

Engineering Graduate Capabilities Mapping – Electrical, Computer and Telecommunications Engineering

YEAR 4		ALL MAJORS											
1,2	ECTE451	Engineering Project 1	6	L1	L1, L2	L1, L3	L1, L2	L1, L2	L1, L2				
		One General Scheduel Elective Subject	6										
YEAR 4		ELECTRICAL ENGINEERING											
		3 Electrical Engineering Major Subjects	18										
		1 Elective Subject	6										
	AND	Option 1 or Option 2											
	Option 1	ELIGIBLE FOR HONOURS											
1,2	ECTE458	Engineering Project 2	12	L1, L3	L3	L2	L1, L2	L1, L2	L1, L2				
1,2	Option 2	ELIGIBLE FOR PASS DEGREE ONLY											
		2 Elective Subjects	12										
		Electrical Engineering Major Subjects											
	ECTE412	Power Electronics and Drives	6										
	ECTE423	Power System Analysis	6										
	ECTE433	Embedded Systems	6	L1	L1		L1	L1	L1			L1	
	ECTE441	Intelligent Control	6	L1	L3		L2	L2			L3		
	ECTE426	Power Distribution Systems	6	L1			L1						
	ECTE442	Computer Controlled Systems	6	L3	L3		L3	L3			L3		
	ECTE465	Wireless Communication Systems	6	L1	L2		L2	L2					
	ECTE471	Robotics and Flexible Automation	6				L1	L1	L1	L1			
YEAR 4	4	COMPUTER ENGINEERING											
	ECTE432	Computer Architecture	6				L1						
		2 Computer Engineering Major Subjects	18										
		1 Elective Subject	6										
	AND	Option 1 or Option 2											
	Option 1	ELIGIBLE FOR HONOURS											
1,2	ECTE458	Engineering Project 2	12	L1, L3	L3	L2	L1, L2	L1, L2	L1, L2				
1,2	Option 2	ELIGIBLE FOR PASS DEGREE ONLY											
		2 Elective Subjects	12										
		Computer Engineering Major Subjects											
	ECTE401	Multimedia Signal Processing	6				L1, L2						
	ECTE431	Real-Time Computing	6	L1	L1		L1	L1	L1			L1	

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	ECTE433	Embedded Systems	6	L1	L1		L1	L1	L1			L1	
	CSCI318	Software Engineering Practices and Principles	6										
	ECTE471	Robotics and Flexible Automation	6				L1	L1	L1	L1			
YEAR 4	4	TELECOMMUNICATIONS ENGINEERING											
2	ECTE469	Queueing Theory and Optimisation	6										
		2 Telecommunications Engineering Major Subjects	18										
		1 Elective Subject	6										
	AND	Option 1 or Option 2											
	Option 1	ELIGIBLE FOR HONOURS											
1,2	ECTE458	Engineering Project 2	12	L1, L3	L3	L2	L1, L2	L1, L2	L1, L2				
1,2	Option 2	ELIGIBLE FOR PASS DEGREE ONLY											
		2 Elective Subjects	12										
		Telecommunications Engineering Major Subjects											
	ECTE401	Multimedia Signal Processing	6				L1, L2						
	ECTE482	Network Engineering	6	L1		L1	L2						
	ECTE465	Wireless Communication Systems	6	L1	L2		L2	L2					
Year	4	Elective Subjects - All subjects made up from existing major subjects plus the following three subjects.											
	INFO411	Data Mining and Knowledge Discovery	6										
	ECTE427	Renewable and Embedded Generation	6	L3	L2		L1, L2	L2		L1			L3
	ECTE428	Energy Efficiency in Electricity Utilisation	6	L3	L2		L2	L1					L3

