

GEOS1040: Earth: Our Dynamic Planet

Callaghan

Semester 1 - 2024



OVERVIEW

Course Description

In this course you will learn about the physical processes that shape planet Earth, driving its evolution through time. Through online learning, interactive tutorials, practical laboratories, and field activities you will develop an understanding of Earth's past and present, and how this will shape its future. You will learn how key processes in the geosphere, hydrosphere, atmosphere, and biosphere interact to drive dynamic cycles that shape the planet's surface and change the oceans over long and short timescales. Understanding these interactions and cycles is fundamental for predicting how Earth will evolve into the future and developing strategies and technologies to sustain life on a changing planet. This course introduces foundational topics in geology, oceanography, climatology, hydrology, and physical geography including the Critical Zone – where Earth's spheres meet. The concepts and skills provide a basis for continuing studies in Earth, Climate, Coastal, Marine, Environmental and Spatial Sciences.

Academic Progress Requirements

Nil

Contact Hours

Callaghan

Field Study *

Face to Face Off Campus

16 hour(s) per term

Two-field days will be held during the semester as part of the practical component.

Compulsory Requirement: Induction Requirement - Students must attend and pass the induction requirements before attending these sessions.

Laboratory *

Face to Face On Campus

2 hour(s) per week(s) for 12 week(s) starting Week 1

Lectorial

Face to Face On Campus

2 hour(s) per week(s) for 12 week(s) starting Week 1

Online Activity

Online

2 hour(s) per week(s) for 12 week(s) starting Week 1

Unit Weighting Workload

* This contact type has a compulsory requirement.

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Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

COURSE OUTLINE

CONTACTS

Course Coordinator **Callaghan**
Dr Michael Kinsela
Michael.Kinsela@newcastle.edu.au
Consultation: Contact online through the Canvas message client or email

Teaching Staff Other teaching staff will be advised on the course Canvas site.

School Office **School of Environmental and Life Sciences**
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9am-5pm (Mon-Fri)

SYLLABUS

Course Content The course examines the evolution and dynamics of planet Earth through the concept of Earth Systems Science, which focusses on interactions between the Earth's spheres. It provides an introduction to key topics of the geosphere, hydrosphere, atmosphere, and biosphere, including:

- The origins, evolution and materials of planet Earth
- Earth's dynamic formation of the continents and oceans
- Atmosphere: precipitation, weather systems and global climate
- Ocean and coastal processes and dynamics
- Landscapes, weathering and geomorphology
- Sediment, soils and biosphere
- Water cycles, drainage and groundwater
- The Critical Zone: where Earth's spheres meet
- Observing and monitoring planet Earth

Course Learning Outcomes **On successful completion of this course, students will be able to:**

1. Explain how the Earth formed and has changed over time;
2. Describe Earth systems including the geosphere, hydrosphere, atmosphere, and biosphere;
3. Identify the drivers of cycles and change on Earth and the links and interactions between these;
4. Collect, critically analyse and interpret field and laboratory data related to Earth systems;
5. Communicate geoscientific information effectively;
6. Contribute as part of a team to achieve tasks and resolve problems

Course Materials **Lecture Materials:**

- Course theory content is provided as self-directed Online Learning Material on Canvas for students to complete each week

- Recommended Text:**
- Tarbuck, E. J. & Lutgens, F. K., 2015. Earth Science, 14th edition. Prentice Hall. [Full text available online through the university library - see course Canvas site]
 - Nesar, L., 2023. Introduction to Earth Science. Virginia Tech Publishing. [Open Access full text available online - <https://doi.org/10.21061/introearthscience>]
 - See the course Canvas site for additional readings

COMPULSORY REQUIREMENTS

In order to pass this course, each student must complete ALL of the following compulsory requirements:

Contact Hour Requirements:

- Field Study Induction Requirement - Students must attend and pass the induction requirements before attending these sessions. In order to participate in this course, students must complete a compulsory fieldwork induction.
- Laboratory There is a compulsory attendance requirement in this course. Students must attend 80% of the laboratory classes.

