GEOS226

Introduction to Field Geology

S3 External 2019

Dept of Earth and Environmental Sciences

Contents

General Information

Unit convenor and teaching staff
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Credit points
3

Prerequisites
12cp at 100 level or above

Corequisites
ENVE117 or ENVS117 or GEOS112 or GEOS125 or GEOS126 or GEOS204

Co-badged status

Unit description
This is a field-based unit with strong emphasis on observation and the development of mapping and generic field skills. Working in small groups, students produce local and regional geological maps to reveal past environments and show how these environments change through time. This involves the study of both natural outcrops and coloured air photographs of the region, complemented by computers using state of the art 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:

Developed skills in geological mapping, producing maps at a range of scales

Developed or enhanced skills in rock and fossil identification

Developed skills in using a number of field instruments including a compass and clinometer, GPS, tape, hand lens

Developed skills in using and interpreting air photos for location, geomorphic and geological purposes

Enhanced generic skills such as team work, organisational, problem solving and public speaking skills

Assessment Tasks

Name	Weighting	Hurdle	Due
On-line quizzes	5%	No	6th December 2019
Participation mark	10%	No	Days 1 to 7
Small (A3) group field map	5%	No	Day 4
Practical test on a traverse	5%	No	Day 5
Regional map and notebook	10%	No	Day 7/8
Specialist project summary	5%	No	8pm Day 7
Class test (practical)	20%	No	Day 8
Class test (theory)	40%	No	Day 8

On-line quizzes

Due: **6th December 2019**
Weighting: **5%**

Two on-line quizzes prior to fieldwork

On successful completion you will be able to:

- Developed skills in geological mapping, producing maps at a range of scales
- Developed or enhanced skills in rock and fossil identification
- Developed skills in using a number of field instruments including a compass and clinometer, GPS, tape, hand lens
- Developed skills in using and interpreting air photos for location, geomorphic and geological purposes
- Enhanced generic skills such as team work, organisational, problem solving and public speaking skills

Participation mark

Due: **Days 1 to 7**
Weighting: **10%**

Tutors will award participation marks for each day's work. These marks will reflect the level of individual student engagement during each day.

On successful completion you will be able to:

- Developed skills in geological mapping, producing maps at a range of scales
- Developed or enhanced skills in rock and fossil identification
- Developed skills in using a number of field instruments including a compass and clinometer, GPS, tape, hand lens
- Developed skills in using and interpreting air photos for location, geomorphic and geological purposes
- Enhanced generic skills such as team work, organisational, problem solving and public speaking skills

Small (A3) group field map

Due: **Day 4**
Weighting: **5%**

Small (A3) group field map

On successful completion you will be able to:

- Developed skills in geological mapping, producing maps at a range of scales
- Developed or enhanced skills in rock and fossil identification
- Developed skills in using a number of field instruments including a compass and clinometer, GPS, tape, hand lens
- Developed skills in using and interpreting air photos for location, geomorphic and geological purposes
- Enhanced generic skills such as team work, organisational, problem solving and public speaking skills

Practical test on a traverse

Due: **Day 5**
Weighting: **5%**

Individual practical test on a traverse

On successful completion you will be able to:

- Developed skills in geological mapping, producing maps at a range of scales
- Developed or enhanced skills in rock and fossil identification
- Developed skills in using a number of field instruments including a compass and clinometer, GPS, tape, hand lens
- Developed skills in using and interpreting air photos for location, geomorphic and geological purposes
- Enhanced generic skills such as team work, organisational, problem solving and public speaking skills

Regional map and notebook

Due: **Day 7/8**
Weighting: **10%**

Large regional group map. To be handed in 8pm on day 7.

Individual field notebook. To be handed in 9am day 8.

On successful completion you will be able to:

- Developed skills in geological mapping, producing maps at a range of scales
- Developed or enhanced skills in rock and fossil identification
- Developed skills in using and interpreting air photos for location, geomorphic and geological purposes

- Enhanced generic skills such as team work, organisational, problem solving and public speaking skills

Specialist project summary

Due: **8pm Day 7**
Weighting: **5%**

A summary of the specialist study project is to be written and handed in by 8pm on day 7.

On successful completion you will be able to:

- Developed skills in using a number of field instruments including a compass and clinometer, GPS, tape, hand lens
- Enhanced generic skills such as team work, organisational, problem solving and public speaking skills

Class test (practical)

Due: **Day 8**
Weighting: **20%**

Class test (practical)

On successful completion you will be able to:

- Developed skills in geological mapping, producing maps at a range of scales
- Developed or enhanced skills in rock and fossil identification
- Developed skills in using a number of field instruments including a compass and clinometer, GPS, tape, hand lens
- Developed skills in using and interpreting air photos for location, geomorphic and geological purposes
- Enhanced generic skills such as team work, organisational, problem solving and public speaking skills

Class test (theory)

Due: **Day 8**
Weighting: **40%**

Class test (theory)

On successful completion you will be able to:

- Developed skills in geological mapping, producing maps at a range of scales
- Developed or enhanced skills in rock and fossil identification

- Developed skills in using a number of field instruments including a compass and clinometer, GPS, tape, hand lens
- Developed skills in using and interpreting air photos for location, geomorphic and geological purposes
- Enhanced generic skills such as team work, organisational, problem solving and public speaking skills

Delivery and Resources

The unit introduces the student to the use of field observations to produce three dimensional sub-surface geological maps and models of paleo-environments. Students spend the day in groups of eight exploring the Lake Keepit area under the guidance of a group tutor. They work in the evenings in teams of four to analyse their field data and augment it with aireal photographs and geophysical data to produce local and regional subterranean geological maps. Working in small groups students learn how to interpret rock and fossil evidence to reconstruct the paleo-history of the region. There are two on campus days: 5th and 6th December. Students depart the Macquarie Campus for the fieldtrip in the morning of the 7th December 2019 and return late afternoon on the 13th December 2019.