UOW ENGINEERING GRADUATE CAPABILITIES CONTINUUM

UOW Graduate Qualities	Engineering Graduate Capabilities	Level of Capability			Engineers Australia Stage 1 Competency Standards
		Level 1	Level 2	Level 3	
<p>Informed Have a sound knowledge of an area of study or profession and understand its current issues, locally and internationally.</p> <p>Know how to apply this knowledge.</p> <p>Understand how an area of study has developed and how it relates to other areas.</p>	<p>1 Professional knowledge, grounding & awareness</p>	<p>Maintain and update knowledge of own discipline.</p> <p>Seek and respond to feedback.</p>	<p>Learn from others within and outside own discipline. Evaluate own and others' engineering work process and product.</p> <p>Aware of current local and international issues, and their professional, legal and social/ethical impacts.</p>	<p>Adapt engineering work practice based on professional learning, taking into account local and international issues.</p>	<p>1.1. Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline.</p> <p>1.2. Conceptual understanding of the, mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline.</p> <p>1.3. In-depth understanding of specialist bodies of knowledge within the engineering discipline.</p> <p>1.6. Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the specific discipline.</p>
		<p>Access range of information sources.</p> <p>Select relevant readings and use effective referencing system.</p>	<p>Synthesise and integrate information to support an argument or strategy.</p>	<p>Critique and evaluate an argument or strategy.</p>	
<p>Independent learners Engage with new ideas and ways of thinking and critically analyse issues.</p> <p>Seek to extend knowledge through ongoing research, enquiry and reflection.</p> <p>Find and evaluate information, using a variety of sources and technologies.</p> <p>Acknowledge the work and ideas of others.</p>	<p>2 Information literacy, gathering & processing</p>	<p>Interpret and refine a research question.</p> <p>Use standard techniques and interpret data to solve defined research question.</p>	<p>Define a research question.</p> <p>Use databases and other sources for systematic research.</p> <p>Select appropriate techniques from a range of possibilities to answer a question.</p> <p>Comment on the validity and significance of findings.</p>	<p>Design a structured approach to researching a question.</p> <p>Propose new directions for research based on findings.</p>	<p>3.4. Professional use and management of information.</p> <p>1.4. Discernment of knowledge development and research directions within the engineering discipline.</p>
	<p>3 Research, analysis & evaluation</p>	<p>Analyse and define a problem.</p> <p>Use a range of standard options and rigorous approaches to solve a problem.</p>	<p>Adapt solutions to new types of problems, within a range of constraints (eg time, technical, financial, etc).</p>	<p>Use observations and ideas from diverse sources to conceptualise and develop a novel solution to a problem.</p>	
<p>Problem solvers Take on challenges and opportunities. Apply creative, logical and critical thinking skills to respond effectively. Make and implement decisions. Be flexible, thorough, innovative and aim for high standards.</p>	<p>4 Problem solving skills</p>	<p>Document basic information. Summarise and describe in a logical structure using clear syntax and correct grammar.</p>	<p>Write a document to support a position, using suitable structure and style for the audience, supported by evidence.</p> <p>Deliver and receive information using appropriate graphics, tables, equations, flow charts, etc.</p>	<p>Write a substantial document that pulls together diverse ideas and integrates evidence.</p> <p>Critically evaluate strengths and weaknesses of arguments.</p> <p>Use and present evidence well to support conclusions.</p>	<p>2.1. Application of established engineering methods to complex engineering problem solving.</p> <p>2.2. Fluent application of engineering techniques, tools and resources.</p> <p>2.3. Application of systematic engineering synthesis and design processes.</p> <p>3.3. Creative, innovative and pro-active demeanour.</p>
<p>Effective communicators Articulate ideas and convey them effectively using a range of media.</p> <p>Work collaboratively and engage with people in different settings.</p> <p>Recognise how culture can shape communication.</p>	<p>6 Oral communication</p>	<p>Effectively provide and receive information with individuals or groups, formally and informally.</p>	<p>Design and deliver a formal presentation appropriate to an audience.</p> <p>Elicit feedback and clarification of different points of view.</p>	<p>Provide an oral defence and response to feedback on major proposal.</p> <p>Adapt style/manner of delivery in response to audience, and cross-cultural needs.</p> <p>Consult and negotiate with a range of stakeholders</p>	
	<p>7 Teamwork</p>	<p>Contribute to group decision-making, meet obligations as a member of a group working on a straightforward task.</p>	<p>Contribute to timely, successful completion of a more complex group task.</p> <p>Understand roles in teams and how teams develop. Make best use of members' skills.</p>	<p>Lead a team to successful completion of a major project, complying with a range of constraints (eg time, technical, financial, etc), minimising/resolving conflict.</p>	<p>3.2. Effective oral and written communication in professional and lay domains.</p> <p>1.5. Knowledge of contextual factors impacting the engineering discipline.</p>
<p>Responsible Understand how decisions can affect others and make ethically informed choices.</p> <p>Appreciate and respect diversity.</p> <p>Act with integrity as part of local, national, global and professional communities.</p>	<p>8 Respect for views, values, culture of others</p>	<p>Work with people from other cultures and countries.</p>	<p>Understand and respect other people's perspectives.</p>	<p>Consult other people and incorporate their input in engineering design/ decision processes.</p>	
	<p>9 Ethics and Professionalism</p>	<p>Explain ethical engineering according to the Engineers Australia Code of Ethics.</p>	<p>Given engineering's status as a self-regulating and service oriented profession, distinguish between own (personal) morals and professional ethics.</p>	<p>Given an ethical conundrum, describe & justify the 'right' course of action, and explain how to act to maintain a position of trust with society.</p>	
	<p>10 Sustainability, societal & environmental impact</p>	<p>Appreciate sustainability. Aware of social and environmental impacts of engineering.</p>	<p>Predict and minimise adverse social and environmental impacts.</p>	<p>Take a leading role in enacting sustainability and socially responsible practice in all aspects of engineering work.</p>	