ENVS2266
Earth Surface Processes
Session 1, Weekday attendance, North Ryde 2021
Department of Earth and Environmental Sciences

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Disclaimer
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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
Unit convenor, lecturer
Paul Hesse
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12WW 430 (level 4)
please email

Lecturer
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Contact via 98506378
12WW439
please email

Credit points
10

Prerequisites
ENVE117 or ENVS117 or ENVS1017 or GEOS117 or GEOS112 or GEOS1110 or EESC1150

Corequisites

Co-badged status

Unit description
Understanding how and why the Earth's surface looks and changes in the way it does is fundamental to effective environmental management. This unit examines earth surface processes from a catchment perspective: hill slopes and soils; rivers and floodplains; and the materials, including contaminants, that comprise them. We draw on Australian and overseas examples from diverse environments to demonstrate how biophysical processes shape our landscape. Students gain practical, laboratory and field-based skills that help them interpret the landscape. These are taught in both on-campus sessions and weekend field trips. This unit builds on themes introduced in ENVS1017 and GEOS1110, and provides a sound conceptual background for students continuing in environmental sciences, environmental management and courses in ecology, biology, geology and archaeology.

Important Academic Dates
Information about important academic dates including deadlines for withdrawing from units are available at https://students.mq.edu.au/important-dates
Learning Outcomes

On successful completion of this unit, you will be able to:

ULO1: Apply knowledge and understanding of important concepts in geomorphology
ULO2: Interpret geomorphic processes from landforms and materials in a wide range of environments
ULO3: Demonstrate geomorphological and sedimentological skills in data collection and analysis in laboratory and field settings
ULO4: Critically evaluate and analyse scientific literature, including the interpretation of data.
ULO5: Complete a field research project including data gathering and interpretation
ULO6: Communicate scientific information and concepts through oral, visual and written formats, including scientific reports

General Assessment Information

PRACTICALS (10%, four practicals must be submitted from which two will be chosen randomly to mark)

These should be clearly presented (as opposed to beautiful) but short and not over-produced. The main objective is to see that you have understood the content of each practical and are competent in the required skills so that we can monitor your progress. The remaining pre and post fieldwork practicals will be used for preparation of maps or data analysis which will be used in the fieldwork reports.

<table>
<thead>
<tr>
<th>Developing</th>
<th>Functional</th>
<th>Proficient</th>
<th>Advanced</th>
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<tbody>
<tr>
<td>an incomplete or unreadable record of observations; many inaccuracies, gaps, few or inaccurate interpretations</td>
<td>record accurately and clearly details of location, observations, data, interpretations using diagrams, tables, maps, graphs and text. Give clear, complete answers to questions</td>
<td>complete, accurate and clear record (as for Functional) with clear interpretations, considered answers, additional schematic diagrams</td>
<td>as for proficient but with original attempts at synthesis and exploration of hypotheses.</td>
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FIELD REPORT 1 (20%)

This report is based on the first weekend fieldtrip, the preparatory practical sessions, post-fieldwork data analysis and your own reading and research on the topic. You will be given a question (Report 1, see below) which you must address in your report. The research and thought which go into each report are an important part of your learning in this unit. We expect that you will deepen your understanding of the topic and your field experience by discovering the links between your observations and previous published research in the scientific literature. The report should be presented with a high standard of presentation (clarity and accuracy, not
necessarily ‘pretty’), with diagrams, maps, graphs and tables (as appropriate) and standard scientific citation and referencing. You will be provided with some essential and useful readings for these reports but you should also undertake your own research of the primary scientific literature.

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<tr>
<td>Lacks a clear explanation of research question, hypothesis or research strategy. Results may not be presented completely or accurately and may not support interpretations. May lack support from suitable literature.</td>
<td>able to explain the research question clearly; explain the hypothesis and show a clear and suitable research strategy; show appropriate results clearly and with accuracy; draw main conclusions from data and outstanding limitations. Supported by reference to appropriate literature.</td>
<td>as for functional level but with greater insight into question, results and interpretations. Includes acknowledgement and/or discussion of limitations of data/interpretations.</td>
<td>as for proficient but with originality in approach and/or interpretation of results.</td>
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FIELD REPORT 2 (30%)

This report is based on the second weekend fieldtrip, the preparatory practical sessions, post-fieldwork data analysis and your own reading and research on the topic. You will develop your own question (Report 2, see below) which you must address in your report, tailoring the presentation and discussion of your results to answer the question and placing them within a context revealed by your readings. The report should be presented in the format of scientific report, with a high standard of presentation (clarity and accuracy, not necessarily ‘pretty’), with diagrams, maps, graphs and tables (as appropriate) and standard scientific citation and referencing. You will be provided with some essential and useful readings for these reports but you should also undertake your own research of the primary scientific literature. See guidelines (below) for report writing style.

