GEOS226

Introduction to Field Geology

S3 External 2018

Dept of Earth and Planetary Sciences

Contents

General Information

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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
Small (A3) map handed in	10%	No	Day 3
On-line quizzes	5%	No	30th November 2018
Practical test on a traverse	10%	No	Day 4
Class test (practical)	20%	No	Day 6

Name	Weighting	Hurdle	Due
Class test (theory)	40%	No	Day 6
Participation mark	15%	No	Days 1 to 6

Small (A3) map handed in

Due: **Day 3**
Weighting: **10%**

Small (A3) map handed in

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

On-line quizzes

Due: **30th November 2018**
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

Practical test on a traverse

Due: **Day 4**

Weighting: **10%**

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

Class test (practical)

Due: **Day 6**
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 6**
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

Participation mark

Due: **Days 1 to 6**
Weighting: **15%**

Participation mark

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. The students earn how to interpret rock and fossil evidence to reconstruct the paleo-history of the region. Students depart the Macquarie Campus early in the morning of the 1st December 2018 and return late afternoon on the 7th December 2018.

Unit Schedule

8. SCHEDULE OF EVENTS AT LAKE KEEPIT

Day	Daylight	Evening
Saturday	Drive to Keepit. Buses will stop at Singleton for short break and Tamworth for supplies.	Welcome and introduction to the unit. Hand out materials. Field survival: water, hats, sunscreen. Lecture on Sediments and Sedimentary rocks. Area orientation and map and air photo exercise.
Sunday	Tape and compass exercise in the field.	Short lecture on fossils you may find during the day. Conversion of magnetic to true north. Draw up traverse (scale 1:2000). Talks.
Monday	Complete tape and compass; trace between creeks	Short lecture on igneous rock classification. True width calculation and stratigraphic columns. Complete and hand-in traverse. Determine formations. Commence small (A3) map. Mapinfo exercise. Talks.
Tuesday	Complete fieldwork for small (A3) map Practical test on a traverse	Lecture on the post depositional history of the rocks. Finish and hand-in small (A3) map. Transfer traverse and small map geology to large (regional) map. Talks.
Wednesday	Examine a section at some distance from small (A3) map location.	Short lecture on cross sections and geological histories. Work on large (regional) map using air photos. Complete and hand-in Mapinfo exercise. Talks.

Thursday	Finish fieldwork by 12 noon. Complete large (regional) map. Hand in equipment. Class test and practical test.	Check all equipment is in. Relax.
Friday	Clean up camp; drive home. Buses will stop at Singleton for lunch.	

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.m

q.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

- 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 task

- Participation mark

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

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

- Small (A3) map handed in
- On-line quizzes
- Participation mark

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

- Small (A3) map handed in
- On-line quizzes
- Practical test on a traverse
- Class test (practical)
- Class test (theory)
- Participation mark

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

- Small (A3) map handed in
- On-line quizzes
- Practical test on a traverse
- Class test (practical)
- Class test (theory)
- Participation mark

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

- Small (A3) map handed in
- Practical test on a traverse
- Class test (practical)
- Class test (theory)
- Participation mark

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

- Small (A3) map handed in
- Practical test on a traverse
- Class test (practical)
- Class test (theory)
- Participation mark

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