



EESC2150

Mass extinctions and the hidden history of Earth

Session 2, In person-scheduled-weekday, North Ryde 2024

School of Natural Sciences

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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

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Unit convenor and Workshop facilitator

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Credit points

10

Prerequisites

EESC1150 (or GEOS112 or GEOS1110 or GEOS125 or GEOS1120 or GEOS126 or GEOS1130)

Corequisites

Co-badged status

Unit description

Life on our planet has nearly been exterminated at multiple times in Earth history and the causes of mass extinctions are still debated. This unit will develop the interdisciplinary skills needed to describe and interpret the geological record throughout Earth history to understand changes in Earth processes and the imprint left in rocks of major upheavals. You will develop skills in field work and geological mapping, rock and mineral identification in hand samples and under the microscope, viewing and probing global datasets and synthesising data to address scientific questions. This unit contains a compulsory multi-day fieldtrip with an additional cost of approximately \$600.

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:

ULO1: observe, understand and record geological information to map rocks and structures and interpret geological history.

ULO2: identify and analyse common sedimentary, metamorphic and igneous rocks to deduce how they formed.

ULO3: integrate scientific data from multiple sources to solve real-world problems and effectively communicate scientific information to experts and non-experts.

ULO4: develop team work, problem solving and project management skills to assess geological settings in Earth's past.

General Assessment Information

Late Assessment Submission Penalty

Students enrolled in Session based units with written assessments will have the following university standard late penalty applied. Please see <https://students.mq.edu.au/study/assessment-t-exams/assessments> for more information.

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the

total possible mark) will be applied each day a written assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of '0' will be awarded even if the assessment is submitted. Submission time for all written assessments is set at 11:55 pm. A 1-hour grace period is provided to students who experience a technical concern.

For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, students need to submit an application for [Special Consideration](#).

Assessments where Late Submissions will be accepted: In this unit, late submissions will be accepted for all assessments following the standard late penalties described above. The dates for submission of assessment tasks are listed on the schedule. **Students must keep a photocopy of their reports.**

Requirements to Pass this Unit

To pass this unit, you should attempt all assessments and must achieve a total mark greater than or equal to 50%.

Special Consideration

The [Special Consideration Policy](#) aims to support students who have been impacted by short-term circumstances or events that are serious, unavoidable and significantly disruptive, and which may affect their performance in assessment.

Written Assessments: If you experience circumstances or events that affect your ability to complete the written assessments in this unit on time, please inform the convenor and submit a Special Consideration request through ask.mq.edu.au.

Weekly practice-based tasks: To pass the unit you need to demonstrate ongoing development of skills and application of knowledge in 10 out of 13 of the weekly practical classes. If you miss a weekly practical class due to a serious, unavoidable and significant disruption, contact your convenor ASAP as you may be able to attend another class that week. If it is not possible to attend another class, you should still contact your convenor for access to class material to review in your own time.

Note that a Special Consideration should only be applied for if you miss more than three of the weekly practical classes.

Assessment Tasks

| Name | Weighting | Hurdle | Due |
|-----------------------------------|-----------|--------|-----------|
| Field Report | 25% | No | Week 8 |
| Final exam | 40% | No | Week 8 |
| Weekly Quizzes | 15% | No | Weeks 4–7 |
| Literature Review | 20% | No | Week 4 |

Field Report

Assessment Type ¹: Case study/analysis

Indicative Time on Task ²: 20 hours

Due: **Week 8**

Weighting: **25%**

A report comprising multiple components that may include preparation for going in the field, virtual and field-based tasks and analysis of data. See iLearn for details.

On successful completion you will be able to:

- observe, understand and record geological information to map rocks and structures and interpret geological history.
- identify and analyse common sedimentary, metamorphic and igneous rocks to deduce how they formed.
- integrate scientific data from multiple sources to solve real-world problems and effectively communicate scientific information to experts and non-experts.
- develop team work, problem solving and project management skills to assess geological settings in Earth's past.

Final exam

Assessment Type ¹: Examination

Indicative Time on Task ²: 17 hours

Due: **Week 8**

Weighting: **40%**

Final examination that requires the application of skills and knowledge developed in this unit.

On successful completion you will be able to:

- identify and analyse common sedimentary, metamorphic and igneous rocks to deduce how they formed.
- integrate scientific data from multiple sources to solve real-world problems and effectively communicate scientific information to experts and non-experts.

Weekly Quizzes

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 11 hours

Due: **Weeks 4–7**

Weighting: **15%**

Short weekly quizzes that test knowledge of lecture and workshop material and may be online or in class. See iLearn for a detailed list of quizzes in this unit.

On successful completion you will be able to:

- identify and analyse common sedimentary, metamorphic and igneous rocks to deduce how they formed.
- integrate scientific data from multiple sources to solve real-world problems and effectively communicate scientific information to experts and non-experts.

Literature Review

Assessment Type ¹: Literature review

Indicative Time on Task ²: 20 hours

Due: **Week 4**

Weighting: **20%**

A summary, interpretation or an evaluation of research findings in a field of study. See iLearn for details of the literature review.

On successful completion you will be able to:

- integrate scientific data from multiple sources to solve real-world problems and effectively communicate scientific information to experts and non-experts.

¹ If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Writing Centre](#) for academic skills support.

² Indicative time-on-task is an estimate of the time required for completion of the assessment

task and is subject to individual variation

Delivery and Resources

Week 1 class: EESC2150 runs a Workshop (3hr) and starts the Virtual Field Trip (3hr) in week 1, i.e., you must attend both classes in week 1.

