ENGG3050

Engineering Leadership and Entrepreneurship

Session 1, In person-scheduled-weekday, North Ryde 2024

School of Engineering

Contents

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General Information

Unit convenor and teaching staff
Convenor
Nicholas Tse
nicholas.tse@mq.edu.au
Contact via email or in class
50 WR
during SGTA or email

Credit points
10

Prerequisites
((ENGG2000 or ENGG200) and (ENGG450 or ENGG2050))

Corequisites

Co-badged status

Unit description
The 5th SPINE unit aims to develop professional, transferable and employability skills. This unit deals with the skills required to effectively lead and manage an ill-defined engineering project. Students will be exposed to tools and concepts that are integral to the success of any engineering projects. Students will be able to perform the appropriate cost/benefit analysis and apply the appropriate risk mitigation techniques to ensure project success. Furthermore, students will be able to view all engineering projects and endeavours from a finance perspective and the ability to apply the appropriate priorities to balance societal benefits verses financial gains. Students will be able to apply these skills in managing any large-scaled multi-domain multi-disciplinary projects.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

ULO1: Analyse and model engineering projects for feasibility using cost, benefit and efficiency perspectives.

ULO2: Applying management and leadership tools to effectively engage with the

relevant stakeholders of an engineering project.

ULO3: Explain and demonstrate ethical judgment and ethical practices.

ULO4: Apply appropriate tools to manage teams to ensure timely delivery of engineering outcomes.

ULO5: Communicate an engineering solution as a value proposition to relevant stakeholders.

General Assessment Information

Grading and passing requirements for unit

In order to pass this unit, a student must obtain a mark of 50 or more for the unit (i.e. obtain a passing grade of P/ CR/ D/ HD).

For any late submission of assignments, 100% will be deducted. The stringent penalty enforcement is to be in line with the professional skills development within the SPINE units. Extenuating circumstances will be considered upon lodgement of a formal request for special consideration and/or with prior notice. Resubmission of work is generally NOT allowed unless stated.

For further details about grading, please refer below to the policies and procedures section.

Professional Hurdle (Fitness to practice)

Starting from 2nd year and onwards, all SPINE units will be applying the professional hurdle requirement widely known as "Fitness to Practice". According to the policy, fitness to practice is deemed as exhibiting behaviours that demonstrate professional competence, acceptable professional behaviour, freedom from an impairment, and compliance with program-specific requirements needed for a student to practice properly and safely throughout their Practical, Clinical or Professional program or unit. Failure to demonstrate these qualities will result in students being at risk of not progressing in the professional engineering program regardless of their marks and grades within individual units. Please refer to the University policy for further details.

Assessment Tasks

Name	Weighting	Hurdle	Due
Reflective writing	6%	No	Week 7 and 13
Online quizzes	30%	No	W 4, 6, 8, 10, 12
Case study 1	17%	No	Week 5
In class presentation	20%	No	W9-13

Name	Weighting	Hurdle	Due
Case study 2	17%	No	Week 13
Workshop participation	10%	No	W1-13

Reflective writing

Assessment Type [1]: Reflective Writing
Indicative Time on Task [2]: 5 hours
Due: **Week 7 and 13**
Weighting: **6%**

Reflective writing on transferable skills learnt. There will be two required submission at two-time points in the semester. Refer to iLearn for more information.

On successful completion you will be able to:

- Analyse and model engineering projects for feasibility using cost, benefit and efficiency perspectives.
- Explain and demonstrate ethical judgment and ethical practices.

Online quizzes

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 16 hours
Due: **W 4, 6, 8, 10, 12**
Weighting: **30%**

5 online quizzes throughout session

On successful completion you will be able to:

- Analyse and model engineering projects for feasibility using cost, benefit and efficiency perspectives.
- Applying management and leadership tools to effectively engage with the relevant stakeholders of an engineering project.
- Explain and demonstrate ethical judgment and ethical practices.
- Apply appropriate tools to manage teams to ensure timely delivery of engineering

outcomes.

Case study 1

Assessment Type [1]: Case study/analysis
Indicative Time on Task [2]: 10 hours
Due: **Week 5**
Weighting: **17%**

Case study on engineering entrepreneurship

On successful completion you will be able to:
- Analyse and model engineering projects for feasibility using cost, benefit and efficiency perspectives.
- Applying management and leadership tools to effectively engage with the relevant stakeholders of an engineering project.
- Explain and demonstrate ethical judgment and ethical practices.
- Communicate an engineering solution as a value proposition to relevant stakeholders.

