



# GEOS3130

## Earth System History

Session 2, Weekday attendance, North Ryde 2021

*Archive (Pre-2022) - Department of Earth and Environmental Sciences*

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#### **Disclaimer**

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#### **Session 2 Learning and Teaching Update**

The decision has been made to conduct study online for the remainder of Session 2 for all units WITHOUT mandatory on-campus learning activities. Exams for Session 2 will also be online where possible to do so.

This is due to the extension of the lockdown orders and to provide certainty around arrangements for the remainder of Session 2. We hope to return to campus beyond Session 2 as soon as it is safe and appropriate to do so.

Some classes/teaching activities cannot be moved online and must be taught on campus. You should already know if you are in one of these classes/teaching activities and your unit convenor will provide you with more information via iLearn. If you want to confirm, see the list of [units with mandatory on-campus classes/teaching activities](#).

Visit the [MQ COVID-19 information page](#) for more detail.

## General Information

### Unit convenor and teaching staff

Convenor

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Credit points

10

Prerequisites

(GEOS206 or GEOS2130) and 120cp at 1000 level or above

Corequisites

Co-badged status

### Unit description

This unit focuses on the evolution of the Earth as a system. The thin layer of sediments and sedimentary rocks at the Earth's surface contains a unique record of the planet's long history. This record reveals the gradual and at times spectacular (co)evolution of the geological, ocean, atmosphere and biological components which make the planet the complex system that it is today. An understanding of this system is critical for predicting the consequences of future climate and environmental change, the origin and distribution of the resources that are critical to society, and allows us to place modern rates of extinction into a geological context. Lectures and case studies will highlight the fascinating ways in which conditions at the Earth's surface have changed over time. Examples will include the causes and consequences of the rise in atmospheric oxygen, the invasion of land by plants and animals, the fall of the dinosaurs, periods of increased volcanism, as well as episodes of global warming and cooling. Hands-on practicals will give you the skills to read and interpret the physical, chemical and biological clues to the Earth's past, and allow you to critically assess the ongoing scientific controversies in this area. This unit is of interest to those majoring in geology, marine science, palaeobiology and environmental science.

## 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:** Demonstrate advanced skills in the identification, petrographic characterisation and interpretation of sedimentary rocks
- ULO2:** Apply stratigraphic principles to the correlation of sedimentary sequences
- ULO3:** Demonstrate an understanding of the links and feedbacks between the geo-, bio-, hydro- and atmosphere and how these have evolved through time
- ULO4:** Demonstrate your ability to critically appraise palaeoenvironmental proxy records, and an understanding of theoretical and empirical basis of proxies
- ULO5:** Describe the major biogeochemical cycles and their link to the climate system
- ULO6:** Apply discipline-specific knowledge to solving problems and evaluating ideas and information

## General Assessment Information

### On-line quizzes on workshops

After each workshop on Monday a quiz will open to make sure you have read and understood the lecture material, practical, and weekly reading. The 12 quizzes will be available on-line

through the iLearn system and together are worth 10% of the unit mark. The quizzes are in each weekly section of iLearn; also see the shortcuts to all quizzes from the “Activities” panel on the right hand side of the iLearn page. You will do the quizzes in your own time, open book, and they will be open until 23:59 on the following Friday (4<sup>1</sup>/<sub>2</sub> days to do each of them). The question order will be forced (i.e. you can't go back to a question later) and random, there will be a time limit of 30 mins on the workshop quizzes, and you only get one go. There is no workshop or quiz in week 13 (oral presentation day). The 10% quiz mark will be derived by summing all 12 of the lecture quizzes and normalising. Each quiz is worth the same amount.

## **Assignment**

You will be given specific details of what is expected for the Earth System Science Research Report (20%) when it is released. The assignment will involve a written research report, in which your use of English and referencing the source of your ideas is important. The assignments will be released to you on iLearn in Week 2, and will be discussed in that week's workshop.