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<td>as for Proficient but with originality in approach and/or interpretation of results.</td>
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EXAMINATION (40%)

The exam will be scheduled in the regular University examination period. The exam is 2 hours in
Assessment Tasks

<table>
<thead>
<tr>
<th>Name</th>
<th>Weighting</th>
<th>Hurdle</th>
<th>Due</th>
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<tbody>
<tr>
<td>Weekly content quizes</td>
<td>5%</td>
<td>Yes</td>
<td>Friday 5pm each week of workshops</td>
</tr>
<tr>
<td>Practical classes</td>
<td>10%</td>
<td>No</td>
<td>10 am Tuesday following practical class</td>
</tr>
<tr>
<td>Field Report 1</td>
<td>20%</td>
<td>No</td>
<td>10 am 20/4/21</td>
</tr>
<tr>
<td>Field Report 2</td>
<td>30%</td>
<td>No</td>
<td>10 am 31/5/21</td>
</tr>
<tr>
<td>Final Exam</td>
<td>35%</td>
<td>No</td>
<td>mid-year exam period</td>
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Weekly content quizes

Assessment Type ¹: Quiz/Test
Indicative Time on Task ²: 2 hours
Due: Friday 5pm each week of workshops
Weighting: 5%
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

A short quiz testing knowledge and understanding of each week’s workshop content

On successful completion you will be able to:
- Apply knowledge and understanding of important concepts in geomorphology

Developing

Unable to explain basic terms and concepts clearly or accurately. Unable to illustrate terms and concepts with specific examples or conceptual diagrams. Unable to extrapolate concepts to new situations.

Functional

able to explain terms and concepts clearly and accurately; can illustrate terms and concepts with specific examples and conceptual diagrams. Can apply knowledge to new situations with some competence.

Proficient

as for Functional level but with greater critical insight. Includes acknowledgement and/or discussion of limitations or drawbacks of own knowledge.

Advanced

as for Proficient but with originality in approach and/or interpretation.
Practical classes
Assessment Type 1: Participatory task
Indicative Time on Task 2: 10 hours
Due: **10 am Tuesday following practical class**
Weighting: **10%**

Completed practicals to be submitted, including presentation of data, diagrams, graphs or short answers relating to the practical classes

On successful completion you will be able to:
- Interpret geomorphic processes from landforms and materials in a wide range of environments
- Demonstrate geomorphological and sedimentological skills in data collection and analysis in laboratory and field settings
- Critically evaluate and analyse scientific literature, including the interpretation of data.
- Communicate scientific information and concepts through oral, visual and written formats, including scientific reports

Field Report 1
Assessment Type 1: Report
Indicative Time on Task 2: 15 hours
Due: **10 am 20/4/21**
Weighting: **20%**

Written report including maps, graphs and tabled data based on the findings from a fieldtrip to a coastal location

On successful completion you will be able to:
- Apply knowledge and understanding of important concepts in geomorphology
- Interpret geomorphic processes from landforms and materials in a wide range of environments
- Demonstrate geomorphological and sedimentological skills in data collection and analysis in laboratory and field settings
- Critically evaluate and analyse scientific literature, including the interpretation of data.
Field Report 2

Assessment Type 1: Report
Indicative Time on Task 2: 20 hours
Due: 10 am 31/5/21
Weighting: 30%

Written report including maps, graphs and tabled data based on the findings from a fieldtrip to a river

On successful completion you will be able to:
• Apply knowledge and understanding of important concepts in geomorphology
• Interpret geomorphic processes from landforms and materials in a wide range of environments
• Demonstrate geomorphological and sedimentological skills in data collection and analysis in laboratory and field settings
• Critically evaluate and analyse scientific literature, including the interpretation of data.
• Complete a field research project including data gathering and interpretation
• Communicate scientific information and concepts through oral, visual and written formats, including scientific reports

Final Exam

Assessment Type 1: Examination
Indicative Time on Task 2: 25 hours
Due: mid-year exam period
Weighting: 35%

Covers all material in the lectures and practical classes

On successful completion you will be able to:
• Apply knowledge and understanding of important concepts in geomorphology
• Interpret geomorphic processes from landforms and materials in a wide range of environments
environments
• Critically evaluate and analyse scientific literature, including the interpretation of data.
• Communicate scientific information and concepts through oral, visual and written formats, including scientific reports