SCHEDULE

Week	Week Begins	Topic	Learning Activity	Assessment Due
1	26 Feb	<u>1. Earth's Dynamic Origins</u> Welcome to Planet Earth	Online Learning Material Lectorial Session Practical Session	Fieldwork Medical Questionnaire
2	4 Mar	Plate Tectonics and Volcanism	Online Learning Material Lectorial Session Practical Session	Quiz 0 (practice quiz)
3	11 Mar	The Rock Cycle	Online Learning Material Lectorial Session Practical Session	Quiz 1 by Monday 5pm <u>Practical Assessment 1</u> (completed in lab class)
4	18 Mar	<u>2. Water on Earth</u> Ocean Dynamics and Processes	Online Learning Material Lectorial Session Practical Session	Quiz 2 by Monday 5pm
5	25 Mar	Atmosphere Dynamics and Processes (Lectorial only)	Online Learning Material Lectorial Session	Quiz 3 by Monday 5pm
6	1 Apr	Atmosphere Dynamics and Processes (Practical only)	Online Learning Material Practical Session <u>Field Trip 1 - full day on Saturday 6th April</u>	Quiz 4 by Wednesday 5pm
7	8 Apr	Climate Systems and Cycles	Online Learning Material Lectorial Session Practical Session	<u>Practical Assessment 2</u> (completed in lab class) Field Trip 1 Assessment by Friday 5pm
Mid-Semester Recess				
Mid-Semester Recess				
8	29 Apr	<u>3. Connected Landscapes</u> Geomorphology, Weathering and Landforms	Online Learning Material Lectorial Session Practical Session	Quiz 5 by Monday 5pm
9	6 May	Sedimentary Rocks and the Record of Life	Online Learning Material Lectorial Session Practical Session	Quiz 6 by Monday 5pm
10	13 May	Soil Processes and Groundwater	Online Learning Material Lectorial Session Practical Session	Quiz 7 by Monday 5pm <u>Practical Assessment 3</u> (completed in lab class)
11	20 May	<u>4. Earth's Critical Zone</u> Critical Biogeography of the Biosphere	Online Learning Material Lectorial Session Practical Session <u>Field Trip 2 - full day on Saturday 25th May</u>	Quiz 8 by Monday 5pm

12	27 May	Earth's Interdependent Spheres	Online Learning Material Lectorial Session Practical Session	Quiz 9 by Monday 5pm <u>Practical Assessment 4</u> (completed in lab class) Field Trip 2 Assessment by Friday 5pm
13	3 Jun	The Anthropocene and Earth's Future	Online Learning Material Lectorial Session Practical Session	Quiz 10 by Friday 5pm
Examination Period				
Examination Period				

ASSESSMENTS

This course has 3 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Laboratory assessment tasks	Completed in class during Practical Sessions of Weeks 3, 7, 10 & 12	Individual	40%	1, 3, 4, 5
2	Field trip report	Due by 5pm Friday 12th April (Week 7) & Friday 31st May (Week 12)	Group	20%	1, 3, 4, 5, 6
3	Knowledge quizzes	Due by 5pm Mondays of Weeks 3, 4, 5, 8, 9, 10, 11 & 12, Wednesday of Week 6 and Friday of Week 13	Individual	40%	1, 2, 3

The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.

Assessment 1 - Laboratory assessment tasks

Assessment Type	Tutorial / Laboratory Exercises
Purpose	To examine the student's understanding of practical concepts and skills, achieving learning outcomes 1, 3, 4 & 5
Description	In class assessment tasks covering the practical content covered within each module
Weighting	40%
Length	Provided in class with the assessment instructions
Due Date	Completed in class during Practical Sessions of Weeks 3, 7, 10 & 12
Submission Method	In Class
Assessment Criteria	Assessment completed in Practical Sessions
Return Method	Provided in class with the assessment instructions
Feedback Provided	In Class
	In Class - After completion of task. Feedback provided in class or online

