



GEOS373

Active Geosystems

S3 External 2017

Dept of Earth and Planetary Sciences

Contents

<u>General Information</u>	2
<u>Learning Outcomes</u>	2
<u>Assessment Tasks</u>	3
<u>Delivery and Resources</u>	5
<u>Unit Schedule</u>	5
<u>Policies and Procedures</u>	5
<u>Graduate Capabilities</u>	6

Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

General Information

Unit convenor and teaching staff

Lucy McGee

lucy.mcgee@mq.edu.au

E5B office 216

Jennifer Rowland

jennifer.rowland@mq.edu.au

Credit points

3

Prerequisites

Permission by special approval and GEOS206 and GEOS226

Corequisites

Co-badged status

Unit description

Active geosystems of the Pacific rim are the key to reconstruction of the circum-Pacific. Fieldwork and literature research form the foundation for description and interpretation of the active geosystems of New Zealand. Fieldwork is conducted in both the South and North Islands of New Zealand and includes: (1) active glacial processes and their implications for climate change; (2) impact of the 2011-2012 Christchurch earthquakes; (3) climate records in the Amuri limestone; (4) the Cretaceous - Tertiary boundary and mass extinction event; (5) evidence for changes in oceanic and atmospheric circulation; (6) the active andesitic volcanoes of the Ruapehu-Tongariro region; (7) tephra and ignimbrite deposits in the Taupo region; (8) geothermal systems and power generation in the Rotorua region; (9) volcanism in and around Auckland.

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:

Investigate the highly varied processes which have formed the extraordinary geology of New Zealand

Apply appropriate field based techniques to a broad range of geological environments

(sedimentary, volcanic, glacial)

Demonstrate ability to observe and record information in the field

Synthesize field observations with recommended scientific reading to develop well-supported interpretations

Effectively and accurately communicate scientific information in verbal and written formats

Distinguish tectonic processes such as faulting and subduction zone magmatism from external processes such as chemical weathering and the formation of glacial moraines

Appreciate the interconnection of all geological environments and the importance of understanding the geosystem as a whole

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Formation of New Zealand</u>	20%	No	04/12/2017
<u>Research Essay 2</u>	20%	No	04/01/2018
<u>Individual Presentation</u>	30%	No	In field
<u>Notebook & field work</u>	30%	No	04/02/2018

Formation of New Zealand

Due: **04/12/2017**

Weighting: **20%**

This written research assignment will focus on the geological history of New Zealand to familiarise students before travel to the field sites.

On successful completion you will be able to:

- Investigate the highly varied processes which have formed the extraordinary geology of New Zealand
- Effectively and accurately communicate scientific information in verbal and written formats
- Distinguish tectonic processes such as faulting and subduction zone magmatism from external processes such as chemical weathering and the formation of glacial moraines

Research Essay 2

Due: **04/01/2018**

Weighting: **20%**

This written research assignment will have a narrower focus based on student interest. Topic choices will be provided during the 4th December workshop.

On successful completion you will be able to:

- Effectively and accurately communicate scientific information in verbal and written formats

Individual Presentation

Due: **In field**

Weighting: **30%**

Students will choose presentation topics during the 4th December workshop. Presentation date will vary by topic. All presentations will occur on site in New Zealand.

On successful completion you will be able to:

- Investigate the highly varied processes which have formed the extraordinary geology of New Zealand
- Synthesize field observations with recommended scientific reading to develop well-supported interpretations
- Effectively and accurately communicate scientific information in verbal and written formats
- Appreciate the interconnection of all geological environments and the importance of understanding the geosystem as a whole

Notebook & field work

Due: **04/02/2018**

Weighting: **30%**

Students will be responsible for taking field notes throughout the field component of the course and making informed interpretations based on the material covered in the workshop and readings assigned in association with the unit.

On successful completion you will be able to:

- Investigate the highly varied processes which have formed the extraordinary geology of New Zealand
- Apply appropriate field based techniques to a broad range of geological environments (sedimentary, volcanic, glacial)
- Demonstrate ability to observe and record information in the field
- Synthesize field observations with recommended scientific reading to develop well-supported interpretations

- Effectively and accurately communicate scientific information in verbal and written formats
- Distinguish tectonic processes such as faulting and subduction zone magmatism from external processes such as chemical weathering and the formation of glacial moraines
- Appreciate the interconnection of all geological environments and the importance of understanding the geosystem as a whole

Delivery and Resources

A field guide with relevant logistical and scientific information will be provided at the beginning of the field trip.

