GEOS705

Research Methods in Earth and Planetary Sciences

S1 Day 2019

Dept of Earth and Environmental Sciences

Contents

General Information

Unit convenor and teaching staff
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Credit points
4

Prerequisites
Admission to MRes

Corequisites

Co-badged status

Unit description
This unit provides advanced knowledge of research principles and methods in Earth and Planetary Sciences. The first part of the unit provides skills in generic research methods. The second part of the unit provides the opportunity to develop specific project-related methods and may include: learning various analysis techniques; learning to use equipment; learning to use software.

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:

This unit aims at introducing students to strategies and methods of research in the Earth Sciences and familiarizing them with general research tools.

Be aware of the ethics in science and in publishing scientific research papers.

Use research tools such as literature databases and/or analytical equipment.

Understand scientific methodology.

Communicate research results in writing as well as orally.

Assessment Tasks

Name	Weighting	Hurdle	Due
Abstract writing	10%	No	Week 6
Ethics Case Study	25%	No	Week 10
Scientific Figure	15%	No	Week 8
Shadowing presentation	40%	No	Week 12
Participation	10%	No	on-going

Abstract writing

Due: **Week 6**
Weighting: **10%**

This assignment consists of writing an abstract for a published article and discussing this task during class.

On successful completion you will be able to:

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- Use research tools such as literature databases and/or analytical equipment.
- Understand scientific methodology.
- Communicate research results in writing as well as orally.

Ethics Case Study

Due: **Week 10**
Weighting: **25%**

Choose an example of a recent high profile ethics controversy that has occurred within science (discussed in class) and write a brief essay (<2k words) describing the issues surrounding the case, the actors involved and possible remedies and ramifications.

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- Understand scientific methodology.

Scientific Figure

Due: **Week 8**
Weighting: **15%**

Following from our discussion in class, you will produce a figure that is appropriate for publication in a scientific journal.

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- Understand scientific methodology.
- Communicate research results in writing as well as orally.

Shadowing presentation

Due: **Week 12**
Weighting: **40%**

This assignment consists of an oral presentation of the student's experience of 'shadowing' a graduate student or staff member during their research work over the semester. Details given in class.

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- Use research tools such as literature databases and/or analytical equipment.
- Understand scientific methodology.
- Communicate research results in writing as well as orally.

Participation

Due: **on-going**
Weighting: **10%**

This assessment evaluates each student's participation in class discussions.

On successful completion you will be able to:

- This unit aims at introducing students to strategies and methods of research in the Earth Sciences and familiarizing them with general research tools.
- Communicate research results in writing as well as orally.

Delivery and Resources

1 hour weekly face-to-face discussion time

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

- This unit aims at introducing students to strategies and methods of research in the Earth Sciences and familiarizing them with general research tools.
- Be aware of the ethics in science and in publishing scientific research papers.

Assessment tasks

- Ethics Case Study
- Participation

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 outcomes

- This unit aims at introducing students to strategies and methods of research in the Earth Sciences and familiarizing them with general research tools.
- Use research tools such as literature databases and/or analytical equipment.
- Understand scientific methodology.

Assessment tasks

- Scientific Figure
- Shadowing presentation

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

- This unit aims at introducing students to strategies and methods of research in the Earth Sciences and familiarizing them with general research tools.
- Use research tools such as literature databases and/or analytical equipment.
- Understand scientific methodology.

Assessment tasks

- Abstract writing
- Ethics Case Study
- Scientific Figure
- Shadowing presentation

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

- This unit aims at introducing students to strategies and methods of research in the Earth Sciences and familiarizing them with general research tools.
- Use research tools such as literature databases and/or analytical equipment.
- Understand scientific methodology.

Assessment tasks

- Abstract writing
- Scientific Figure
- Shadowing presentation

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

- This unit aims at introducing students to strategies and methods of research in the Earth Sciences and familiarizing them with general research tools.
- Communicate research results in writing as well as orally.

Assessment tasks

- Abstract writing
- Scientific Figure

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

- This unit aims at introducing students to strategies and methods of research in the Earth Sciences and familiarizing them with general research tools.
- Be aware of the ethics in science and in publishing scientific research papers.

Assessment task

- Ethics Case Study