The assignment is essay based, so skill at writing reports is important. The assignment topic must be fully researched and the report written in your own words. Cutting and pasting information from web pages is NOT acceptable. Information you obtain from other sources (brief quotes, images, ideas) must be fully referenced in the text (author, year), with references listed at the end of the essay (year, author, title, journal or link). The assignment will be submitted for turnitin checking and grademark assessment through iLearn. You will not need to produce hard copy. The assignment will be due on Wednesday of Week 6 (1<sup>st</sup> September) at 5pm.

**LATE PENALTIES** (loss of marks) will apply for work that is late where no extension has been granted: it is a 5% per day penalty for late work (i.e. 1/20 of the marks allocated to the exercise will be deducted for each day that the work is late).

## **Oral: Earth System Evolution presentation, addressing a topical question in Earth System Science and Historical Geology**

A long list of possible topics for the oral presentations (20%) will be released in week 10. You will have the choice to pick a topic from this list. First come first served! The presentations will be in week 13, and will be for approximately 10 mins each, including questions. The presentations will be marked by academic staff on the unit and some invited postdocs/PhD students from DEES, as well as by peer assessment (you...!).

## **Mid-semester test**

The mid-semester test (10%) will occur at the start of the week 7 workshop on Monday 6 September, in the week before the semester break. It will be a short test of the week 1–6 lectures, unit reading material, and practical exercises. The educational rationale for the mid-semester test is to check that you are on track in terms of your learnings from the unit.

## **Final Exam**

The unit examination (40%) will be based on lectures, unit reading material, practical exercises, information you should have absorbed through completing the assignment and oral presentation, and any other material presented during classes.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Earth System Evolution presentations</a>	20%	No	1/11/21
<a href="#">Weekly Quiz</a>	10%	No	Fridays midnight throughout semester
<a href="#">Stratigraphy &amp; Earth System Science report</a>	20%	No	1/9/21
<a href="#">Mid-term test and final exam</a>	50%	No	6/9/21 and exam period

### Earth System Evolution presentations

Assessment Type <sup>1</sup>: Presentation

Indicative Time on Task <sup>2</sup>: 15 hours

Due: **1/11/21**

Weighting: **20%**

Presentation addressing a range of topical questions in Earth System Science and Historical Geology

On successful completion you will be able to:

- Demonstrate an understanding of the links and feedbacks between the geo-, bio-, hydro- and atmosphere and how these have evolved through time
- Demonstrate your ability to critically appraise palaeoenvironmental proxy records, and an understanding of theoretical and empirical basis of proxies
- Describe the major biogeochemical cycles and their link to the climate system
- Apply discipline-specific knowledge to solving problems and evaluating ideas and information

### Weekly Quiz

Assessment Type <sup>1</sup>: Quiz/Test

Indicative Time on Task <sup>2</sup>: 6 hours

Due: **Fridays midnight throughout semester**

Weighting: **10%**

Weekly online quiz covering material from lecture, practical and weekly readings

On successful completion you will be able to:

- Demonstrate advanced skills in the identification, petrographic characterisation and interpretation of sedimentary rocks
- Apply stratigraphic principles to the correlation of sedimentary sequences
- Demonstrate an understanding of the links and feedbacks between the geo-, bio-, hydro- and atmosphere and how these have evolved through time
- Demonstrate your ability to critically appraise palaeoenvironmental proxy records, and an understanding of theoretical and empirical basis of proxies

## Stratigraphy & Earth System Science report

Assessment Type <sup>1</sup>: Report

Indicative Time on Task <sup>2</sup>: 25 hours

Due: **1/9/21**

Weighting: **20%**

Report evaluating a topical issue or fundamental concept in Stratigraphy or Earth System Science

On successful completion you will be able to:

- Apply stratigraphic principles to the correlation of sedimentary sequences
- Demonstrate an understanding of the links and feedbacks between the geo-, bio-, hydro- and atmosphere and how these have evolved through time
- Demonstrate your ability to critically appraise palaeoenvironmental proxy records, and an understanding of theoretical and empirical basis of proxies
- Describe the major biogeochemical cycles and their link to the climate system

## Mid-term test and final exam

Assessment Type <sup>1</sup>: Examination

Indicative Time on Task <sup>2</sup>: 20 hours

Due: **6/9/21 and exam period**

Weighting: **50%**

Based on practical, multiple-choice and written questions covering material from lectures, practicals, readings.

