GEOS3315

Global Tectonics and Cycles

Session 1, Weekday attendance, North Ryde 2021

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

Contents

Notice

As part of Phase 3 of our return to campus plan, most units will now run tutorials, seminars and other small group activities on campus, and most will keep an online version available to those students unable to return or those who choose to continue their studies online.

To check the availability of face-to-face activities for your unit, please go to timetable viewer. To check detailed information on unit assessments visit your unit's iLearn space or consult your unit convenor.

General Information

Unit convenor and teaching staff
Craig O'Neill
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Credit points
10

Prerequisites
10cp in GEOS units at 2000 level and 10cp in GEOS or MATH or PHYS units at 2000 level

Corequisites

Co-badged status

Unit description
This multidisciplinary unit integrates recent advances in geodynamics, global cycle modelling, geophysics and geochemistry to understand the tectonic evolution of the Earth, its impact on the surface and the complex feedbacks between internal dynamics and the atmosphere, hydrosphere and biosphere (e.g. volcanic degassing, natural CO2 sequestration, feedback between climate and plate tectonics, among others). Topics covered include structure and dynamics of the Earth, global supercycles, heat and mass transfer, physical processes controlling Earth dynamics, and recent developments in the understanding of the links between the solid Earth and the atmosphere/hydrosphere/climate. Through hands-on workshops, students will also gain experience in computer programming, scientific visualization and quantitative data analysis.

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:

ULO2: Analyse the processes powering mantle and lithosphere dynamics, and tectonic plates

ULO1: Demonstrate knowledge of the interaction between global tectonics of the Earth

and its surface systems

ULO3: Apply scientific methodology, in accessing, using and synthesising Earth-science information

ULO4: Apply geodynamic knowledge to solving problems, data analysis, scientific visualisation, and evaluating ideas and information

ULO5: Demonstrate the capacity to present ideas clearly with supporting evidence

Assessment Tasks

Name	Weighting	Hurdle	Due
Final Exam	50%	No	TBD
Assignment I - Geodynamics	15%	No	Week 4
Online Quizzes	10%	No	Ongoing
Research paper	25%	No	Week 13

Final Exam

Assessment Type [1]: Examination
Indicative Time on Task [2]: 25 hours
Due: **TBD**
Weighting: **50%**

The final exam will consist of questions to be answered in essay style and will cover all aspects of the unit.

On successful completion you will be able to:

- Analyse the processes powering mantle and lithosphere dynamics, and tectonic plates
- Demonstrate knowledge of the interaction between global tectonics of the Earth and its surface systems
- Demonstrate the capacity to present ideas clearly with supporting evidence

Assignment I - Geodynamics

Assessment Type [1]: Report
Indicative Time on Task [2]: 15 hours
Due: **Week 4**
Weighting: **15%**

Produce a report on the interaction between tectonics, geodynamics and surface systems

On successful completion you will be able to:

- Demonstrate knowledge of the interaction between global tectonics of the Earth and its surface systems
- Analyse the processes powering mantle and lithosphere dynamics, and tectonic plates
- Apply scientific methodology, in accessing, using and synthesising Earth-science information
- Apply geodynamic knowledge to solving problems, data analysis, scientific visualisation, and evaluating ideas and information
- Demonstrate the capacity to present ideas clearly with supporting evidence

Online Quizzes

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 9 hours
Due: **Ongoing**
Weighting: **10%**

Quizzes undertaken on workshop activities

On successful completion you will be able to:

- Demonstrate knowledge of the interaction between global tectonics of the Earth and its surface systems
- Analyse the processes powering mantle and lithosphere dynamics, and tectonic plates

Research paper

Assessment Type [1]: Literature review
Indicative Time on Task [2]: 25 hours
Due: **Week 13**
Weighting: **25%**

This review will consist of a paper, and a presentation, which results from your reading on an individually selected topic.

On successful completion you will be able to:

- Demonstrate knowledge of the interaction between global tectonics of the Earth and its surface systems
- Apply scientific methodology, in accessing, using and synthesising Earth-science information
- Demonstrate the capacity to present ideas clearly with supporting evidence

[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

Delivery will be largely online, with weekly meetings, and in-person discussion groups will be organised as needed. Timing to be discussed in Week 1.

The recommended textbook is Fowler's "The Solid Earth". All other resources will be provided on ilearn.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (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). 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) 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

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

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.