FOSC804

Leadership in Science Research and Innovation

S1 Day 2018

Science and Engineering Faculty level units

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General Information

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Lecturer / Unit Convener
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Meeting confirmed by email

Credit points
4

Prerequisites
Admission to MSc

Corequisites

Co-badged status

Unit description
This unit provides an opportunity for students to engage with leaders in STEM research and thinking, acquiring advanced conceptual knowledge of breakthrough scientific discoveries and technological advances and the leadership strategies that make them possible. This unit explores how innovative science is translated to applications in health, industry and the environment. This unit also provides students with essential learning experiences that develop the concepts and skills necessary for leadership in science and technology. Students will be required to also critically analyse new directions of scientific thought and break-through methodologies.

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:

Create a well-rounded appreciation of the concept of leadership in science

Analyse how effective leadership leads to innovation in Science

Apply core principles of influencing behavior and strategic thinking

Acquire basic skills in conflict management, negotiation and other related soft skills to be

effective leaders

Critically analyse new directions of scientific thought and break-through methodologies

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
Post-Tutorial Reflections	15%	No	Weekly
Case Study	10%	Yes	Week 5
Mid-Semester Exam	20%	No	Week 7
Networking Task	15%	Yes	Week 8
Strategic plan	10%	No	Week 9
Final Essay	30%	No	Week 12
Attendance	0%	Yes	Week 13

Post-Tutorial Reflections

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

These post-tutorial reflection exercises will be a series of short questions to reflect on learnings and will be assessed by quality and depth of reflection.

On successful completion you will be able to:

- Create a well-rounded appreciation of the concept of leadership in science
- Analyse how effective leadership leads to innovation in Science

Case Study

Due: **Week 5**
Weighting: **10%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

Critically analyse the conceptual ideas that lead to the success of a new direction of scientific thought and/or break-through methodologies

On successful completion you will be able to:

- Create a well-rounded appreciation of the concept of leadership in science
- Analyse how effective leadership leads to innovation in Science
- Critically analyse new directions of scientific thought and break-through methodologies

Mid-Semester Exam

Due: **Week 7**
Weighting: **20%**

There will be a 60 min exam (15% total assessment) held in the tutorial class of Week 7 . This will be designed to test your responses in particular scenarios in a leadership context in science based on your course content and reflections.

On successful completion you will be able to:

- Analyse how effective leadership leads to innovation in Science

Networking Task

Due: **Week 8**
Weighting: **15%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

Identify and engage with at least 3 individuals of prominence (in your perception) in your Major and submit a report (2000 words) of your strategic plan and positive results of that interaction.

On successful completion you will be able to:

- Analyse how effective leadership leads to innovation in Science
- Acquire basic skills in conflict management, negotiation and other related soft skills to be effective leaders

Strategic plan

Due: **Week 9**
Weighting: **10%**

Prepare an illustrated one (1) page brief of an idea (in your field) you wish to develop (or question you wish to answer). The plan must contain a clear vision, PMI's and at least 3 practical enabling actions for achievement.

On successful completion you will be able to:

- Analyse how effective leadership leads to innovation in Science
- Apply core principles of influencing behavior and strategic thinking

Final Essay

Due: **Week 12**
Weighting: **30%**

Research essay on leadership in science

On successful completion you will be able to:

- Create a well-rounded appreciation of the concept of leadership in science
- Analyse how effective leadership leads to innovation in Science
- Acquire basic skills in conflict management, negotiation and other related soft skills to be effective leaders

Attendance

Due: **Week 13**
Weighting: **0%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

Students are required to attend at least 80% of all classes. Failure to attend must be supported by valid excuses as per MQ uni policy.

On successful completion you will be able to:

- Create a well-rounded appreciation of the concept of leadership in science
- Critically analyse new directions of scientific thought and break-through methodologies

Delivery and Resources

Objective of the unit

This unit provides an opportunity for students to engage with leaders in STEM research and thinking, acquiring advanced conceptual knowledge of breakthrough scientific discoveries and technological advances and the leadership strategies that make them possible. This unit explores how Innovative science is translated to applications in health, Industry and the environment. This unit also provides students with essential learning experiences that develop the concepts and skills necessary for leadership In science and technology. Students will be required to also critically analyze new directions of scientific thought and break-through methodologies.

