ENGG8106

Engineering Innovation and Entrepreneurship

Session 1, In person-scheduled-weekday, North Ryde 2025

School of Engineering

Contents

General Information

Unit convenor and teaching staff
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Credit points
10

Prerequisites
30cp at 3000 level or above

Corequisites

Co-badged status

Unit description
This unit is designed to equip students with the necessary skills and knowledge to develop scalable startups and work effectively in engineering organizations with an entrepreneurial mindset. Through this course, students will learn the fundamental knowledge and procedures necessary for creating successful ventures, including the process of understanding customer requirements and translating them into product specifications, as well as designing a process for production. Other key aspects of entrepreneurship will also be covered, including business planning, financial management, sources of finance, crowdfunding, entrepreneurial behaviour, and technology management.

Learning in this unit enhances student understanding of global challenges identified by the United Nations Sustainable Development Goals (UNSDGs) Decent Work and Economic Growth; Industry, Innovation and Infrastructure

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: Apply the fundamental knowledge and theoretical frameworks related to entrepreneurial behaviour in business management.
ULO2: Build an entrepreneurial mindset for value creation in existing business and create new business.
ULO3: Develop comprehensive knowledge business planning, financial management and technology management to develop successful ventures.
ULO4: Identify and pursue business opportunities, and create value for all stakeholders.
ULO5: Apply the process of capturing market and customer needs and converting these to a viable and sustainable products.

Assessment Tasks

Name	Weighting	Hurdle	Due
Business Proposal	40%	No	Week 13
Case Studies	30%	No	Weeks 2, 5, 6,10, & 11
Midterm group project	20%	No	Week 7
Active Engagement	10%	No	Week 8

Business Proposal

Assessment Type [1]: Project
Indicative Time on Task [2]: 30 hours
Due: **Week 13**
Weighting: **40%**

Written report on a new venture with the purpose of gaining funding to start the business

On successful completion you will be able to:

- Apply the fundamental knowledge and theoretical frameworks related to entrepreneurial behaviour in business management.
- Build an entrepreneurial mindset for value creation in existing business and create new

business.

- Develop comprehensive knowledge business planning, financial management and technology management to develop successful ventures.
- Identify and pursue business opportunities, and create value for all stakeholders.
- Apply the process of capturing market and customer needs and converting these to a viable and sustainable products.

Case Studies

Assessment Type [1]: Case study/analysis
Indicative Time on Task [2]: 30 hours
Due: **Weeks 2, 5, 6,10, & 11**
Weighting: **30%**

Case studies on Engineering Entrepreneurship

On successful completion you will be able to:

- Apply the fundamental knowledge and theoretical frameworks related to entrepreneurial behaviour in business management.
- Build an entrepreneurial mindset for value creation in existing business and create new business.
- Develop comprehensive knowledge business planning, financial management and technology management to develop successful ventures.
- Identify and pursue business opportunities, and create value for all stakeholders.
- Apply the process of capturing market and customer needs and converting these to a viable and sustainable products.

Midterm group project

Assessment Type [1]: Project
Indicative Time on Task [2]: 16 hours
Due: **Week 7**
Weighting: **20%**

Midterm group project and team work activity

On successful completion you will be able to:

- Apply the fundamental knowledge and theoretical frameworks related to entrepreneurial behaviour in business management.
- Build an entrepreneurial mindset for value creation in existing business and create new business.
- Develop comprehensive knowledge business planning, financial management and technology management to develop successful ventures.
- Identify and pursue business opportunities, and create value for all stakeholders.
- Apply the process of capturing market and customer needs and converting these to a viable and sustainable products.

Active Engagement

Assessment Type [1]: Simulation/role play
Indicative Time on Task [2]: 0 hours
Due: **Week 8**
Weighting: **10%**

Active Engagement and Contribution in the classrom SGTA activities

On successful completion you will be able to:

- Apply the fundamental knowledge and theoretical frameworks related to entrepreneurial behaviour in business management.
- Build an entrepreneurial mindset for value creation in existing business and create new business.
- Develop comprehensive knowledge business planning, financial management and technology management to develop successful ventures.
- Identify and pursue business opportunities, and create value for all stakeholders.
- Apply the process of capturing market and customer needs and converting these to a viable and sustainable products.

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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

Text: Technology Venture: From Idea to Enterprise (McGraw Hill)

Thomas Byers, Richard Dorf, and Andrew Nelson

Unit Schedule

Week	Topic	Content / Reference	Tutorials
1	Course overview. Background to innovation and entrepreneurship.	Ch.1	Dow Corning Deck Protector
2	Opportunities and Strategies	Ch. 2, 3, 4, 5	**Dr Johns Products***
3	Concept Summary & Risk	Ch. 6 & 7	Ecowash- Lean Start Up
4	Intellectual Property – Patent Searching	Guest Lecturer	
5	Intellectual Property – Patenting Process	Guest Lecturer	**Molecular Insights Pharmaceuticals***
6	Product Development. Marketing and Sales. Types of Ventures.	Ch. 8, 9, & 10	**Google Glass Development***
7	New Enterprise, Resources and Operations **Mid Term Assignment Due**	Ch 12, 13, & 14	DJI Innovation – Product Development for Start Ups
8	Entrepreneurship Simulation – The Start Up Game		
9	Design for Six Sigma		DfSS at Ford.
10	The Financial Plan & Sources of Capital	Ch.16, 17, & 18	**Equity Crowdfunding Symbid Entering the US***
11	Deal Presentations, Negotiations and Leading Ventures to Success	Ch 19 & 20	**How to pitch a brilliant idea.** *
12	Presentation / Pitch **Final Assignment Due**		

* HBP Case Studies. Discuss in class and hand in Case Study Questions

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 connect.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 and maths support, academic skills development and wellbeing consultations.

Student Support

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

Academic Success

Academic Success 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 the Service Connect Portal, 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.

Engineers Australia Competency Mapping

EA Competency Standard	Unit Learning Outcomes

Knowledge and Skill Base	1.1 Comprehensive, theory-based understanding of the underpinning fundamentals applicable to the engineering discipline.	
	1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing.	
	1.3 In-depth understanding of specialist bodies of knowledge	
	1.4 Discernment of knowledge development and research directions	ULO5
	1.5 Knowledge of engineering design practice	
	1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice.	
Engineering Application Ability	2.1 Application of established engineering methods to complex problem solving	ULO2
	2.2 Fluent application of engineering techniques, tools and resources.	
	2.3 Application of systematic engineering synthesis and design processes.	ULO4, ULO5
	2.4 Application of systematic approaches to the conduct and management of engineering projects.	ULO2
Professional and Personal Attributes	3.1 Ethical conduct and professional accountability.	
	3.2 Effective oral and written communication in professional and lay domains.	ULO3, ULO4
	3.3 Creative, innovative and pro-active demeanour.	ULO1
	3.4 Professional use and management of information.	ULO3
	3.5 Orderly management of self, and professional conduct.	
	3.6 Effective team membership and team leadership	ULO2

Unit information based on version 2025.03 of the Handbook