



ENVS3240

Environmental Change

Session 1, In person-scheduled-weekday, North Ryde 2024

School of Natural Sciences

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Disclaimer

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General Information

Unit convenor and teaching staff

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Credit points

10

Prerequisites

(130cp at 1000 level or above) including (ENVS2115(Cr) or ENVS266 or ENVS2266 or ENVE214(Cr) or ENVS214(Cr) or ENVE266 or GEOS214(Cr) or GEOS266)

Corequisites

Co-badged status

Unit description

We are living in a changing world, but how much of this change is 'normal' and how much is human induced? This unit requires you to piece together lines of evidence over the last 2.6 million years from cave and fluvial sediments, tree rings, pollen, ice cores, marine cores and landforms to establish a benchmark for environmental change and to define the normal range of variability. We can then use this benchmark as a context for present day changes to predict how the environment will change in the future and how landscapes, vegetation, fauna and humans will respond. The last 2.6 millions years saw dramatic changes as the environment swung in and out of huge glacials, where large sections of the planet were covered in ice, to interglacials, where the climate recovered and the environment flourished. We will use evidence of these changes from the local Australian landscape and investigate this evidence during field excursions, including a week-long field trip during the mid-semester break. Case studies include: reconstructing the last glacial maximum in NSW; how environmental change in Africa and Asia shaped human evolution; human-environmental interactions in Australia such as the mega fauna debate; and how forest fires and deforestation have affected our present-day climate. This unit contains compulsory fieldwork with an additional cost of approximately \$250.

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 your knowledge to identify and evaluate lines of evidence to reconstruct past and present day environmental change

ULO2: Collect data in a manner that is rigorous, reliable and replicable.

ULO3: Demonstrate your ability to 'Read the landscape' through geomorphological and sedimentary field skills

ULO4: Design and conduct a field research project including designing a research question, data gathering and interpreting and evaluating your own data

ULO5: Communicate scientific information and concepts through oral, visual and written formats

General Assessment Information

Requirements to pass the unit

To pass this unit you must:

- Attempt all assessments, and

- Achieve a total mark equal to or greater than 50%, and
- Participate in, and undertake all activities

Assessment Criteria

Assessment at Macquarie University is standards-based, as outlined in the [Assessment Policy](#). This means that your work will be assessed against clear criteria, and these criteria will be made available when the assessment tasks are released to you on iLearn.

Submission of Assessments

All assignments must be submitted online through [Turnitin](#) unless otherwise indicated. Links for the submission of each assignment will be available on [iLearn](#). The due dates for all assessment tasks are not negotiable. If you have commitments that will significantly impact your study during the session then you must plan for this in advance as part of an effective individual study plan and you may need to contact the unit convenor for advice.

Marking of Assessments

Assignments will be marked through Turnitin and feedback will be noted on the assignment. **Do not** submit your assignments via email or in hard copy. Your grades will be returned using the Grades Report on iLearn. Grades from quizzes and the exam will also be made available on iLearn.

We aim to return your assignments with feedback within two to three weeks of the date that you submit your assignment, and before your next assignment is due. We appreciate your patience and will advise you through iLearn when your marked assignments and feedback are available for viewing.

Submission deadlines

Online quizzes, in-class activities, or scheduled tests and exam must be undertaken at the time indicated in the unit guide. Should these activities be missed due to illness or misadventure, students may apply for Special Consideration via ask.mq.edu.au.

All other assessments must be submitted by 11:55 pm on their due date. Should these assessments be missed due to illness or misadventure, students should apply for Special Consideration through ask.mq.edu.au.

Special Consideration

The [Special Consideration Policy](#) aims to support students who have been impacted by short-term circumstances or events that are serious, unavoidable and significantly disruptive, and which may affect their performance in assessment. If you experience circumstances or events that affect your ability to complete the assessments in this unit on time, please inform the convenor and submit a Special Consideration request through ask.mq.edu.au.

Late Assessment Submission Penalty

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark of the task) will be applied for each day a written report or presentation assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade

of '0' will be awarded even if the assessment is submitted. The submission time for all uploaded assessments is **11:55 pm**. A 1-hour grace period will be provided to students who experience a technical concern.