On successful completion you will be able to:

- Demonstrate advanced skills in the identification, petrographic characterisation and

interpretation of sedimentary rocks

- Apply stratigraphic principles to the correlation of sedimentary sequences
- Demonstrate an understanding of the links and feedbacks between the geo-, bio-, hydro- and atmosphere and how these have evolved through time
- Demonstrate your ability to critically appraise palaeoenvironmental proxy records, and an understanding of theoretical and empirical basis of proxies
- Describe the major biogeochemical cycles and their link to the climate system

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<sup>1</sup> 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.

<sup>2</sup> 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

### Classes and contact hours

Attend the five-hour workshop each week.

11 Wally's Walk, 210, Mondays, 09:00-14:00.

Each 5 hour workshop will include about 60 mins to 90 mins of mini-lectures, with the rest of the time spent on practical activities. The lecture material will mostly be delivered in small blocks, interspersed with the practicals. The mini-lectures may be at any time during the workshop, as decided by the person teaching each week. The lectures will typically give a broad overview of the topics, provide background information and introduce new ideas and concepts that link in with the practical activities. The lectures will be interactive, with questions and answers throughout. The lectures will be recorded using Echo 360 active learning (audio and screen capture; first 3 hours of each workshop), and files of the lecture graphics will also be made available through iLearn. These will be particularly useful for revision purposes.

At the moment this unit is set to be delivered with workshops on campus. It is possible that COVID-19 will disrupt these plans during semester 2. For up-to-date information from the university about precautions to take during semester 2, please visit the [Coronavirus \(COVID-19\) infection latest information pages](#).

### Textbook and Readings

- Earth System History, Steven M. Stanley and John A. Luczaj, 2015, Fourth Edition,

Freeman/Macmillan Learning

- Macquarie Library Level 1/Level 2 QE28.3.S735 2015
- [https://multisearch.mq.edu.au/primo-explore/fulldisplay?docid=MQ\\_ALMA21157705280002171&context=L&vid=MQ&lang=en\\_US&search\\_scope=PC\\_PLUS\\_LOCAL&adaptor=Local%20Search%20Engine&tab=books\\_more&query=any,contains,Earth%20System%20History&offset=0](https://multisearch.mq.edu.au/primo-explore/fulldisplay?docid=MQ_ALMA21157705280002171&context=L&vid=MQ&lang=en_US&search_scope=PC_PLUS_LOCAL&adaptor=Local%20Search%20Engine&tab=books_more&query=any,contains,Earth%20System%20History&offset=0)
- There are 4 copies in the library, 4 available for loan (no reserve due to COVID)
- It can also be purchased as a cheap ebook (pdf file).
- e.g. <https://collegestudenttextbook.org/product/earth-system-history-4th-edition-ebook/>, US\$13.
- Or from Macmillan: [https://store.macmillanlearning.com/us/product/Earth-System-History/p/1429255269?\\_ga=2.230914459.529381458.1594707400-1498979216.1594707400](https://store.macmillanlearning.com/us/product/Earth-System-History/p/1429255269?_ga=2.230914459.529381458.1594707400-1498979216.1594707400)
- Deals such as 6 month rental for \$60.99.
- Other readings will be supplied on iLearn.

## Unit Schedule

see information in iLearn

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.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](#)
- [Grade Appeal Policy](#)
- [Complaint Management 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 <ask.mq.edu.au> or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto: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 help you improve your marks and take control of your study.

- [Getting help with your assignment](#)
- [Workshops](#)
- [StudyWise](#)
- [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

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](mailto: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/](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**

Since 2020 there was a minor reordering of the unit content.