Methods of communication: We will communicate with you via your university email (if personal) and through announcements on iLearn. Queries to convenors must be placed on the iLearn discussion board (if not personal) or sent to the unit convenor via the contact email on iLearn (if personal).

Introduction: This is a hands on unit of study that will reinforce skills developed in first year (EESC1150 Planet Earth) and acquaint you with the essential features of the materials that constitute the Earth, processes that shape the Earth's surface, and the deeper Earth processes that lead to rock change. The unit is an **introduction to deep Earth processes and interpreting Earth history** and not only forms the vital stepping stone for future studies in Earth and Environmental Science, but also sets out to give students from other disciplines a basic understanding of the physical Earth.

We aim to help you develop the skills necessary for study of the physical Earth. By the end of the unit, you should have the skills to:

- Make critical observations of geology for yourself
- Identify minerals and rocks
- Determine geometric relationships between rock units, as depicted on geological maps
- Use geological information to better understand the physical Earth

STUDY PROGRAM

This unit concentrates on five major themes that will be explored and revisited in various ways throughout the unit. These themes include:

- Deep time (prehistorical and ancient geological past)
- Plate tectonics
- The rock cycle
- Geological skills, e.g., mineral/rock identification, cross-sectioning, interpreting geological history, mapping
- How geoscience can be used to solve some of the problems of the 21st century

There are two modules that investigate different aspects of geoscience. The main ideas and objectives for the modules are:

Module 1: Applied Geology (approximately two-thirds of the unit)

By the end of this unit module students should be able to:

- Understand the rock-cycle and key deep earth processes that make and change rocks

- Distinguish typical hand specimens of different rock types and investigate these in thin section
- Read and interpret geological maps using cross sections to determine geological history

Module 2: Stratigraphy, geological time and palaeontology (approximately one-third of the unit)

By the end of this unit module students should be able to:

- Characterise sedimentary rocks and interpret sedimentary facies
- Describe methods of dating the Earth
- Describe body and trace fossils and use these in biostratigraphy
- Illustrate how knowledge of mass extinctions can be useful to understanding diversification and evolution
- Reconstruct paleoenvironments from sedimentary rocks and fossil records

FIELD TRIPS

During this unit of study you will be required to participate in field trips: on-campus (in-person during the workshop class) and virtual (completed with the help of a tutor in weekly classes). These excursions form an essential part of the unit and give you an introduction to field geology.

Unit Schedule

SCHEDULE:

| Date | Week | Workshop (compulsory participation) Tue 9–12 [11 WW 210] | Fieldwork (compulsory participation) Tue 13–16 [11 WW 210] |
|-------|------|--|---|
| 22Jul | 1 | <u>Weeks 1–4:</u> Nathan Daczko Introduction | <u>Weeks 1–7:</u> (virtual field trip) Mineral identification in thin section |
| 29Jul | 2 | Applied Geology | Mapping Bingie |
| 5Aug | 3 | <ul style="list-style-type: none"> • Rock identification in hand sample • Cross-section construction • Interpreting Earth history | Remote Sensing Mapping igneous field relationships |
| 12Aug | 4 | Quiz 1 (30 min) | https://sites.google.com/view/mapping-bingie/home [Nathan Daczko, Aditi Chatterjee, Tom England, Michelle Moxey] |

| | | | |
|--------------|-----------|--|------------|
| 19Aug | | <u>Weeks 5–7: John Alroy</u> | |
| | 5 | Stratigraphy & Palaeontology | |
| 26Aug | 6 | <ul style="list-style-type: none"> • Sedimentary facies • Palaeoenvironments • Body and trace fossils | |
| 2Sep | 7 | <ul style="list-style-type: none"> • Biostratigraphy and deep time • Diversification and mass extinctions • Dinosaurs, brachiopods, K-Pg event <p>Quiz 2 (30 min)</p> | |
| 9Sep | 8 | Exam (in class) | No classes |
| | 9+ | No classes | No classes |

IMPORTANT DATES:

Week 4 – 20% 'Literature Review' is due

Weeks 4–7 – 15% iLearn 'Quiz' is due

Week 8 – 25% 'Field Report' is due

Week 8 – 40% 'Final Exam' (in class)

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.s.mq.edu.au\)](https://policies.s.mq.edu.au). 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](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies \(https://students.mq.edu.au/support/study/policies\)](https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au) and use the [search tool](#).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/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 connect.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

Student Services and Support

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study

- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support including information about finances, tenancy and legal issues](#)
- [Student Advocacy](#) provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via the [Service Connect Portal](#), or contact [Service Connect](#).

Changes to the Special Consideration Policy

Please note, changes to the special consideration policy/procedure were approved by Senate on 24 May 2022. The most significant changes are the use of statements of fact rather than other documentation and the inclusion of "circumstances or events which are anticipated but unable to be changed". These changes will take effect from 25 July 2022.

<https://policies.mq.edu.au/document/view.php?id=136&version=2>

Special Considerations are checked by the central assessment team. If the SC meets the appropriate criteria, then it **must be** accepted by the team and will be forwarded to the unit convenor to action. If the SC doesn't meet the appropriate criteria, it is rejected and does not go to the unit convenor. It is the role of the central assessment team to accept or reject SCs. It is the role of the unit convenor to recommend the remedy. SCs need to be actioned by UCs within 5 working days.

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.

Changes from Previous Offering

This unit is experiencing a change of academic staff and so the content for the current offering is being developed as we deliver the unit. Please help us by providing feedback each week on how the unit is progressing.

Unit information based on version 2024.02 of the [Handbook](#)