For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, please apply for [Special Consideration](#).

Extensions for Assessments

To obtain an extension for an assessment task, you will need to follow the formal process as outlined in the [Special Consideration Policy](#), and you must provide appropriate supporting documentation (e.g. medical certificate - see advice for [Special Consideration](#) requests) and apply through ask.mq.edu.au. The final decision regarding the granting of an extension and/or a late penalty lies with the unit convenor. Permission for extension must be sought **well before the due date** unless this is absolutely impossible. Let us know of problems in advance or as soon as possible, not after the event: we are likely to be much more sympathetic and flexible in our requirements if you follow this advice.

Assessment Tasks

Name	Weighting	Hurdle	Due
Understanding and applying Quaternary data	10%	No	5/3/24
Mid-semester test	25%	No	Week 8 in class
In field assessment of field skills, data collection and interpretation	15%	No	Fieldtrip
Field report	25%	No	Week 10
Conference presentation	25%	No	Week 13 in class

Understanding and applying Quaternary data

Assessment Type ¹: Quantitative analysis task

Indicative Time on Task ²: 3 hours

Due: **5/3/24**

Weighting: **10%**

Representative Quaternary data will be chosen to practice reading, understanding and interpreting data sets to appreciate the challenges of reconstructing environmental change.

On successful completion you will be able to:

- Apply your knowledge to identify and evaluate lines of evidence to reconstruct past and present day environmental change

Mid-semester test

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 10 hours

Due: **Week 8 in class**

Weighting: **25%**

A test of knowledge and skills developed throughout the first part of the semester

On successful completion you will be able to:

- Apply your knowledge to identify and evaluate lines of evidence to reconstruct past and present day environmental change
- Communicate scientific information and concepts through oral, visual and written formats

In field assessment of field skills, data collection and interpretation

Assessment Type ¹: Field work task

Indicative Time on Task ²: 12 hours

Due: **Fieldtrip**

Weighting: **15%**

Towards the end of the fieldtrip your field skills, data collection and understanding will be evaluated through your daily group work, plus your individual interpretation and evaluation skills will be tested in the evening via a field write up submission

On successful completion you will be able to:

- Collect data in a manner that is rigorous, reliable and replicable.
- Demonstrate your ability to 'Read the landscape' through geomorphological and sedimentary field skills
- Communicate scientific information and concepts through oral, visual and written formats

Field report

Assessment Type ¹: Report

Indicative Time on Task ²: 5 hours

Due: **Week 10**

Weighting: **25%**

Students will write up the results and data interpretation in a scientific report format based on the data collected only in the field

On successful completion you will be able to:

- Apply your knowledge to identify and evaluate lines of evidence to reconstruct past and present day environmental change
- Collect data in a manner that is rigorous, reliable and replicable.
- Demonstrate your ability to 'Read the landscape' through geomorphological and sedimentary field skills
- Design and conduct a field research project including designing a research question, data gathering and interpreting and evaluating your own data
- Communicate scientific information and concepts through oral, visual and written formats

Conference presentation

Assessment Type ¹: Presentation

Indicative Time on Task ²: 17 hours

Due: **Week 13 in class**

Weighting: **25%**

A conference style presentation of the results from your field and laboratory analysis.

On successful completion you will be able to:

- Design and conduct a field research project including designing a research question, data gathering and interpreting and evaluating your own data
- Communicate scientific information and concepts through oral, visual and written formats

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 [Writing Centre](#) 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

WEEK 1 CLASSES

All workshops commence in week 1 - this means you need to be prepared for the content in week 1 by completing your first online unit

METHODS OF COMMUNICATION

Contact your convenor via email to ask questions or to make an appointment if you wish to communicate face to face. The convenor will only communicate with you via announcements on iLearn or your mq.edu.au email address. Queries to convenors can either be placed on the iLearn discussion board or sent to the unit convenor via the contact email on iLearn.

