

ADVANCED DIPLOMA OF BIOMEDICAL ENGINEERING

MODULE DETAILS	MODULE 3: FUNDAMENTALS OF PROFESSIONAL ENGINEERING
	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>
MODULE PURPOSE	<p>This module covers project management principles and various non-technical aspects of engineering education in compliance with the 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:</p> <ul style="list-style-type: none"> • 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

ADVANCED DIPLOMA OF BIOMEDICAL ENGINEERING

	<ul style="list-style-type: none"> • 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-REQUISITES MODULE, UNITS / CO-REQUISITES	Nil	
ASSESSMENT STRATEGY	To evaluate the achievement of the learning outcomes; written assignments, group projects and practical exercises are set.	
SUMMARY OF LEARNING OUTCOMES	<ol style="list-style-type: none"> 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. Administer the basics of project finance 6. Demonstrate awareness of workplace health and safety-related issues 	
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

ADVANCED DIPLOMA OF BIOMEDICAL ENGINEERING

	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 qualitative and 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	List and apply the do's and don'ts of professional conduct
	4.2	Illustrate awareness of ethics issues
	4.3	List the responsibilities of the Engineering Associate
	4.4	Demonstrate awareness of global issues such as depletion, pollution, extinction and degradation

ADVANCED DIPLOMA OF BIOMEDICAL ENGINEERING

	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	Administer the basics of project finance	
Assessment Criteria	5.1	Estimate the cost of a given project
	5.2	Construct a spread sheet-based cash flow model for a given project
	5.3	Construct a discounted cash flow for a project
	5.4	Illustrate 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
	6.3	Apply the basics of High Voltage (HV) safety regulations and procedures
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, HTMLI and Word format) accessed through the Moodle Learning Management System (LMS).		