



ENVS6266

Earth Surface Processes

Session 1, Weekday attendance, North Ryde 2020

Department of Earth and Environmental Sciences

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General Information

Unit convenor and teaching staff

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Credit points

10

Prerequisites

Admission to MEnv or GradDipEnv or GradCertEnv or MSusDev or GradDipSusDev or GradCertSusDev or MSc or MScInnovationEnvSc or MScInnovationGeologyGeophys

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 ENV56202 and provides a sound conceptual background for students continuing in postgraduate studies in environmental sciences, environmental management and programs in ecology, biology, geology and archaeology.

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:

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 data collection and analysis skills 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

Assessment Tasks

Coronavirus (COVID-19) Update

Assessment details are no longer provided here as a result of changes due to the Coronavirus (COVID-19) pandemic.

Students should consult [iLearn](#) for revised unit information.

[Find out more about the Coronavirus \(COVID-19\) and potential impacts on staff and students](#)

General Assessment Information

WEEKLY CONTENT TEST (5%)

Three or four short answer questions (one paragraph each) based on the lectures from the previous week.

<i>Developing</i>	<i>Functional</i>	<i>Proficient</i>	<i>Advanced</i>
incomplete or unreadable; many inaccuracies, gaps, few or inaccurate interpretations	accurate and clear descriptions. Give clear, complete answers to questions	complete, accurate and clear answers (as for Functional) with clear interpretations, considered answers, may include schematic diagrams	as for proficient but with original attempts at synthesis and exploration of hypotheses.

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.

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

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.

<i>Developing</i>	<i>Functional</i>	<i>Proficient</i>	<i>Advanced</i>
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.	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.	as for functional level but with greater insight into question, results and interpretations. Includes acknowledgement and/or discussion of limitations of data/interpretations.	as for proficient but with originality in approach and/or interpretation of results.

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.

<i>Developing</i>	<i>Functional</i>	<i>Proficient</i>	<i>Advanced</i>
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.	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.	as for Functional level but with greater insight into question, results and interpretations. Includes acknowledgement and/or discussion of limitations of data/interpretations.	as for Proficient but with originality in approach and/or interpretation of results.

EXAMINATION (40%)

The exam will be scheduled in the regular University examination period. The exam is 2 hours in length and will cover all subjects covered in the lectures, practicals and fieldtrips. There is a combination of short answer and longer (short essay) style questions. Past exam papers can be found on the library web site.

<i>Developing</i>	<i>Functional</i>	<i>Proficient</i>	<i>Advanced</i>
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.	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.	as for Functional level but with greater critical insight. Includes acknowledgement and/or discussion of limitations or drawbacks of own knowledge.	as for Proficient but with originality in approach and/or interpretation.

The University examination period in First Semester is announced at mq.edu.au. You are expected to present yourself for examination at the time and place designated in the University Examination Timetable. The timetable will be available in draft form approximately eight weeks before the commencement of the examinations and in final form approximately four weeks before the commencement of the examinations. (<http://www.reg.mq.edu.au/Forms/APSCon.pdf>)

The only exception to not sitting an examination at the designated time is because of documented illness or unavoidable disruption. In these circumstances you may wish to consider

applying for Special Consideration. Information about unavoidable disruption and the special consideration process is available at (<http://www.reg.mq.edu.au/Forms/APSCon.pdf>)

If a supplementary examination is granted as a result of the Special Consideration process the examination will be scheduled after the conclusion of the official examination period. You are advised that it is Macquarie University policy not to set early examinations for individuals or groups of students. All students are expected to ensure that they are available until the end of the teaching semester, that is the final day of the official examination period.

Delivery and Resources

Coronavirus (COVID-19) Update

Any references to on-campus delivery below may no longer be relevant due to COVID-19.

Please check here for updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

ENV56266 is co-taught with ENV52266 Earth Surface Processes. All classes are identical. There is an additional assessment item (weekly questions) in addition to the other assessment items expected of ENV52266 students.

- You must attend one of three weekly 3 hour **practical** sessions, usually held in 11WW 240
- **Lectorials** are held each Monday at 3 pm in 14SCO T5 and Tuesday at 5 pm in 14SCO T4
- There are two compulsory 2 day **fieldtrips** for all students: 3-4 or 4-5 April, and 15-16 or 16-17 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.**

LECTORIALS 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 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 (Weeks 2, 3 and 9) will be conducted in the field within the normal practical class times. Equipment and safety issues for field work are described below.

Scaffolding of lectures, practicals, fieldwork and assessment

All modules will 'lead' with practical experiences and will be followed by large group teaching (part lecture part tutorial) to back up and provide depth to the practical experience.

Lecture recordings are not normally available for this unit (because it is not an external unit).

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

Four **practicals** and the **fieldtrips** (field reports) are directly **assessable**. Knowledge and understanding of **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.

- Paton TR, Humphreys GS and Mitchell PB, 1995. *Soils: A New Global View*. UCL Press.
 - National Committee on Soil and Terrain, 2009. Australian Soil and Land Survey Handbook, 3rd edition. CSIRO Publishing, Melbourne.
- Fryirs KA and Brierley GJ, 2013. *Geomorphic analysis of river systems*. Wiley-Blackwell. ISBN 978-1-4051-9274-3.

Essential readings are shown on the timetable on page 3. Some suggestions for Essential Readings are from the Treatise on Geomorphology, an eBook you can find through the Library search page (you need to go through the library to get access). It covers some, but not all, topics in this unit; some better than others.

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 ENV52266 (<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

Coronavirus (COVID-19) Update

The unit schedule/topics and any references to on-campus delivery below may no longer be relevant due to COVID-19. Please consult [iLearn](#) for latest details, and check here for updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

Please see the ENV52266 iLearn page or the laboratory manual for the class schedule. You will be issued with a laboratory manual in week 1.

There will be lectures and a practical class 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) (<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) (<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) (<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/study/getting-started/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.

Changes from Previous Offering

We always tinker a little to try and make things better. In 2020 we are emphasising the practical basis of learning and experimenting with the nature of the lecture classes. All modules will 'lead' with practical experiences and lectures will be followed by large group teaching (part lecture part tutorial) to back up and provide depth to the practical experience.

Due to changes to the new curriculum we have had to make some changes. Some lectures and a practical have been cut in line with Faculty requirements. At the same time, the expectation is that you will spend more time on individual study (non-timetabled) for this (and other) units.

In 2020 this unit is being co-taught as ENV56266 again. All students in ENV56266 should make themselves known to the Convenor at the beginning of semester to discuss the modified assessment criteria.

In 2020 the unit is not offered externally. That means that lecture recordings are not normally available, except in exceptional circumstances.

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 ENV5, 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.