

# ELEN90069 Electrical Power Systems

<b>Credit Points:</b>	12.5
<b>Level:</b>	9 (Graduate/Postgraduate)
<b>Dates &amp; Locations:</b>	2016, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
<b>Time Commitment:</b>	Contact Hours: 1 x 3 hour lecture per week and up to 12 hours of tutorials Total Time Commitment: 200 hours
<b>Prerequisites:</b>	Admission into the MC-ENGYSYS Master of Energy Systems OR Admission into a postgraduate course offered by the Melbourne School of Engineering except MC-ENG Master of Engineering (Electrical) and MC-ENG Master of Engineering (Electrical with Business), subject to program coordinator approval
<b>Corequisites:</b>	None
<b>Recommended Background Knowledge:</b>	None
<b>Non Allowed Subjects:</b>	Admission into the Master of Engineering (Electrical) or (Electrical with Business)
<b>Core Participation Requirements:</b>	<p>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.</p> <p>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: <a href="http://services.unimelb.edu.au/disability">http://services.unimelb.edu.au/disability</a></p>
<b>Coordinator:</b>	Assoc Prof Tansu Alpcan
<b>Contact:</b>	Dr. Tansu Alpcan Email: <a href="mailto:tansu.alpcan@unimelb.edu.au">tansu.alpcan@unimelb.edu.au</a> (mailto:tansu.alpcan@unimelb.edu.au)
<b>Subject Overview:</b>	<p><b>AIMS</b> This subject provides an overview of electrical power systems for students without significant background in Electrical Engineering. It will cover the basic elements of electrical power systems including generation, transmission and distribution.</p> <p><b>INDICATIVE CONTENT</b> Specific topics covered include:</p> <ul style="list-style-type: none"> <li># Electrical Network Basics: current, voltage, resistance, analysis of resistive circuits, capacitance, inductance, sinusoidal-steady state analysis</li> <li># Power System Analysis: AC power, transformers, generators, loads, three-phase systems, power lines, power flow analysis, reliability and stability</li> <li># Power System Operation: planning, scheduling, distributed generation, electricity markets, smart grid</li> </ul>
<b>Learning Outcomes:</b>	<p><b>INTENDED LEARNING OUTCOMES (ILO's)</b> Having completed this subject it is expected that the student be able to:</p>

	<ol style="list-style-type: none"> <li>1 Analyse simple electrical networks using basic device models and circuit theory</li> <li>2 Describe the core components of electrical power systems (generation, transmission and distribution)</li> <li>3 Describe the main components of the broader power system operations (including scheduling, electricity markets and the smart grid)</li> </ol>
<b>Assessment:</b>	One written examination, not exceeding three hours at the end of semester, worth 60% Continuous assessment of project work and assignments (approximately 40-45 hours of work per student), worth 30% Quizzes, worth 10%. Intended Learning Outcomes (ILO's) 1-3 are assessed in the final examinations, continuous assessment and quizzes.
<b>Prescribed Texts:</b>	None
<b>Recommended Texts:</b>	Alexandra von Meier, <i>Electric Power Systems: A Conceptual Introduction</i> , Wiley, 2006.
<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>On completion of this subject students should have developed the following generic skills:</p> <ul style="list-style-type: none"> <li># Ability to apply knowledge of basic science and engineering fundamentals</li> <li># Ability to undertake problem identification, formulation and solution</li> <li># Ability to communicate effectively, with the engineering team and with the community at large</li> <li># Capacity for independent critical thought, rational inquiry and self-directed learning</li> </ul>
<b>Notes:</b>	<p><b>LEARNING AND TEACHING METHODS</b></p> <p>This mode of delivery of this subject is through lectures supported by tutorials.</p> <p><b>INDICATIVE KEY LEARNING RESOURCES</b></p> <p>Full set of lecture notes, and tutorial sets are provided.</p> <p><b>CAREERS / INDUSTRY LINKS</b></p> <p>Guest speakers from power industry are usually invited to give seminars on technical issues related to their respective companies and how these issues relate to the content of this subject.</p>
<b>Related Course(s):</b>	Master of Energy Systems