



GEOS385

Global Tectonics

S1 Day 2015

Dept of Earth and Planetary Sciences

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General Information

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Credit points

3

Prerequisites

(GEOS205 or GEOS268) and (GEOS206 or GEOS260 or GEOS272)

Corequisites

Co-badged status

Unit description

This unit integrates recent advances in geodynamics, geophysics, geochemistry, and geology to understand the long-term tectonic evolution of the Earth, and its impact on the surface. Topics covered include structure and dynamics of the Earth, physical processes driving Earth dynamics, fundamentals of modern earthquake seismology, plate motions through time, paleomagnetism, global supercycles, and recent developments in the understanding of mantle/lithosphere dynamics.

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:

Understanding of issues concerning the global tectonics of the earth

Understanding of mantle and lithosphere dynamics

understanding of the basic concepts of tectonic plate motions

Understanding scientific methodology

Competence in accessing, using and synthesising appropriate information

Application of knowledge to solving problems and evaluating ideas and information

Capacity to present ideas clearly with supporting evidence

Assessment Tasks

Name	Weighting	Due
Online Quizzes	7%	Various
Assignment I	7%	Week 4
Assignment II	8%	Week 7
Assignment III	8%	Week 11
Research Paper & Seminar	20%	Week 12
Final Exam	50%	July

Online Quizzes

Due: **Various**

Weighting: **7%**

Students will complete 5 online quizzes, on each module of the course.

On successful completion you will be able to:

- Understanding of issues concerning the global tectonics of the earth
- Understanding of mantle and lithosphere dynamics
- understanding of the basic concepts of tectonic plate motions
- Application of knowledge to solving problems and evaluating ideas and information

Assignment I

Due: **Week 4**

Weighting: **7%**

Assignment on module 1

On successful completion you will be able to:

- Understanding of mantle and lithosphere dynamics
- Competence in accessing, using and synthesising appropriate information

- Application of knowledge to solving problems and evaluating ideas and information

Assignment II

Due: **Week 7**

Weighting: **8%**

Assignment on plate tectonics module

On successful completion you will be able to:

- Understanding of issues concerning the global tectonics of the earth
- Understanding of mantle and lithosphere dynamics
- understanding of the basic concepts of tectonic plate motions
- Application of knowledge to solving problems and evaluating ideas and information

Assignment III

Due: **Week 11**

Weighting: **8%**

Assignment on continental lithosphere module

On successful completion you will be able to:

- Understanding scientific methodology
- Competence in accessing, using and synthesising appropriate information
- Application of knowledge to solving problems and evaluating ideas and information
- Capacity to present ideas clearly with supporting evidence

Research Paper & Seminar

Due: **Week 12**

Weighting: **20%**

Research Paper

On successful completion you will be able to:

- Understanding of issues concerning the global tectonics of the earth
- Understanding of mantle and lithosphere dynamics
- understanding of the basic concepts of tectonic plate motions
- Understanding scientific methodology
- Competence in accessing, using and synthesising appropriate information
- Application of knowledge to solving problems and evaluating ideas and information
- Capacity to present ideas clearly with supporting evidence

Final Exam

Due: **July**

Weighting: **50%**

Final Exam

On successful completion you will be able to:

- Understanding of issues concerning the global tectonics of the earth
- Understanding of mantle and lithosphere dynamics
- understanding of the basic concepts of tectonic plate motions
- Understanding scientific methodology
- Application of knowledge to solving problems and evaluating ideas and information
- Capacity to present ideas clearly with supporting evidence

Delivery and Resources

Lecture:

Practical 1:

Practical 2:

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy <http://mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Grievance Management Policy http://mq.edu.au/policy/docs/grievance_management/policy.html

Disruption to Studies Policy http://www.mq.edu.au/policy/docs/disruption_studies/policy.html *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of 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/support/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.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

IT Help

For help with University computer systems and technology, visit <http://informatics.mq.edu.au/help/>.

When using the University's IT, you must adhere to the [Acceptable Use 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

- Understanding of mantle and lithosphere dynamics
- Understanding scientific methodology
- Competence in accessing, using and synthesising appropriate information
- Capacity to present ideas clearly with supporting evidence

Assessment tasks

- Assignment I
- Research Paper & Seminar

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

- Understanding of mantle and lithosphere dynamics
- understanding of the basic concepts of tectonic plate motions
- Understanding scientific methodology
- Competence in accessing, using and synthesising appropriate information
- Application of knowledge to solving problems and evaluating ideas and information

Assessment tasks

- Online Quizzes
- Assignment I
- Assignment III
- Research Paper & Seminar
- Final Exam

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

- Understanding of mantle and lithosphere dynamics
- Understanding scientific methodology
- Competence in accessing, using and synthesising appropriate information
- Application of knowledge to solving problems and evaluating ideas and information

Assessment tasks

- Assignment I
- Assignment II
- Assignment III
- Research Paper & Seminar
- Final Exam

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

- Understanding of issues concerning the global tectonics of the earth
- Understanding of mantle and lithosphere dynamics
- understanding of the basic concepts of tectonic plate motions

Assessment tasks

- Online Quizzes
- Assignment I
- Assignment II
- Assignment III
- Research Paper & Seminar
- Final Exam

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

- Understanding of issues concerning the global tectonics of the earth
- Understanding of mantle and lithosphere dynamics
- understanding of the basic concepts of tectonic plate motions
- Understanding scientific methodology
- Competence in accessing, using and synthesising appropriate information
- Application of knowledge to solving problems and evaluating ideas and information

Assessment tasks

- Assignment I
- Assignment II
- Assignment III
- Research Paper & Seminar
- Final Exam

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

- Understanding of mantle and lithosphere dynamics
- Understanding scientific methodology
- Competence in accessing, using and synthesising appropriate information

Assessment tasks

- Assignment I
- Assignment II
- Assignment III
- Research Paper & Seminar

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

- Understanding scientific methodology
- Capacity to present ideas clearly with supporting evidence

Assessment tasks

- Assignment III
- Research Paper & Seminar
- Final Exam

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

- Understanding scientific methodology
- Competence in accessing, using and synthesising appropriate information

Assessment task

- Research Paper & Seminar

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 outcomes

- Understanding scientific methodology
- Competence in accessing, using and synthesising appropriate information

Assessment tasks

- Assignment III
- Research Paper & Seminar