In class presentation

Assessment Type [1]: Presentation
Indicative Time on Task [2]: 14 hours
Due: **W9-13**
Weighting: **20%**

In class presentation on a given research topic

On successful completion you will be able to:
- Communicate an engineering solution as a value proposition to relevant stakeholders.

Case study 2

Assessment Type [1]: Case study/analysis
Indicative Time on Task [2]: 10 hours
Due: **Week 13**
Weighting: **17%**

Case study on engineering leadership

On successful completion you will be able to:

- Applying management and leadership tools to effectively engage with the relevant stakeholders of an engineering project.
- Explain and demonstrate ethical judgment and ethical practices.
- Apply appropriate tools to manage teams to ensure timely delivery of engineering outcomes.

Workshop participation

Assessment Type [1]: Participatory task
Indicative Time on Task [2]: 0 hours
Due: **W1-13**
Weighting: **10%**

Weekly participation in workshop activities. Indicative hours spent on assessment excludes scheduled workshop hours.

On successful completion you will be able to:

- Analyse and model engineering projects for feasibility using cost, benefit and efficiency perspectives.
- Applying management and leadership tools to effectively engage with the relevant stakeholders of an engineering project.
- Explain and demonstrate ethical judgment and ethical practices.
- Apply appropriate tools to manage teams to ensure timely delivery of engineering outcomes.
- Communicate an engineering solution as a value proposition to relevant stakeholders.

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[1] If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the Writing Centre for academic skills support.

[2] Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

All slides and materials, recommended book list and pdfs will be provided on iLearn.

Unit Schedule

Refer to iLearn for a detailed schedule.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Assessment Procedure
- Complaints Resolution Procedure for Students and Members of the Public
- Special Consideration Policy

Students seeking more policy resources can visit Student Policies (https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit Policy Central (https://policies.mq.edu.au) and use the search tool.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/admin/other-resources/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe academic integrity – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a

range of resources and services to help you reach your potential, including free online writing an d maths support, academic skills development and wellbeing consultations.

Student Support

Macquarie University provides a range of support services for students. For details, visit http://stu dents.mq.edu.au/support/

The Writing Centre

The Writing Centre provides resources to develop your English language proficiency, academic writing, and communication skills.

- Workshops
- Chat with a WriteWISE peer writing leader
- Access StudyWISE
- Upload an assignment to Studiosity
- Complete the Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

Student Services and Support

Macquarie University offers a range of Student Support Services including:

- IT Support
- Accessibility and disability support with study
- Mental health support
- Safety support to respond to bullying, harassment, sexual harassment and sexual assault
- Social support including information about finances, tenancy and legal issues
- Student Advocacy provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via AskMQ, or contact Service Connect.

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/ offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy.

The policy applies to all who connect to the MQ network including students.

Changes from Previous Offering

Changes from the 2023 offering.

- Changes to Staff
- Some modifications of class running
- Selection of companies for the presentation segment of the unit.
- Unique SGTA attendance recording
- A new feedback system for presentation was implemented.
- Changes to quiz questions.
- Addressed key concerns from LEUs

Engineers Australia Competency Mapping

All key learning outcomes of this unit (see learning outcomes section; ULO1 – ULO5) are designed to meet the requirements of the Engineers Australia competency standard. The table below shows how the learning outcomes are mapped to the requirements.

Engineers Australia Competency Mapping

EA Competency Standard		Unit Learning Outcomes	
Knowledge and Skill Base	1.1	Comprehensive, theory-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline.	
	1.2	Conceptual understanding of mathematics, numerical analysis, statistics, and Electronic and information sciences which underpin the engineering discipline.	
	1.3	In-depth understanding of specialist bodies of knowledge within the engineering discipline	
	1.4	Discernment of knowledge development and research directions within the engineering discipline.	
	1.5	Knowledge of engineering design practice and contextual factors impacting the engineering discipline.	
	1.6	Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline.	ULO2
Engineering Application Ability	2.1	Application of established engineering methods to complex engineering problem-solving.	ULO1
	2.2	Fluent application of engineering techniques, tools and resources.	ULO1
	2.3	Application of systematic engineering synthesis and design processes	ULO1
	2.4	Application of systematic approaches to the conduct and management of engineering projects.	ULO2,ULO4
Professional and Personal Attributes	3.1	Ethical conduct and professional accountability.	ULO2

	3.2	Effective oral and written communication in professional and lay domains.	ULO5
	3.3	Creative, innovative and proactive demeanour.	ULO1,ULO2
	3.4	Professional use and management of information.	
	3.5	Orderly management of self, and professional conduct.	ULO3
	3.6	Effective team membership and team leadership	ULO4

Unit information based on version 2024.02 of the Handbook