FOSE8020

Entrepreneurship and Innovation in Science and Technology

Session 2, Weekday attendance, North Ryde 2020

Science and Engineering Faculty level units

Contents

Notice

As part of Phase 3 of our return to campus plan, most units will now run tutorials, seminars and ot her small group learning activities on campus for the second half-year, while keeping an online ver sion available for those students unable to return or those who choose to continue their studies onli ne.

To check the availability of face-to-face and onlin e activities for your unit, please go to timetable vi ewer. To check detailed information on unit asses sments visit your unit's iLearn space or consult yo ur unit convenor.

General Information

Unit convenor and teaching staff Abidali Mohamedali abidali.mohamedali@mq.edu.au
Credit points 10
Prerequisites Admission to MSc or MScInnovationBioConsMgmt or MScInnovationChemBiomolecularSc or MScInnovationEnvSc or MScInnovationGeologyGeophys or MScInnovationIT or MScInnovationStat or MEng or MEngElecEng or MEngEnvSafetyEng or MEngMechEng or MEngNetTeleEng or MBiotech or MBiotechBus or MRes
Corequisites
Co-badged status
Unit description This unit provides students with an understanding of the process that an entrepreneur employs to develop an innovative idea into an opportunity for commercialisation in the science context. 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. Skills such as basic accounting, law, economics, management, planning, lean methodologies and others will be developed. At the end of the unit, students will be able to create a commercialisation pitch for presenting their proposals to investors, industry and 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:

ULO1: Demonstrate an understanding of the differences between innovation, entrepreneurship and impact.

ULO2: Carefully evaluate the feasibility of innovative STEM proposals and determine the resources needed to bring ideas to fruition.

ULO3: Critically analyse issues in STEM innovation and entrepreneurship.

ULO4: Develop solutions to innovation and entrepreneurship problems in the STEM context.

ULO5: Document and argue for innovative ideas and the means and resources required to realise them.

ULO6: 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
Pitch Parts 1 and 2	20%	Yes	Week 5 and 12
Open Book Mid Semester Exam	18%	No	Week 8
Business Plan	30%	No	9th Nov 2020
Evalutation and message from Guest speakers	2%	No	Weekly
Creative Marketing Task	15%	No	25th Oct 2020
Weekly Quiz- Weeks 2-5	15%	No	Weekly

Pitch Parts 1 and 2

Assessment Type [1]: Presentation
Indicative Time on Task [2]: 16 hours
Due: **Week 5 and 12**
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 part, due in week 5, will be worth 5% and the second part, 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. This will take place on Zoom.

On successful completion you will be able to:

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

Open Book Mid Semester Exam

Assessment Type [1]: Examination
Indicative Time on Task [2]: 10 hours
Due: **Week 8**
Weighting: **18%**

The exam will cover critical elements of content taught in the first half of the semester and an opportunity for students to exercise skills obtained.

On successful completion you will be able to:

- Demonstrate an understanding of 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.

Business Plan

Assessment Type [1]: Plan
Indicative Time on Task [2]: 30 hours
Due: **9th Nov 2020**
Weighting: **30%**

Students are required to present a document detailing the business plan for their company that can be used to give to investors. Each section of the business plan will be built using skills developed in the tutorials.

On successful completion you will be able to:

- Demonstrate an understanding of 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.

Evalutation and message from Guest speakers

Assessment Type [1]: Participatory task
Indicative Time on Task [2]: 5 hours
Due: **Weekly**
Weighting: **2%**

Students will be required to fillout an electronic survey with 5 specific questions related to the

guest speakers talk.

On successful completion you will be able to:

- Demonstrate an understanding of 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.

Creative Marketing Task

Assessment Type [1]: Media presentation
Indicative Time on Task [2]: 12 hours
Due: **25th Oct 2020**
Weighting: **15%**

You will need to 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.

Weekly Quiz- Weeks 2-5

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 15 hours
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. You are be expected to develop your 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:

- Demonstrate an understanding of 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.

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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

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 (as a tool to understand and test ideas in the real world)
    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: All classes will be ONLINE. Lectures will be held Thursdays 2-4pm and Tutorials from 4-6pm during semester time. Live attendance for tutorial is required.

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 FOSE8020 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 use 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 FOSE8020.

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 FOSE8020.** Your username is your Macquarie Student ID Number (MQID), which is an eight-digit number located on your student card. The password is your my MQ 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 student IT Desk (ph: 9850 6500).

Teaching and Learning Strategy

FOSE8020 is a 10-credit point half-year unit and will require an average of 9 hours of work per week (contact hours plus self-study time).

FOSE8020 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 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.

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

Week	Date	Topic	Speaker	Tutorial topics	Assignments due
1	30th July	Introduction (brief revision of FOSE8010)	**Abidali M**	Conception and testing of business idea	
		Entrepreneurial Thought and Science-			
2	6th Aug	**Commercialisation of Science – Core Skills**	**Anna Paradowska**	**PART 1** FOSC806 Workshop **PART 2-** Market Systems map	Week 1- Quiz

3	13th Aug	Establishing a new science enterprise – considerations (market Dynamics) and hurdles	**Merlin Kong** **(CEO – LASA)**	Market Identification/ strategies Interviews	Week 2- Quiz
4	20th Aug	Recognition of opportunities for enterprise in science- Mission, vision and aims of a science enterprise	**Dr. Syed Farook** **(Strategy, innovation and Forsight – Emirates)**	**Lean Canvas PART 1** - Value Proposition development (Canvas)	Week 3- Quiz
5	27th Aug	Marketing 101- Basic Marketing principles		Customer Discovery and interviewing	Week 4- Quiz **Assignment 1** – PITCH part 1 (online submission)
6	3rd Sep	Economics 101- Basic economics principles for science entrepreneurs	**Abidali M**	Lean Canvas PART 2	
7	10th Sep	Accounting 101 – Bookkeeping, financial management/governance	**Nuraddeen Nuhu** **MQ Accounting**	Accounting Tutorial	
8	1st Oct	Getting capital – Venture capital/grants etc. for science	**Callum Bir** **CEO Citta.ai and Strategikon health**	Lean Canvas Part 3 – Supply, cost and revenue	
9	8th Oct	Managing a science enterprise The Innovation process- Regulation/ Quality management	**Brad Walsh** **Minomic**	Lean and Agile management techniques	**Assignment 3-** Submit a marketing plan/ strategy (12th October)
10	15th Oct	Intellectual Property LAW and procedures	**Gorjana Mitic** **Commercialisation and IP**	Media training for science/entrepreneurs-	
11	22nd Oct	Bringing in the CASH- The sales process in science	**Guy Tsnafat** **Evidentli**	Entrepreneur tools (resources, crowdfunding, advertising etc.)	**Assignment 4**- Creative marketing task
12	29th Oct	Internal and External characteristics of a science enterprise		**Assignment 1-** Pitch PART 2-	
13	5th Nov	How to be an intrapreneur		**Assignment 1-** Pitch PART 2-	**Assignment 2**- COMPLETE business plan (9th Nov)

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.)*

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 help you improve your marks and take control of your study.

- Getting help with your assignment
- Workshops
- StudyWise
- 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

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.

Changes from Previous Offering

Due to Covid-19 this semester (S2-2020) FOSE8020 will be offered online only.