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 Learning Skills Unit 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

• You must attend one of three weekly 3 hour practical sessions, usually held in 11WW 240
• Workshops/lectures will be on zoom (Monday 11am, Tuesday 10am) unless pre-recorded (to be advised)
• There are two compulsory 1.5 day fieldtrips for all students: 26-27 or 27-28 March, and 7-8 or 8-9 May

PRACTICAL CLASSES comprise a practical exercise, including map and air photo interpretation, numerical analysis, examination of rocks and sediments or local fieldwork. Practicals provide hands-on experience of the topics in each module and are designed to assist learning by encouraging your active participation. The week 1 practical is held in 11WW 240 and some other practicals will be held in the field within a short distance from the university. Each student must bring the appropriate equipment to the practical session and pre-read the practical description. Equipment may include; pencils, ruler, calculator, field note book. You should also wear appropriate clothes for the laboratory (week 1) and field: closed shoes, sun protection etc.

WORKSHOPS/LECTURES are designed to give depth and background to the practical learning. They provide you with a framework with which to focus your study of the subject and are an essential and important component of the course. They are by no means exhaustive on each and every topic, and you are expected to supplement them by reading especially from the textbook but also from the current journals, where the most up-to-date information can be found. There is a reading list for you to use as a starting point later in this document, and additional material will be referred to during the workshop/lecture program. Slides will be available on-line through https://ilearn.mq.edu.au/ for viewing and/or printing but they are not a replacement for attending classes.

FIELD WORK There are two compulsory weekend fieldtrips in this unit during which a range of
natural and human-modified landscape features are examined. Each of these fieldtrips reinforces and extends the content of the Soils and Coasts modules (first fieldtrip) or Catchment and Fluvial Processes module (second fieldtrip). The major assignments are based on these field trips. In addition, three of the weekly practicals (Pracs 2, 3 and 7) will be conducted in the field within the normal practical class times. Equipment and safety issues for field work are described below.

**Scaffolding of workshops, practicals, fieldwork and assessment**

All modules will ‘lead’ with practical experiences and will be followed by large group teaching (workshops with lectures or zoom meetings) to back up and provide depth to the practical experience.

The fieldtrips build on knowledge, concepts and skills developed in the workshops/lectures and practicals. You should prepare for each fieldtrip by reading the recommended papers, attending the workshops/lectures and practicals.

Four practicals (two out of four submissions will be marked) and the fieldtrips (field reports) are directly assessable. Knowledge and understanding of workshop/lecture content is assessed in the mid-year examination.

**TEXTBOOKS and ESSENTIAL READINGS**

The following texts are suggested as being valuable reading. You are not required to purchase them, but may find them useful. There are some copies in the library.


*For a full list of suggested readings see the Leganto block on the iLearn page (right hand side), as well as the PDF version in the unit information folder.*

**TECHNOLOGY USED AND REQUIRED**

You will require access to a computer for parts of this unit. You can gain access to powerpoint slides used for each lecture by visiting the iLearn page for ENVS2266 ([https://ilearn.mq.edu.au/](https://ilearn.mq.edu.au/)). iLearn may be used by staff to send reminders and notices concerning fieldtrips, practical classes and lectures. You should check the site regularly, especially the day before lectures/pracs. There is also the space for a bulletin board discussion between students; please feel free to use this to discuss issues relating to any aspect of the unit and geomorphology in general. For specific questions of the lecturers, email them directly (see front cover). For practical 4 you should use ArcMap GIS software. You will be able to access this on University laptops in the pracs, in the 11WW computer labs after hours. You may also be able to install a copy on your own computer (not on Macs), requiring a licence code issued by the University.
The major assignments must also be submitted electronically through Turnitin, via the iLearn page for this unit. This software provides a means of gauging the timing of submission, an originality checker to test for potential plagiarism and a paperless grading system, more information on this program can be found at (http://turnitin.com/) and (http://mq.edu.au/iLearn/student_info/assignments.htm) and a ‘quick guide’ in iLearn next to the Turnitin link. Many of the readings (scientific papers) are available on-line from the library.

**Unit Schedule**

See iLearn page and laboratory manual (to be issued in week 1)

There are lectures and a practical in week 1 (see the iLearn page for details)

**Policies and Procedures**

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). 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 (Note: The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)

Students seeking more policy resources can visit the Student Policy Gateway (https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/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/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 Enquiry Service
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

Equity 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.