Textbook : Readings and reading materials to be provided on iLearn

4 Broad themes with a dedicated focus on STEM will be presented

1. Principles of leadership and Innovation
2. Strategic thinking and influencing behavior

3. The art of negotiation and conflict resolution

Classes

Timetable: Please check http://timetables.mq.edu.au/2018/ for the official timetable of the unit.

Technology Used and Required

You are expected to access the unit iLearn web site on a frequent basis and to download all necessary PDF files. To access the unit web site, if you have off-campus Internet access, simply start your web browser and proceed as above for logging in. On-campus wireless access is also available. If you do not have your own computer you may wish to access the FOSC804 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 the 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 on a frequent basis.

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 prompts to FOSC 804.

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/or assignment.

Logging In: Type in the URL http://ilearn.mq.edu.au **and find FOSC804.** Your username is your Macquarie Student ID Number (MQID), which is an 8 digit number found 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

FOSC804 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).

FOSC804 consists of:

- **2 hours of lectures** and

- a **2 hour 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 in leadership.

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.

· The mid-semester exam will be run in a tutorial class.

Unit Schedule

Week	Date	Lecture	Topic	Speaker
1	1st Mar	1	Introduction	Abidali M
		2	Principles of Leadership	
2	8th Mar	3	Leadership Models	
		4	Leadership Models	
3	15th March	5	Passion and Vision Maintenance/delivery- Transformative Leadership	

		6	Vision Creation – Thought Leadership - Seeds of Innovation	
4	22rd March	7	Essential Skills in STEM Leadership 1	
		8	Essential Skills in STEM Leadership 2	
5	29th March	9	Conflict Resolution 1	
		10	Conflict Resolution 2	
6	5th April	11	Art of Negotiation 1	
		12	Art of Negotiation 2	
7	12th April	13	Relationship building/ networking/collaboration	
		14	Emotional intelligence	
Mid Semester Break				
8	3th May	15	Leadership in science innovation	Joanne Jamie- NISEP
		16	Managing Innovation	
9	10th May	17	Courageous Leadership	
		18	Ethics and Ego in leadership	
10	17th May	19	Political Leadership in/of Science- The Future	
		20	Forging a path to leadership	
11	24th May	21	Influencing Behaviour in Science 1	
		22	Influencing Behaviour in Science 2	
12	31st May	23	Building a team	
		24	Training/Coaching a team	
13	7th Jun	25	Time management/Work life balance	Abidali M
		26	Review and Revision	
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 shown in *iLearn*, 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.

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

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 outcome

- Acquire basic skills in conflict management, negotiation and other related soft skills to be effective leaders

Assessment tasks

- Networking Task
- Final Essay

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:

Learning outcome

- Create a well-rounded appreciation of the concept of leadership in science

Assessment tasks

- Post-Tutorial Reflections
- Case Study
- Final Essay

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

- Acquire basic skills in conflict management, negotiation and other related soft skills to be effective leaders
- Critically analyse new directions of scientific thought and break-through methodologies

Assessment tasks

- Case Study
- Networking Task
- Final Essay

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 outcomes

- Analyse how effective leadership leads to innovation in Science
- Acquire basic skills in conflict management, negotiation and other related soft skills to be effective leaders
- Critically analyse new directions of scientific thought and break-through methodologies

Assessment tasks

- Post-Tutorial Reflections
- Case Study
- Mid-Semester Exam
- Networking Task
- Strategic plan
- Final Essay

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

- Apply core principles of influencing behavior and strategic thinking
- Acquire basic skills in conflict management, negotiation and other related soft skills to be effective leaders

Assessment tasks

- Networking Task
- Strategic plan
- Final Essay

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 outcome

- Analyse how effective leadership leads to innovation in Science

Assessment tasks

- Post-Tutorial Reflections
- Case Study

- Mid-Semester Exam
- Networking Task
- Strategic plan
- Final Essay
- Attendance

Changes from Previous Offering

This unit will feature new and more diverse speakers than in the past offerings. More interactive lessons have also been planned with a more hands on approach to leadership.