ONLINE CONTENT AND BLOGS

Online content will be provided most weeks - follow the links in iLearn. This content is designed to provide you with a framework with which to focus your study of the subject and are **an essential and compulsory component** of the unit. We expect you to have worked through the online content **before** attending the workshops so you have the knowledge and understanding, which you will learn how to apply in the workshops. After completing the online content for each week you are expected to write a reflective blog on the knowledge you have learnt **before you attend the workshop**. This is not a 'tell me everything you know' task but more of a reflection in the model of 'what? so what? what next?' The online content is 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 unit. It is your responsibility to keep up to date with the online content and write a blog (7 in total).

WORKSHOPS

Workshops are held most weeks on Mondays and Thursdays at 9-12 for 3-4 hours. Each student **is expected to attend** all workshop sessions. The focus of these workshops will be an emphasis on activities and practical tasks that are based on your understanding of the online content and will teach you how to apply your new knowledge. Most workshops will have no take-home component but students must demonstrate understanding of the topics and mastery of the

skills introduced before being allowed to leave. Workshops comprise of practical exercises, including numerical analysis, examination of sediments or local fieldwork. Workshops provide greater depth to the related online materials and are designed to assist learning by encouraging your active participation. Important material for the workshops is included in a workshop manual. Additional material may be posted on ilearn for download. Each student must bring the appropriate equipment to the workshops and pre-read the practical description. Equipment may include; overhead transparencies, permanent FINE overhead pen (red or green preferably), drawing pencils (2B, HB, 2H), coloured pencils, ruler, sharpener, eraser, protractor, calculator, field note book. You should also wear appropriate clothes for the laboratory and field: closed shoes, sun protection etc.

FIELDWORK

There are two compulsory fieldtrip for all students: 11th or 14th March a day trip to Narrabeen and 16-21st April a mid-semester field trip to Nerrandera. This fieldwork forms an essential component of this unit (Module 2 and 3) and therefore all students must attend. The assignments and fieldtrip are described in detail elsewhere in this unit guide. Equipment and safety issues for field work are described in the fieldwork section.

ASSESSMENTS

There are 4 assessments overall with different percentage weightings (see details above)

PROBLEM SOLVING

A private or team study quest to practice problem solving skills and create environmental detectives. At the end of each lecture series an environmental problem will be presented that needs to be solved, the answers can be entered into ilearn at home.

LIGHTNING PRESENTATIONS

Each student will be expected to present a 1 minute presentation (with no notes) to their peers on an important topic in Quaternary Science. The presentations will not be graded but will be helpful for developing essential communication skills and understanding of the topic areas. They will be conducted on the week-long fieldtrip

PEER REVIEW

All students will be given the opportunity to assess the final presentations (assignment 3) this will contribute a small proportion to the final grades. You will be assessed on your scores provided by your peers.

VIMEO CHALLENGE

There will be the opportunity to present your final presentation as a video using basic editing software. Videos will be presented in the ENV3240 conference in the last week of semester

ESSENTIAL READINGS

There is no specific essential reading for this topic – but you will need to read widely in order to

have the background necessary to achieve a good understanding of the topic. However, the following texts are suggested as being valuable reading and will be referred to during lectures. You are not required to purchase them, but may find them useful. There are some copies in the library, which have been placed in special reserve so everyone can have access:

- **Global Environments through the Quaternary**, Anderson, D., Goudie A.S., Parker, A.G., 2007. Oxford University Press
- **Reconstructing Quaternary Environments**, JJ Lowe Walker, MJC. 2nd Edition.
- **Quaternary Environments**. Martin Williams, David Dunkerley, Patrick De Deckker, Peter Kershaw, John Chappell. 1998. Arnold.
- **Quaternary Geochronology**, Noller, JS., Sowers JS Lettis WR 2000. American Geophysical Union, Washington DC
- **Encyclopaedia of Quaternary Science**, Elias, S.A. (Ed.), 2007. Elsevier, London (Electronic resources in MQ library – each article can be downloaded)
- **Tectonic Geomorphology** Burbank DW, Anderson RS. 2001. Blackwell Scientific: Oxford

If you have not already done so, you should invest in a Dictionary of Physical Geography, available in the bookshop.