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.

Changes from Previous Offering
We always tinker a little to try and make things better. In 2021 we are working within the University’s precautions around the coronavirus. Lecture timeslots will be for either recorded lectures or live zoom meetings. We have special permission for face-to-face practical classes and fieldwork but under certain restrictions (to be advised).
Fieldwork

FIELDWORK

Weather: We never cancel fieldtrips for bad weather! You must be prepared to work in the rain with the appropriate clothing. Likewise you should always protect yourself from the sun and dehydration.

Transport: You will need to arrange your own transport for these fieldtrips. Ideally you should arrange to drive to each site with several other students from your practical class. There are usually a limited number of spaces available in staff vehicles.

Arrival: See the prac book for the arrival time for your fieldtrip. For Seal Rocks there are two options (1) 8 am Friday morning, (2) midday Saturday. For Macdonald River we (currently) plan for the same timetable.

Cost: You must cover your own food and transport costs and pay for accommodation. We book accommodation on behalf of the group and you must pay your money using the form to be provided on the iLearn page BEFORE THE TRIP.

Food: We will advise you of plans depending on which fieldtrip option you choose. You will need lunches to eat in the field and to provide your own breakfast. Depending on which fieldtrip option you choose you may need to bring one dinner. There are no shops nearby. We will provide a BBQ dinner on one night of each fieldtrip.

Accommodation: Field accommodation is in bunk rooms with communal kitchens, dining, bathroom/toilet and work areas. You should bring (apart from the gear listed below) a sleeping bag, pillow and towel.

Departure: We aim to leave the field by midday Saturday (first option) or 5pm on the Sunday afternoon (second option), after all field equipment is returned and the accommodation cleaned. You must sign off before returning home.

Personal Field Equipment: Each student should bring the following aids/comforts on each field trip:

- sturdy shoes - no sandals, thongs, or high heels! (no visible skin below the ankles)
- water bottle (at least 1 litre)
- wet weather gear - we go whatever the weather!!! Cheap plastic ponchos will not survive walking through scrub.
- hat (with a wide brim, front and back), insect repellent and sunscreen
- field note book and pencils (see note below)
- calculator, hand lens, small pocket knife
- camera
your lunch, drinks & snacks for the day - we do not stop at shops!!!

a back pack to store it all in

FIELD EQUIPMENT YOU SHOULD PURCHASE

- Field notebook
- Hand lens

Each student MUST purchase a small hardcover notebook for use in the field. It should be bound down the spine on the left side, or across the top (but NOT spiral bound). The notebook does not necessarily have to be used only for this unit (you may have used it on previous trips) but it should be good quality and able to withstand a week in the field – in what may be wet conditions. The best, and most expensive, option is a waterproof Rite-in-the-Rain, Markrite or Chartwell notebook. There are several versions but the best options are 1. Geological (Rite in the Rain 540F), with columns, lines and grids (good for sketching and data), included classifications; 2. Small Rite in the Rain notebook (200T) which can be inserted in a hard cover (200C). The first will last you several fieldtrips (and units), the second will probably last you this Unit.

These items can be bought online, for example, Prospectors Supplies. They can be used in many ENVS, BIOL and GEOS units.

SAFETY IN THE FIELD AND LABORATORY

Any student who has a disability that may limit their participation in field work or that could result in a medical emergency in the field should notify the unit convenor immediately. As a general guide to the level of physical fitness required, you should be able to walk 10 km over open undulating terrain in 3 hours.

Each student must ensure his/her own safety at all times during field excursions.

- Do not undertake fieldwork alone. You must work with at least one other person.
- You must be adequately equipped to undertake fieldwork, including wet weather clothing, warm clothing, hat and sun protection, protective footwear (closed toe boots or shoes).
- You should bring a first aid kit if you have one (they will be provided to each group but do not include any drugs/creams etc).
- Do not undertake any activity you feel to be unsafe. Discuss with the fieldtrip leader any concerns you have about particular tasks.
- Be watchful of the safety of your fellow students, if they become separated from the group or are at some other risk. Tell the fieldtrip leader as soon as you notice a potentially dangerous situation.
- If you have any medical condition (including allergies) that require medication then you should bring medication with you. We do not have and cannot provide any medication (including non-prescription).
Laboratory work in this unit does not involve hazardous chemicals. Nevertheless, in the laboratory you must wear safe (closed) footwear and generally follow safe practice. Where items of equipment are to be used, do not use them until you have received adequate training.