Notes:	**LEARNING AND TEACHING METHODS** The subject is based on presentations by experienced industry professionals who present case studies in their area of expertise. In addition each student prepares a group assignment paper on refurbishment of a selected office building to improve Green Star rating. **INDICATIVE KEY LEARNING RESOURCES** • CH2 Building Learning Construct II on line **http://people.eng.unimelb.edu.au/lua/CH2/ (http://people.eng.unimelb.edu.au/lua/CH2/)**

	• Selective Papers from CRC Construction Innovation **http://www.construction-innovation.info/index1e35.html?id=39 (http://www.construction-innovation.info/index1e35.html?id=39)** • Your Building Prospering from Sustainability **http://www.yourbuilding.org/ (http://www.yourbuilding.org/)** • GBCA rating tools **http://www.gbca.org.au/green-star/rating-tools/ (http://www.gbca.org.au/green-star/rating-tools/)** **CAREERS / INDUSTRY LINKS** Presenters from industry present case studies. Green Building Council Australia
Related Course(s):	Master of Energy Systems Master of Engineering Management Master of Engineering Project Management Master of Engineering Structures Master of Environmental Engineering Master of Philosophy - Engineering Ph.D.- Engineering
Related Majors/Minors/ Specialisations:	Climate Change Climate Change Energy Efficiency Modelling and Implementation Energy Efficiency Modelling and Implementation Energy Studies Energy Studies Master of Engineering (Civil) Master of Engineering (Environmental) Master of Engineering (Structural) Tailored Specialisation Tailored Specialisation