

CIVL1200: Earth Systems

Singapore BCA and Callaghan
Semester 2 - 2023



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

OVERVIEW

Course Description

This course introduces students to geomaterials and their origin. It describes the context in which geomaterials are formed, transformed and commonly occur. Particular attention is given to the occurrence of materials in the near surface environment and the conditions and processes which occur there. The physical principles which prevail in natural processes and systems are established and emphasised.

Assumed Knowledge

Basic Secondary School Science

Contact Hours

Singapore BCA

Field Study *

Face to Face Off Campus

4 hour(s) per Term Full Term

The excursion is the best opportunity to contextualise the course material by entering a real-world situation and interpreting the theory of the course in a practical setting.

Lecture

Face to Face On Campus

2.5 hour(s) per Week for Full Term starting Week 1

Attendance at lectures is expected.

Practical*

Face to Face On Campus

2 hour(s) per Week for Full Term starting Week 1

Callaghan

Field Study *

Face to Face Off Campus

4 hour(s) per Term Full Term

The excursion is the best opportunity to contextualise the course material by entering a real-world situation and interpreting the theory of the course in a practical setting.

Lecture

Face to Face On Campus

2.5 hour(s) per Week for Full Term starting Week 1

Attendance at lectures is expected.

Practical

Face to Face On Campus

2 hour(s) per Week for Full Term starting Week 1

COURSE OUTLINE

www.newcastle.edu.au

CRICOS Provider 00109J

UN College of Intl Education

Field Study *

Face to Face Off Campus

4 hour(s) per Term Full Term

The excursion is the best opportunity to contextualise the course material by entering a real-world situation and interpreting the theory of the course in a practical setting.

Lecture

Face to Face On Campus

2.5 hour(s) per Week for Full Term starting Week 1

Attendance at lectures is expected.

Practical*

Face to Face On Campus

2 hour(s) per Week for Full Term starting Week 1

Tutorial

Face to Face On Campus

1 hour(s) per Week for Full Term starting Week 1

* This contact type has a compulsory requirement.

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Unit Weighting Workload

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

CONTACTS

Course Coordinator

Singapore BCA and Callaghan

Dr Davide Guccione

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02 4921 5401

Consultation: Callaghan: Monday morning between 10am and 12am, EA Building, Room EA204 or send an email to arrange at different time.

Singapore BCA: check Canvas site

Teaching Staff

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

School Office

School of Engineering

EAG02

EA Building

Callaghan

SENG-ADMIN@newcastle.edu.au

SYLLABUS

Course Content

- Characteristics of the earth surface environment
- Basis of water cycle, rainfall, runoff, infiltration, evaporation, transpiration
- Introduction to geological materials and processes
- Structural geology
- Introduction to tectonics and seismology
- Coal and coal deposits
- Groundwater and hydrogeology
- Spatial data, cross-sections, surface and subsurface maps and GIS
- Mass balance and energy balance
- Geological uncertainties

Course Learning Outcomes

On successful completion of this course, students will be able to:

1. Describe the geological processes responsible for making rocks from soil, and soil from rocks.
2. Differentiate, identify, describe and classify soils, sedimentary rocks, igneous rocks and metamorphic rocks.
3. Recall the structure and composition of the Earth and explain the processes which shape continents, produce earthquakes and impart fabric and structure to rocks.
4. Understand the basic spatial forms and relationships between rock interpret spatial relationships and extrapolate simple surface outcrop patterns.
5. Describe the basic interactions between water and geomaterials in the near-surface geologic environment.
6. Explain the fundamental physical processes involving geomaterials and water with appropriate appreciation of the basic laws of physics and chemistry.
7. Relate geomaterial properties and geologic/hydrogeologic processes to practical engineering situations.

Course Materials

COMPULSORY REQUIREMENTS

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

Contact Hour Requirements:

- Field Study There is a compulsory attendance requirement in this course. Students must attend the excursion.
- Practical: Students must attend 80% of sessions.

Course Assessment Requirements:

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Pre-Placement Requirements:

- WHS Requirement - Students must complete a Workplace Safety Induction or Risk Assessment. Students must attend a particular session. Students must complete and pass an online WH & S site induction module in Canvas before being allowed to undertake the excursion.

