

## ELEN90072 Energy Efficient Networking

<b>Credit Points:</b>	12.5
<b>Level:</b>	9 (Graduate/Postgraduate)
<b>Dates &amp; Locations:</b>	2015, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.
<b>Time Commitment:</b>	Contact Hours: 36 hours of lectures Total Time Commitment: 200 hours
<b>Prerequisites:</b>	Admission into the 351AA or MR-MPHIL research higher degree (Masters or PhD) in Engineering;
<b>Corequisites:</b>	None
<b>Recommended Background Knowledge:</b>	None
<b>Non Allowed Subjects:</b>	None
<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>	Assoc Prof Marcus Brazil
<b>Contact:</b>	Email: <a href="mailto:elen-subjectenquiry@unimelb.edu.au">elen-subjectenquiry@unimelb.edu.au</a> (mailto:elen-subjectenquiry@unimelb.edu.au)
<b>Subject Overview:</b>	<p><b>AIMS</b></p> <p>This course will provide an introduction and overview of energy efficiency in communications networks. The course will look at trends (past and future), challenges and opportunities presented by evolution to energy efficient telecommunications. The course will be presented in conjunction with Telstra by a group of experts in various aspects of network energy efficiency. There will be an emphasis on practical implementation and understanding of energy efficiency and the technologies and systems to reduce the average “energy per bit” in a telecommunications network.</p> <p><b>INDICATIVE CONTENT</b></p> <ul style="list-style-type: none"> <li># Growth of ICT and its power consumption</li> <li># Sustainability implications of this growth</li> <li># Modelling network power consumption</li> <li># Power consumption modelling of networks</li> <li># Power consumption of equipment</li> <li># Equipment power consumption trends</li> <li># Modelling overall network energy consumption</li> <li># What is “energy efficiency” and how can it be improved?</li> <li># What energy efficiency is attainable?</li> <li># Practical issues confronting implementing energy efficient networks</li> </ul>

	<p>a) Service Level Agreements and commitments</p> <p>b) Dealing with legacy equipment and services</p> <p>c) Change management and the move toward energy efficient networks</p> <p># Overview of global activities for “greening” of networks</p>
<b>Learning Outcomes:</b>	<p><b>INTENDED LEARNING OUTCOMES (ILO) / SUBJECT OBJECTIVES</b></p> <p>On completion of this subject, the student should have:</p> <ol style="list-style-type: none"> <li>1 An intermediate level of knowledge and understanding of the issues and challenges that must be addressed to improve the energy efficiency of telecommunications networks as the use of the Internet and associated services grows in the coming years</li> <li>2 An appreciation of the changes required in a telecommunications provider organisation to successfully move it towards implementing more energy efficient networks and systems.</li> </ol>
<b>Assessment:</b>	<p>The assessment (other than the written exam) will consist of a team Project which will be assessed via an oral exam and a team report (which together will contribute to 60% of the final mark). Each team will consist of two or three students. The oral exam will involve each student giving a 15-20 minute presentation on some aspect of the team project to an audience of experts, followed by a 5 minute question and answer session. Students will be assessed individually for this oral exam. The team Project report is a written report of not more than 15 pages, at the end of semester (approximately 50-55 hours of work per student), worth 36%. Students will receive marks as a team; however individual marks may be weighted based on the student's ability to knowledgeably answer questions during the oral exam Oral examination 15-20 minutes per student at the end of semester, worth 24% A written examination, not exceeding 3 hours, at the end of semester 40% Intended Learning Outcomes (ILOs) 1 and 2 are assessed in the final written examination, project submission and oral examination.</p>
<b>Prescribed Texts:</b>	None
<b>Recommended Texts:</b>	None
<b>Breadth Options:</b>	This subject is not available as a breadth subject.
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Generic Skills:</b>	<p>This course will provide the following skills:</p> <ul style="list-style-type: none"> <li># Applying knowledge of science and engineering fundamentals to the improvement of energy efficiency of telecommunication networks</li> <li># Analysing and identifying energy efficiency issues in a telecommunications network and then to formulate possible solutions to improve network energy efficiency</li> <li># Utilising a systematic approach to the improvement of telecommunications network energy efficiency</li> <li># A capacity for independent critical thought, rational inquiry and self-directed learning</li> <li># A profound respect for truth and intellectual integrity, and for the ethics of scholarship.</li> </ul>
<b>Related Course(s):</b>	<p>Master of Philosophy - Engineering</p> <p>Ph.D.- Engineering</p>