Unit Schedule

8. SCHEDULE OF EVENTS AT LAKE KEEPIT

Day	Daylight	Evening
Thursday	On Campus Day 1: Basics 9:00 Introduction 10:00 Sediments and Sedimentary Rocks 11:00 Post Depositional Mechanisms 12:00 Lunch 13:00 Determining Paleo-histories 15:00 Finish	

Friday	On Campus Day 2: Special Study Areas 10:00 Soils 11:00 Fossils 12:00 Lunch 13:00 Volcanics 14:00 Geo-physics 15:00 Load buses	
Saturday	Drive to Lake Keepit. Buses will stop at Singleton for short break and Tamworth for supplies.	Hand out materials. Orienteering exercise. Area orientation with map and air photo exercise.
Sunday	Tape and compass exercise in the field.	Conversion of magnetic to true north. True width calculation and stratigraphic columns. Draw up traverse (scale 1:2000). Talks.
Monday	Complete fieldwork for small (A3) field map.	Drawing a cross section. Determine formations. Transfer geology to small (A3) field map. Complete and hand-in traverse. Talks.
Tuesday	Practical test on a traverse Visit Eastern and Central Areas	Transfer small (A3) field map geology to large (regional) map. Finish and hand-in small (A3) field map. Talks.
Wednesday	Visit alternate areas	Work on large (regional) map using air photos. Talks.
Thursday	Special Study Fieldwork. Return all equipment.	Complete Special Study report. Hand in large (regional) map. Complete field notebooks. Revise.
Friday	Hand in field notebooks. Class test and practical test. Clean up camp; drive home. Buses will stop at Singleton for driving break.	

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

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

- Developed skills in geological mapping, producing maps at a range of scales
- Developed or enhanced skills in rock and fossil identification
- Developed skills in using a number of field instruments including a compass and clinometer, GPS, tape, hand lens
- Developed skills in using and interpreting air photos for location, geomorphic and geological purposes

Assessment tasks

- Participation mark
- Regional map and notebook
- Specialist project summary

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

- Developed skills in geological mapping, producing maps at a range of scales
- Developed or enhanced skills in rock and fossil identification
- Developed skills in using a number of field instruments including a compass and clinometer, GPS, tape, hand lens
- Developed skills in using and interpreting air photos for location, geomorphic and geological purposes
- Enhanced generic skills such as team work, organisational, problem solving and public speaking skills

Assessment tasks

- On-line quizzes
- Participation mark
- Regional map and notebook
- Specialist project summary

Commitment to Continuous Learning

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

Learning outcomes

- Developed skills in geological mapping, producing maps at a range of scales
- Developed or enhanced skills in rock and fossil identification
- Developed skills in using a number of field instruments including a compass and clinometer, GPS, tape, hand lens
- Developed skills in using and interpreting air photos for location, geomorphic and

geological purposes
- Enhanced generic skills such as team work, organisational, problem solving and public speaking skills

Assessment tasks

- On-line quizzes
- Participation mark
- Small (A3) group field map

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

- Developed skills in geological mapping, producing maps at a range of scales
- Developed or enhanced skills in rock and fossil identification
- Developed skills in using a number of field instruments including a compass and clinometer, GPS, tape, hand lens
- Developed skills in using and interpreting air photos for location, geomorphic and geological purposes

Assessment tasks

- On-line quizzes
- Participation mark
- Small (A3) group field map
- Practical test on a traverse
- Regional map and notebook
- Specialist project summary
- Class test (practical)
- Class test (theory)

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

- Developed skills in geological mapping, producing maps at a range of scales
- Developed or enhanced skills in rock and fossil identification
- Developed skills in using a number of field instruments including a compass and clinometer, GPS, tape, hand lens
- Developed skills in using and interpreting air photos for location, geomorphic and geological purposes

Assessment tasks

- On-line quizzes
- Participation mark
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- Regional map and notebook
- Specialist project summary
- Class test (practical)
- Class test (theory)

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

- Developed skills in geological mapping, producing maps at a range of scales
- Developed or enhanced skills in rock and fossil identification
- Developed skills in using a number of field instruments including a compass and clinometer, GPS, tape, hand lens
- Developed skills in using and interpreting air photos for location, geomorphic and geological purposes

Assessment tasks

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- Regional map and notebook
- Specialist project summary
- Class test (practical)
- Class test (theory)

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

- Developed skills in geological mapping, producing maps at a range of scales
- Developed or enhanced skills in rock and fossil identification
- Developed skills in using and interpreting air photos for location, geomorphic and geological purposes
- Enhanced generic skills such as team work, organisational, problem solving and public speaking skills

Assessment tasks

- Participation mark
- Small (A3) group field map
- Practical test on a traverse
- Regional map and notebook
- Specialist project summary
- Class test (practical)
- Class test (theory)

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 outcomes

- Developed skills in geological mapping, producing maps at a range of scales
- Enhanced generic skills such as team work, organisational, problem solving and public speaking skills

Assessment tasks

- On-line quizzes
- Participation mark

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

- Enhanced generic skills such as team work, organisational, problem solving and public speaking skills

Assessment tasks

- On-line quizzes
- Participation mark

Changes from Previous Offering

1. Added two on campus days prior to field trip.

2. Added optional study subjects.

3. Moved practical and theory exams from Thursday afternoon to Friday morning.

4. Added additional content explaining and practising synthesis of data to produce models.

5. Added additional explaination of producing cross sections.