FOSC805

Entrepreneurship and Innovation in Science and Technology

S2 Day 2019

Science and Engineering Faculty level units

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Disclaimer

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General Information

Unit convenor and teaching staff Lecturer / Unit Convener Abidali Mohamedali abidali.mohamedali@mq.edu.au Contact via 9850 9292 F7B-4 Wally's Walk 119 Meeting confirmed by email
Credit points 4
Prerequisites Admission to MSc or MEng or MScInnovation
Corequisites
Co-badged status
Unit description This unit provides students an understanding of the process that an entrepreneur employs to develop an innovative idea into an opportunity for commercialization. Students will acquire the skills to apply sound principles of entrepreneurial strategy to evaluate STEM innovations and to identify critical resources in achieving a successful and impactful outcome. At the end of the unit students will be able to develop a commercialization pitch for presenting their proposals to investors, industry and to the public.

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:

Understand the differences between innovation, entrepreneurship and impact

Carefully evaluate the feasibility of innovative STEM proposals and determine the resources needed to bring ideas to fruition

Critically analyse issues in STEM innovation and entrepreneurship

Develop solutions to innovation and entrepreneurship problems in the STEM context

Document and argue for innovative ideas and the means and resources required to

realise them

Able to propose (pitch) ideas effectively of a commercial or non-commercial nature to stakeholders within and outside organisations.

General Assessment Information

Please refer to the Macquarie University Policies and Procedures, specially with respect to submission of assignments, academic honesty policy, extensions and late submissions.

Assessment Tasks

Name	Weighting	Hurdle	Due
Weekly Quiz- Weeks 2-5	15%	No	Weekly
Pitch Part 1 and 2	20%	Yes	Week 5
Marketing Plan	20%	No	Week 8
Creative Marketing Task	15%	No	Week 9
Business Plan	30%	No	Week 13

Weekly Quiz- Weeks 2-5

Due: **Weekly**
Weighting: **15%**

These early reflection exercises will be a series of short questions to reflect on learning and will be assessed by quality and depth of reflection. Students will be expected to develop their own ideas through a series of processes and submit regular updates via this quiz including justifications and reflections for each step.

On successful completion you will be able to:

- Understand the differences between innovation, entrepreneurship and impact
- Carefully evaluate the feasibility of innovative STEM proposals and determine the resources needed to bring ideas to fruition
- Critically analyse issues in STEM innovation and entrepreneurship

Pitch Part 1 and 2

Due: **Week 5**
Weighting: **20%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

This pitch presentation is divided into 2 parts, the first due in week 5 will be worth 5% and the second in week 11 will be worth 15%. This will give an opportunity for students to improve their pitch based on feedback from the examiners. This pitch will be to various stake holders presenting your idea.

On successful completion you will be able to:

- Able to propose (pitch) ideas effectively of a commercial or non-commercial nature to stakeholders within and outside organisations.

Marketing Plan

Due: **Week 8**
Weighting: **20%**

Students will be required to present a detailed marketing (digital, traditional and social media) strategy as a max 5 page (without references) report. This detailed marketing strategy has to demonstrate depth of thinking and research and has to be well substantiated with elements of real interviews and market research of the product/service/method proposed and enhanced with litrature and scholarly evidence.

On successful completion you will be able to:

- Carefully evaluate the feasibility of innovative STEM proposals and determine the resources needed to bring ideas to fruition
- Develop solutions to innovation and entrepreneurship problems in the STEM context
- Document and argue for innovative ideas and the means and resources required to realise them

Creative Marketing Task

Due: **Week 9**
Weighting: **15%**

Come up with a creative marketing method to deliver the innovative idea (product, method, process) to a wider market. This could involve a video, website, social media page, creative flyers etc. in keeping with the marketing strategy for assignment 3.

On successful completion you will be able to:

- Critically analyse issues in STEM innovation and entrepreneurship
- Develop solutions to innovation and entrepreneurship problems in the STEM context
- Document and argue for innovative ideas and the means and resources required to realise them

Business Plan

Due: **Week 13**
Weighting: **30%**

Present a (maximum 10 page) document detailing the business plan for the company that can be used to give to investors. This report will be submitted as 2 section, one in week 8 will have the value proposition, business model, marketing strategy and plan, and an outline of resourcing. (Part 1 10%)

The final report due in week 13 will contain a complete report including detailed resourcing and IP strategies. This will allow students to develop their business plan with the feedback provided by examiners. (Part 2 20%)

On successful completion you will be able to:

- Understand the differences between innovation, entrepreneurship and impact
- Develop solutions to innovation and entrepreneurship problems in the STEM context
- Document and argue for innovative ideas and the means and resources required to realise them

Delivery and Resources

Aim: This unit provides students with an understanding of the process that an entrepreneur employs to develop an innovative idea into an opportunity for commercialisation. Students will acquire the skills to apply sound principles of entrepreneurial strategy to evaluate STEM innovations and to identify critical resources in achieving a successful and impactful outcome. At the end of the unit, students will be able to develop a commercialisation pitch for presenting their proposals to Investors, industry and the public.