ASSESSMENTS

This course has 4 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Mid Term Online Quiz	Week 6, in regular lecture period	Individual	20%	1, 2, 3, 4
2	Practical Exam	Week 7 prac class session	Individual	20%	2
3	Field Trip Group Report	Week 11	Group	20%	2, 3, 4, 5, 6, 7
4	Final Exam	Week 13, in regular lecture period	Individual	40%	1, 2, 3, 4, 5, 6, 7

Late Submissions

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 - Mid Term Online Quiz

Assessment Type	Quiz
Description	Multiple choice questions on-line quiz which relates to lecture material and prac classes of Weeks 1 to 5.
Weighting	20%
Due Date	Week 6, in regular lecture period
Submission Method	Online
Assessment Criteria	Students will be expected to identify the correct answer out of those given to a simple multiple-choice question.
Return Method	Online
Feedback Provided	

Assessment 2 - Practical Exam

Assessment Type	In Term Test
Description	A one hour in-class quiz requiring the student to produce a written description of up to 6 provided samples of rock.
Weighting	20%
Due Date	Week 7 prac class session
Submission Method	In Class (Closed book)
Assessment Criteria	Appropriate description and classification according to framework presented in the course notes.

Return Method	Not Returned
Feedback Provided	In Person -. Within 3 weeks of test. Students may request the opportunity to seek individual feedback on this item

Assessment 3 - Field Trip Group Report

Assessment Type	Written Assignment
Description	A pro-forma document with short answers and explanatory sketches to be provided in the spaces provided. COVID permitting, the exercise will relate to a self-directed field trip to be conducted on a public location with provided guided notes. However, if this arrangement cannot be accommodated, then an alternative will be arranged
Weighting	20%
Due Date	Week 11
Submission Method	Online
	Reports are to be submitted, with photos and details attached. Field trip reports will not be accepted or evaluated from students who do not undertake the field trip. Groups will be set up with the course coordinator and an online safety induction will have to be completed prior the field trip.
Assessment Criteria	Answers should be appropriate to space provided in the Proforma report sheets, the information provided during the field trip, and the observations made by the student. Expectations will be apparent from the information provided in the Proforma report sheets.
Return Method	Not Returned
Feedback Provided	In Person -. Within 3 weeks of submission students will be provided with a feedback sheet with the marks breakdown for each aspect of the excursion task sheet.

Assessment 4 - Final Exam

Assessment Type	In Term Test
Description	A 2 hour exam with simple and extended multiple choice questions, mapping exercises and short answer questions.
Weighting	40%
Length	2 hours
Due Date	Week 13, in regular lecture period
Submission Method	In Class
Assessment Criteria	
Return Method	
Feedback 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.
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*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: A member of the group must inform the course coordinator via email with the date and stating (before departure) and finishing time (after completion) of the self-directed field. trip.)
- Practical (Method of recording: The practical sessions have an 80% attendance requirement; students must use the myUni app.)

Communication Methods

Communication methods used in this course include:

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

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:

1. the assessment item is a major assessment item; or
2. 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; or
4. the course has a compulsory attendance requirement.

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>

Important Policy Information

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/no-room-for/policies-and-procedures> that support a safe and respectful environment at the University.

Graduate Profile Statements

This course builds students' capacity in the following University of Newcastle Bachelor of Engineering Graduate Profile Statements (based on 2011 Engineers Australia revised Stage 1 Competency Standards for Professional Engineers):

UON Att.	University of Newcastle Bachelor of Engineering Graduate Profile Statements/ Engineers Australia Stage 1 competency statements	Taught	Practised	Assessed	Skill Level (1-4)
	Professional Attributes				
11	3.1. Ethical conduct and professional accountability	X		X	1
12	3.2. Effective oral and written communication in professional and lay domains.				
13	3.3. Creative, innovative and pro-active demeanour.	X	X	X	1
14	3.4. Professional use and management of information.	X	X		1
15	3.5. Orderly management of self, and professional conduct.				
16	3.6. Effective team membership and team leadership.				
	Engineering Ability				
7	2.1. Application of established engineering methods to complex engineering problem solving.				
8	2.2. Fluent application of engineering techniques, tools and resources.	X	X	X	1
9	2.3. Application of systematic engineering synthesis and design processes.	X	X	X	1
10	2.4. Application of systematic approaches to the conduct and management of engineering projects.	X			1
	Knowledge Base				
1	1.1. Comprehensive, theory-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline.	X	X	X	2
2	1.2. Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline.				
3	1.3. In-depth understanding of specialist bodies of knowledge within the engineering discipline.	X	X	X	2
4	1.4. Discernment of knowledge development and research directions within the engineering discipline.				
5	1.5. Knowledge of contextual factors impacting the engineering discipline.	X	X	X	2
6	1.6. Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the specific discipline.	X	X	X	1

This course outline was approved by the Head of School on the 28/06/2023. 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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