ADVANCED DIPLOMA OF PLANT ENGINEERING

MODULE DETAILS	**Module 5: Fundamentals of Professional Engineering** Nominal duration: 4 weeks (2 webinars at the start of this module and 2 webinars at the end of the course) (48 hours time commitment) + 8 extra webinars throughout the course as described below (96 hours time commitment) = 144 hours total time commitment for this module. This time commitment includes the preparation reading, attendance at each webinar (1 hour plus 15-30 minutes for discussion), and the time necessary to complete the assignments and further study. This module covers the project management principles and Stage 1 competency standards for professional engineers which will be delivered over the remaining period of the course for students to work on a group project while studying other modules. Students will attend two webinar sessions at the start of this module. On regular intervals students will attend eight additional webinar sessions spread over the remaining course while attending other modules. In these instances, the student will attend two webinar sessions in a week. Students will allocate additional time to do their group project and during the last two weeks (week 71 and 72) of the course the students will present their findings to the other students.
MODULE PURPOSE	This module covers project management principles and various non-technical aspects of engineering education, stage 1 competency standards for the professional engineer as required by Engineers Australia. The broad aims of this unit are to enable the student to: • Assess personal strengths, weaknesses and preferences • Implement personal development strategies that align with Engineers Australia's professional standards • Undertake complex ill-defined engineering projects and report appropriate solutions • Investigate, develop and articulate technical knowledge required to undertake engineering projects

	• Articulate and demonstrate personal development of time management skills, project management skills and team management skills • Analyse and assess the viability of engineering projects using sustainability frameworks • Present technical engineering information to peers and superiors • Continue to develop a portfolio to demonstrate development of a professional attitude, problem solving skills, technical knowledge and productive work practices • Provide evidence of a professional capacity to communicate, work and learn productively, both individually and in team
PRE-REQUISITE MODULE(S)	Module 4: Pressure Vessels and Boilers
ASSESSMENT STRATEGY / CONDITIONS OF ASSESSMENT	To evaluate the achievement of the learning outcomes; written assignments, group projects and practical exercises are set. The Training and Assessment Matrix (TAM) documents the assessment criteria included in these assessments, based on the learning outcomes. The Training and Assessment Strategy (TAS) documents the overall training strategy for this Advanced Diploma course. The conditions of assessment are outlined in the Assessment Guidelines, TAM and TAS. Written assignments, group projects and practical exercises are required to meet assessment criteria outlined in the Assessment Guidelines, TAM and TAS.
SUMMARY OF LEARNING OUTCOMES	1. Demonstrate the ability to self-manage 2. Demonstrate familiarity with key Project Management issues 3. Communicate in a Technical environment 4. Demonstrate professional and global awareness 5. Describe the basics of project finance 6. Demonstrate awareness of workplace health and safety-related issues

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Learning Outcome 1	**Demonstrate the ability to self-manage**	
Assessment Criteria	1.1	Create a personal career plan and online portfolio of skills
	1.2	Explain and demonstrate time management techniques
	1.3	Demonstrate the application of (a) formal decision-making methodology and (b) decision making software
	1.4	Compare various leadership styles
	1.5	Examine the concept of Situational Leadership
Learning Outcome 2	**Demonstrate familiarity with key Project Management issues**	
Assessment Criteria	2.1	Execute a group project as per PMBOK guidelines
	2.2	Apply software tools to produce project schedules (PERT/Gantt)
	2.3	Examine the basic risk issues addressed in Risk Management standard AS/NZS ISO 31000:2009
	2.4	Perform (a) qualitative and (b) quantitative risk assessments
Learning Outcome 3	**Communicate in a Technical environment**	
Assessment Criteria	3.1	Examine and discuss the basics of interpersonal communication
	3.2	Create and present PowerPoint slideshows
	3.3	Demonstrate mastery of basic Technical Writing skills (emails, memos)
	3.4	Draw up a functional specification
	3.5	Prepare a formal technical report
	3.6	Operate within a group
Learning Outcome 4	**Demonstrate professional and global awareness**	
Assessment Criteria	4.1	Examine the dos and don'ts of professional conduct
	4.2	Show awareness of ethics issues

	4.3	Discuss the responsibilities of the Engineering Associate
	4.4	Show awareness of global issues such as depletion, pollution, extinction and degradation
	4.5	Apply the concepts of sustainable development and design
	4.6	Demonstrate familiarity with Engineering standards and Codes of Practice
	4.7	Apply basic Contract Law to selected case studies
Learning Outcome 5	**Describe the basics of project finance**	
Assessment Criteria	5.1	Estimate the cost of a given project
	5.2	Draw up a spread sheet-based cash flow model for a given project
	5.3	Produce a discounted cash flow for a project
	5.4	Determine the merits of a proposed project in terms of Net Present Value (NPV) and Internal Rate of Return (IRR)
Learning Outcome 6	**Demonstrate awareness of workplace health and safety-related issues**	
Assessment Criteria	6.1	Demonstrate awareness of the essence of Occupational Health and Safety regulations
	6.2	Outline the procedure for performing workplace health and safety assessments
Delivery mode		
A combination of asynchronous and synchronous e-learning delivery comprising a judicious mix of interactive online web conferencing, simulation (virtual labs) software, remote online labs, online videos, PowerPoint slides, notes, reading and study materials (in PDF, HTML and Word format) accessed through the Moodle Learning Management System (LMS).		