Textbook : Readings and reading materials to be provided on iLearn

Main topics with a dedicated focus on STEM will be presented

1. Developing new ideas innovative solutions
    1. Techniques and processes
    2. The nature of commercialisation of Tech and Deep Tech
2. Resources –
    1. Understanding fundamental IP law and regulatory frameworks (ISO, TGA etc.)
    2. Understanding fundamental economics and accounting
    3. Lean canvas
    4. Developing value propositions
    5. Identifying and developing market knowledge (customers vs users)
3. Marketing (selling the idea)

        1. Preparatory steps
            1. Identifying targets (market research)
            2. Communicating with developers
            3. Communicating with marketers/artists
        2. The art of the Pitch
        3. Media Training (social and Mainstream)
    4. Other issues
        1. Business setup/running basics –
        2. Developing business plans
        3. Sourcing finance

Classes

Timetable: Please check https://timetables.mq.edu.au/2017/default.aspx for the official timetable of the unit.

Technology Used and Required

You are expected to access the unit iLearn web site frequently and to download all necessary PDF files. To access the unit web site, if you have off-campus Internet access, start your web browser and proceed as above for logging in. On-campus wireless access is also available. If you do not have your computer, you may wish to access the FOSC805 web resources on campus using the computers in the Library.

To view the lecture notes and other PDF files on the website, you will require Adobe Acrobat Reader Version 9 or later to be installed on your computer. Acrobat Reader can be downloaded from the Adobe website http://get.adobe.com/uk/reader/. If you are using computers in the library, then Acrobat has already been installed.

We will also be using ECHO Interactive (from iLEARN), and therefore you will be **required** to bring your laptop, tablet, smartphone to the lectures.

Please note information may also be sent by email to your student email account, so please look at your student email account frequently.

Unit Web Page

The web page for this unit is at Macquarie's new learning management system website: *http://ilearn.mq.edu.au*

Login and follow to FOSC 805.

You are expected to access the unit web site frequently (i.e., almost daily). This site contains important information including lecture notes (that you will be expected to access in class), mid-semester exams and assignment.

Logging In: Type in the URL http://ilearn.mq.edu.au **and find FOSC805.** Your username is your Macquarie Student ID Number (MQID), which is an eight digit number located on your student

card. The password is your myMQ Student Portal password. This will be the original MQID password (2 random characters followed by your date of birth in ddmmyy format) that was sent to you on enrolment unless you have already changed your password in the myMQ Student Portal. If you experience difficulties in getting your reprint or your password, please contact the StudentIT Desk (ph: 9850 6500).

Teaching and Learning Strategy

FOSC805 is a 3-credit point half-year unit and will require an average of 9 hours of work per week (contact hours plus self-study time).

FOSC805 consists of:

- **Two hours of lectures** and a
- **2 hour COMPULSORY tutorial class** every week.

The lecture material and tutorial complement each other and have been developed to increase your understanding of the topics so you can achieve the learning outcomes.

The purpose of tutorials will be to develop higher level critical thinking skills in students and teach contemporary skills.

The unit coordinator's expectation is that you will:

· Attend **all interactive** lectures. If you cannot attend a lecture, you are expected to listen to the iLecture as soon as possible after it is made available.

· Demonstrate reasonable competence in all exercises exercises and attend and participate in each class/tutorial.

· Perform satisfactorily in all assessments.

· Spend an average of no less than 2 hours per week of private study in addition to direct contact.

If you prepare and attend all components of the unit and work consistently/continuously throughout the semester, you should be able to develop a strong understanding of leadership and develop strategic skills to help you achieve greater goals post study.

You are expected to use the lecture materials in the lectures (or bring them) so you can spend most of the time listening rather than transcribing. The lectures are interactive and you will be expected to have input in polls and discussions. Do not assume notes or iLectures are in any way a suitable substitute for attending lectures – lecturers from all departments put an effort into making the lectures up to date and relevant.

Learning is an active process, and as such, you must engage with the material. This means downloading and reading lecture notes and case studies completing reflection exercises and participating in poll questions online.

Unit Schedule

Please note that the dates shown are fixed however the activity/speaker may be subject to

change. All changes will be updated on ilearn regularly.