Assessment 2 - Field trip report

Assessment Type	Report
Purpose	To examine the student's understanding of field concepts and skills, achieving learning outcomes 1, 3, 4, 5 & 6
Description	Written assessment on field activities. Field trip arrangements and costs to be communicated via Canvas
Weighting	20%
Due Date	Due by 5pm Friday 12th April (Week 7) & Friday 31st May (Week 12)
Submission Method	Online
	Submission through Canvas
Assessment Criteria	Provided on Canvas with the assessment instructions
Return Method	Online
Feedback Provided	Online - Within 2 weeks after submission. Feedback provided through Canvas

Assessment 3 - Knowledge quizzes

Assessment Type	Quiz
Purpose	To examine the student's understanding of course theory content, achieving learning outcomes 1, 2 & 3.
Description	10 online quizzes completed in Canvas. Student's highest 8 quiz grades will contribute 40% of their final course grade.
Weighting	40%
Length	See Canvas quiz instructions
Due Date	Due by 5pm Mondays of Weeks 3, 4, 5, 8, 9, 10, 11 & 12, Wednesday of Week 6 and Friday of Week 13
Submission Method	Online Completed through Canvas
Assessment Criteria	See Canvas quiz instructions
Return Method	Online
Feedback Provided	Online - After the due date once quizzes are fully graded. Correct answer and explanation provided

ADDITIONAL INFORMATION

Grading Scheme

This course is graded as follows:

Range of Marks	Grade	Description
85-100	High Distinction (HD)	Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives.
75-84	Distinction (D)	Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of skills*; and achievement of all assessment objectives.
65-74	Credit (C)	Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development of skills*; and achievement of all learning outcomes.
50-64	Pass (P)	Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory development of skills*; and achievement of all learning outcomes.
0-49	Fail (FF)	Failure to satisfactorily achieve learning outcomes. If all compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action.

*Skills are those identified for the purposes of assessment task(s).

Attendance

Attendance/participation will be recorded in the following components:

- Field Study (Method of recording: Attendance on field trips will be recorded by payment receipt and completion of attendance roll in the field)
- Laboratory (Method of recording: Attendance recorded through MyUni app) – minimum 80% attendance requirement

Communication Methods

Communication methods used in this course include:

- Canvas Course Site: Students will receive communications via the posting of content or announcements on the Canvas course site.
- Email: Students will receive communications via their student email account.
- Face to Face: Communication will be provided via face to face meetings or supervision.

Course Evaluation	Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.
Oral Interviews (Vivas)	As part of the evaluation process of any assessment item in this course an oral examination (viva) may be conducted. The purpose of the oral examination is to verify the authorship of the material submitted in response to the assessment task. The oral examination will be conducted in accordance with the principles set out in the Oral Examination (viva) Procedure . In cases where the oral examination reveals the assessment item may not be the student's own work the case will be dealt with under the Student Conduct Rule .
Academic Misconduct	All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations. For the Student Academic Integrity Policy, refer to https://policies.newcastle.edu.au/document/view-current.php?id=35 .
Adverse Circumstances	<p>The University acknowledges the right of students to seek consideration for the impact of allowable adverse circumstances that may affect their performance in assessment item(s). Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where:</p> <ol style="list-style-type: none">1. the assessment item is a major assessment item; or2. the assessment item is a minor assessment item and the Course Co-ordinator has specified in the Course Outline that students may apply the online Adverse Circumstances system;3. you are requesting a change of placement; or4. the course has a compulsory attendance requirement. <p>Before applying you must refer to the Adverse Circumstance Affecting Assessment Items Procedure available at: https://policies.newcastle.edu.au/document/view-current.php?id=236</p>
Important Policy Information	<p>The Help button in the Canvas Navigation menu contains helpful information for using the Learning Management System. Students should familiarise themselves with the policies and procedures at https://www.newcastle.edu.au/current-students/respect-at-uni/policies-and-procedures that support a safe and respectful environment at the University.</p>

This course outline was approved by the Head of School. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.

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