To keep up with lecture materials and also some of the practical classes and the fieldtrips you should read all '**essential text**' BEFORE the lectures each week. Start with these chapters as a foundation then supplement your reading with the listed journal references when you have some spare time. MORE READING = BETTER UNDERSTANDING. Key journals for this course include:

Quaternary Science Reviews

Journal of Quaternary Science

Quaternary International

Quaternary Research

Palaeogeography, Palaeoclimatology, Palaeoecology

Nature Geoscience

Journal of Human Evolution

TECHNOLOGY USED AND REQUIRED - iLearn and ON-LINE MATERIALS

You will require access to a computer for parts of this unit. The university uses iLearn – you will need to make yourself familiar with this system – student guides can be found at <http://mq.edu.au/iLearn/studentinfo.htm>. You can gain access to the Powerpoint slides used for each lecture by visiting the iLearn page for ENV3240 (<https://ilearn.mq.edu.au/login/MQ/> - login with your Macquarie OneID username and password). Please note: Audio lecture

recordings in iletecture will not be available for this unit – it is your responsibility to come to the lectures or catch up on material missed. This iLearn site will be used by staff to outline course content week by week, to post video clips, to send reminders and notices concerning fieldtrips, practical classes and lectures, and to keep in contact with students. **You should check the site regularly**, especially the day before lectures/pracs. There is also capacity for discussion between students; please feel free to use this to discuss issues relating to any aspect of the unit and environmental change in general. For specific questions on the lecturers, either post them on iLearn or email them directly (see front cover).

In addition to iLearn we will be using student and teacher ‘clicker’ (Socrative – m.socrative.com) to facilitate rapid student responses during the lecture. Everyone is encouraged to participate – all it requires is a SMART phone, laptop, tablet or ipad with a connection to the internet (all web enabled devices can be used) – if everyone has a device then a short ‘exit’ quiz will used at the end of most lectures to test understanding.

Your own study time for ENV53240 should be a **minimum** of an **additional 1.5 hours per week (for 13 weeks)**. Simply attending workshops is not enough to guarantee a good grade.

LIBRARY RESEARCH RESOURCES

The Library provides a range of learning opportunities aimed at developing student capabilities in research and information technology. Topics covered include:

computer essentials

navigating the Macquarie University website

getting started in your online unit

using the library catalogue and e-readings to locate key references

using research databases to find journal articles

locating scholarly information on the Internet

effective searching of the Internet

You can choose to learn online or at face-to-face session in the library.

More information is available at: (<http://www.lib.mq.edu.au/training/>). Follow the links to Training

FINDING RELEVANT SCIENTIFIC JOURNALS

While you should begin with the readings listed below, wander through the GB, S590 and QE sections of the library (in particular). You are especially encouraged to keep an eye on the current journals, where the most up-to-date information can be found. Particular attention should be placed on the journals *Earth Surface Processes and Landforms* and *Geomorphology*. Don't be scared to bring journal articles to our attention – we are always ready to chat about such things!

Additional journals that you are encouraged to 'keep your eye on' are listed below. Recent years of many of these titles are available on-line. Go to 'Journal Search' on the Library web page and follow directions. Usually, papers can be downloaded and printed freely.

American Journal of Science.	Q1.A5	Journal of Sedimentary Research.	QE420.J84
Annals of the Association of American Geographers	G3.A7	Nature.	Q1.N202
Applied Geography.	G1.A7	Palaeogeography, Palaeoclimatology, Palaeoecology.	QE500.P25
Australian Geographer.	G1.A9	Progress in Physical Geography.	G1.P685
Australian Geographical Studies.	G51.A9	Quaternary Research.	QE696.Q33
Australian Journal of Earth Science.	QE1.G3	Science.	Q1.S35
Australian Journal of Soil Research.	S590.A78	Sedimentary Geology.	QE581.A1.S42
Catena.	S590.C3	Sedimentology.	QE581.A1.S4
Earth and Planetary Science Letters.	QE1.E12	Zeitschrift fur Geomorphologie.	G1.Z472
Earth Surface Processes & Landforms.	GB400.E3		

FINDING RELEVANT SCIENTIFIC PAPERS

In addition to the journal papers we have listed below, there are many more papers, especially recent and overseas papers, which you may find have valuable information for your reports. To find relevant papers you should become familiar with the searchable databases available through the library web page. From the main Library page, go to 'Databases' and try these:

- Science Direct
- Web of Science (also called ISI Web of Science)
- SCOPUS
- INGENTA
- GEORef

And enter search terms (e.g. ice cores, speleothems). There are many other environmental and biological databases as well. For example, Google Scholar (see the Google search page) is also a good search engine for scientific papers.