Week	Date	Lecture	Topic	Speaker	Tutorial topics	Assignments due
1	2nd Aug	1	Introduction (brief revision of FOSC 804)	**Abidali M**	Hackathon – Conception and testing of business idea	
		2	Entrepreneurial Thought and Science-			
2	9th Aug	3	**ANSTO VISIT – TOUR AND LECTURES/SHOWCASE FROM COMMERCIALISATION – 12-4pm**			Week 1- Quiz
		4				
3	16th Aug	5	Establishing a new science enterprise – considerations (market Dynamics) and hurdles		Market Identification/ strategies Interviews / Market Systems map	Week 2- Quiz
		6				
4	23rd Aug	7	Recognition of opportunities for enterprise in science- Mission, vision and aims of a science enterprise	Aideen Ghallagher	Lean Canvas PART 1 - Value Proposition development (Canvas)	Week 3- Quiz
		8				
5	30th Aug	9	Marketing 101- Basic Marketing principles	Carol Upton (uptonconsulting)	The Art of the Pitch – Business idea pitch/ elevator pitch-	Week 4- Quiz
		10			**Assignment 1-** Pitch PART 1	
6	6th Sep	11	Economics 101- Basic economics principles for science entrepreneurs	**Gary Jones (Fledge)**	Lean Canvas PART 2	**Assignment 2:** Business plan Part 1 submitted (8th Sept)
		12				
7	13th Sept	13	Accounting 101 – Bookkeeping, financial management/governance	**Nuraddeen Nuhu** **MQ**	Accounting Tutorial	
		14				
Mid Semester Break						
8	4th Oct	15	Intellectual Property LAW and procedures	Ross Heisy	Lean Canvas Part 3 – Supply, cost and revenue	
		16				
9	11th Oct	17	Bringing in the CASH- The sales process in science	**Guy Tsnafat**	Lean and Agile management techniques	**Assignment 3-** Submit marketing plan/strategy (13th October)
		18				

10	18th Oct	19 20	Managing a science enterprise The Innovation process- Regulation/Quality management	**Brad Walsh** **Minomic**	Media training for science/ entrepreneurs-		
11	25th Oct	21 22	Internal and External characteristics of a science enterprise	Colin Anson	Entrepreneur tools (resources, crowdfunding, advertising etc.)	**Assignment 4**- Creative marketing task	
12	1st Nov	23 24	Getting capital – Venture capital/ grants etc. for science		**Assignment 1-** Pitch PART 2-		
13	8th Nov	25 26	How to be an intrapreneur	Andrea Sosa Pintos	**Assignment 1-** Pitch PART 2-	**Assignment 2**- COMPLETE business plan submitted (11th Nov)	
Exam Session							

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). 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
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy *(**Note:** The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)*

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

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/study/getting-started/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

Student Support

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

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to improve your marks and take control of your study.

- Workshops
- StudyWise
- Academic Integrity Module for Students
- Ask a Learning Adviser

Student Services and Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

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.

Graduate Capabilities

PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

Learning outcomes

- Carefully evaluate the feasibility of innovative STEM proposals and determine the resources needed to bring ideas to fruition
- Develop solutions to innovation and entrepreneurship problems in the STEM context
- Document and argue for innovative ideas and the means and resources required to realise them

Assessment tasks

- Marketing Plan
- Business Plan

PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

Assessment tasks

- Weekly Quiz- Weeks 2-5
- Pitch Part 1 and 2

PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

Learning outcomes

- Carefully evaluate the feasibility of innovative STEM proposals and determine the

resources needed to bring ideas to fruition
- Critically analyse issues in STEM innovation and entrepreneurship
- Document and argue for innovative ideas and the means and resources required to realise them
- Able to propose (pitch) ideas effectively of a commercial or non-commercial nature to stakeholders within and outside organisations.

Assessment tasks

- Pitch Part 1 and 2
- Business Plan

PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

Learning outcome

- Develop solutions to innovation and entrepreneurship problems in the STEM context

Assessment tasks

- Weekly Quiz- Weeks 2-5
- Pitch Part 1 and 2
- Creative Marketing Task
- Business Plan

PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

Learning outcomes

- Understand the differences between innovation, entrepreneurship and impact
- Able to propose (pitch) ideas effectively of a commercial or non-commercial nature to stakeholders within and outside organisations.

Assessment tasks

- Marketing Plan
- Creative Marketing Task
- Business Plan

PG - Engaged and Responsible, Active and Ethical Citizens

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of connectedness with others and country and have a sense of mutual obligation. They will be able to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues

This graduate capability is supported by:

Learning outcomes

- Understand the differences between innovation, entrepreneurship and impact
- Carefully evaluate the feasibility of innovative STEM proposals and determine the resources needed to bring ideas to fruition
- Critically analyse issues in STEM innovation and entrepreneurship
- Document and argue for innovative ideas and the means and resources required to realise them

Assessment tasks

- Weekly Quiz- Weeks 2-5
- Pitch Part 1 and 2
- Marketing Plan
- Creative Marketing Task
- Business Plan

Changes from Previous Offering

Some changes in quality of offerings and guest lectures. Slight changes in weighting of assignments.