There is no set textbook for this unit, however, an excellent resource is "A continent on the move: New Zealand geoscience into the 21st Century" edited by Ian Graham.

Other recommended readings will be provided on iLearn and on the 4th December workshop.

Unit Schedule

Mandatory on campus workshop: 4th December 2017 9am-4pm

Field trip:

Trip meets in Auckland 22nd January 2018 9am

Trip ends in Queenstown 4th February 2018 (late! no flights this night, please make own arrangements)

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy http://mq.edu.au/policy/docs/assessment/policy_2016.html

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Complaint Management Procedure for Students and Members of the Public http://www.mq.edu.au/policy/docs/complaint_management/procedure.html

Disruption to Studies Policy (in effect until Dec 4th, 2017): http://www.mq.edu.au/policy/docs/disruption_studies/policy.html

Special Consideration Policy (in effect from Dec 4th, 2017): <https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration>

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of 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/support/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

Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

Learning outcomes

- Apply appropriate field based techniques to a broad range of geological environments (sedimentary, volcanic, glacial)
- Synthesize field observations with recommended scientific reading to develop well-supported interpretations
- Appreciate the interconnection of all geological environments and the importance of understanding the geosystem as a whole

Assessment task

- Individual Presentation

Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

Learning outcomes

- Apply appropriate field based techniques to a broad range of geological environments (sedimentary, volcanic, glacial)
- Demonstrate ability to observe and record information in the field
- Synthesize field observations with recommended scientific reading to develop well-supported interpretations
- Effectively and accurately communicate scientific information in verbal and written formats

Assessment tasks

- Formation of New Zealand
- Research Essay 2
- Individual Presentation
- Notebook & field work

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where

relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

- Investigate the highly varied processes which have formed the extraordinary geology of New Zealand
- Apply appropriate field based techniques to a broad range of geological environments (sedimentary, volcanic, glacial)
- Demonstrate ability to observe and record information in the field
- Synthesize field observations with recommended scientific reading to develop well-supported interpretations
- Distinguish tectonic processes such as faulting and subduction zone magmatism from external processes such as chemical weathering and the formation of glacial moraines

Assessment tasks

- Formation of New Zealand
- Research Essay 2
- Individual Presentation
- Notebook & field work

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- Investigate the highly varied processes which have formed the extraordinary geology of New Zealand
- Apply appropriate field based techniques to a broad range of geological environments (sedimentary, volcanic, glacial)
- Synthesize field observations with recommended scientific reading to develop well-supported interpretations
- Distinguish tectonic processes such as faulting and subduction zone magmatism from

external processes such as chemical weathering and the formation of glacial moraines

- Appreciate the interconnection of all geological environments and the importance of understanding the geosystem as a whole

Assessment tasks

- Formation of New Zealand
- Research Essay 2
- Individual Presentation
- Notebook & field work

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

- Apply appropriate field based techniques to a broad range of geological environments (sedimentary, volcanic, glacial)
- Synthesize field observations with recommended scientific reading to develop well-supported interpretations
- Distinguish tectonic processes such as faulting and subduction zone magmatism from external processes such as chemical weathering and the formation of glacial moraines

Assessment tasks

- Formation of New Zealand
- Research Essay 2
- Individual Presentation

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcomes

- Demonstrate ability to observe and record information in the field
- Synthesize field observations with recommended scientific reading to develop well-supported interpretations
- Effectively and accurately communicate scientific information in verbal and written formats

Assessment tasks

- Formation of New Zealand
- Research Essay 2
- Individual Presentation
- Notebook & field work

Engaged and Ethical Local and Global citizens

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

Learning outcome

- Appreciate the interconnection of all geological environments and the importance of understanding the geosystem as a whole

Assessment task

- Notebook & field work

Socially and Environmentally Active and Responsible

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

This graduate capability is supported by:

Learning outcome

- Appreciate the interconnection of all geological environments and the importance of understanding the geosystem as a whole

Assessment tasks

- Individual Presentation
- Notebook & field work