



ADVANCED DIPLOMA OF MECHANICAL ENGINEERING TECHNOLOGY

MODULE DETAILS

Module 15: Fundamentals of Professional Engineering

Nominal duration: 4 weeks (48 hours total time commitment)

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.

MODULE PURPOSE

This module covers project management principles and various non-technical aspects of engineering education, stage 1 competency standards for the engineering associate 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 MODULES/UNIT(S)

NONE

ASSESSMENT STRATEGY

To evaluate the achievement of the learning outcomes; written assignments and a group project are set.

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. Apply 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	<ul style="list-style-type: none">1.1 Create a personal career plan and an online portfolio of skills1.2 Explain and demonstrate time management techniques1.3 Demonstrate the application of (a) formal decision-making methodology and (b) decision making software1.4 Compare various leadership styles1.5 Examine the concept of Situational Leadership
Learning Outcome 2	Demonstrate familiarity with key Project Management issues
Assessment Criteria	<ul style="list-style-type: none">2.1 Execute a group project as per PMBOK guidelines2.2 Apply software tools to produce project schedules (PERT/Gantt)2.3 Examine the basic risk issues addressed in Risk Management standard AS/NZA ISO 31000:20092.4 Perform qualitative and quantitative risk assessments
Learning Outcome 3	Communicate in a Technical environment
Assessment criteria	<ul style="list-style-type: none">3.1 Examine and discuss the basics of interpersonal communication3.2 Create and present PowerPoint slideshows3.3 Demonstrate mastery of basic Technical Writing skills (email, memos)3.4 Draw up a functional specification3.5 Prepare a formal technical report3.6 Operate within a group



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Learning Outcome 4	Demonstrate professional and global awareness
Assessment criteria	<ul style="list-style-type: none">4.1 Examine the dos and don'ts of professional conduct4.2 Show awareness of ethics issues4.3 Discuss the responsibilities of the Engineering Associate4.4 Show awareness of global issues such as depletion, pollution, extinction and degradation4.5 Apply the concepts of sustainable development and design4.6 Demonstrate familiarity with Engineering standards and Codes of Practice4.7 Apply basic Contract Law to selected case studies
Learning Outcome 5	Apply the basics of project finance
Assessment criteria	<ul style="list-style-type: none">5.1 Estimate the cost of a given project5.2 Draw up a spread sheet-based cash flow model for a given project5.3 Produce a discounted cash flow for a project5.4 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	<ul style="list-style-type: none">6.1 Demonstrate awareness of the essence of Occupational Health and Safety regulations6.2 Outline the procedure for performing workplace health and safety assessments6.3 Examine the basics of High Voltage (HV) safety regulations and procedures



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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).