All databases are slightly different and it's often worth trying more than one. Once you have found the details (often including the abstract) you will probably need to go back to the journal (use 'journal search' on the library page) to find and download the paper.

Note: Many of the readings (scientific papers) are available online from the library's e-reserve page for ENV53240 (<http://www.lib.mq.edu/borrowing/ereserve.php>)

COVID INFORMATION

For the latest information on the University's response to COVID-19, please refer to the Coronavirus infection page on the Macquarie website: <https://www.mq.edu.au/about/coronavirus-faqs>. Remember to check this page regularly in case the information and requirements change during semester. If there are any changes to this unit in relation to COVID, these will be communicated via iLearn.

Unit Schedule

Week	Week	Workshop Title	Online content	Workshop activities	Essential Reading
1	19/2	Module 1 Anthropocene Workshop 1 - <i>What is the Anthropocene?</i>	1# The human epoch	Defining the start Google time machine – assessing environmental changes #10yrschallenge Future predictions Start Assessment 1	Monastersky 2015 Gutherie, 2015
KW					
2	26/2	Workshop 2 – Climate change vs variability	2# Climate change and variability	Anthropocene in Australia -climate and sea level Continue Assessment 1	Vertessy et al., 2019 Pacific climate Futures –(website)
KW					
3	4/3	Module 2 – Into the past Workshop 3 – Drivers and Proxies Submit Assessment 1: 5/3 @ 11:55 pm	3# Orbital proxies	What's 'natural'? What is the background to the Anthropocene? orbit games Proxies – sources of evidence Isotopes and thermometer	Lowe and Walker 2007– Ch1 Brook 2007 Rohling 2007 Schwartz 2007
KW					
4	11/3	Workshop 4 - Narrabeen	<i>None</i>	Field day in Narrabeen lagoon – collecting grab samples	Roy et al., 1980 Flack and Erskine, 1996
KW					
5	18/3	Workshop 5 –proxy records of sea-level change.	<i>None</i>	Analysing grab samples	Lewis et al., 2013
KW					

6	25/3	Workshop 6 – Timing is everything	4# Dating; Caves and fossils	OSL game - dating Caves fossils- cave models VR	Duringer et al., 2012 Sloss et al., 2013 Jull 2007
KW					
7	1/4	Module 3 - Human environment interactions Workshop 7 - human dispersal and megafauna	5# The arrival-extinction problem	Bridges and barriers Megafauna game	Dennell, 2004, Miller et al., 2016 OR Saltre et al., 2016 Wroe et al., 2012 OR Cohen et al., 2015
KW					
8	8/4	<i>Workshop 8</i> Take Assessment 2: Mid semester test (in class)	6# The burning question AND 7# Aridity and desertification	TBA	Mooney et al., 2011
KW					
Break – Fieldtrip 16-21 April (KW/PH)					
Module 4: Evidence for Environmental Change					
Assessment 3: In field assessment of techniques and data analysis (19-21/4)					
9	29/4	Module 5 – Environmental change in Australia Workshop 9 <i>Lab project - Initial sample preparation</i>	<i>None</i>	Starting to open and analyse samples	Fitzsimmons et al., 2013. Kemp et al., 2020 Hesse et al., 2018
KW					
10	6/5	Submit Assessment 4: Field report Laboratory project (flexible)	<i>None</i>	Continuing lab analyses	Any Quaternary in Australia paper related to your project
11	13/5	Laboratory project (flexible)	<i>None</i>	Continuing lab analyses	Any Quaternary in Australia paper related to your project
12	20/5	Workshop 10; UNIT SUMMARY Laboratory project (optional)	<i>None</i>	Writing and PowerPoint clinic - Revision of content, question practice	Any Quaternary in Australia paper related to your project
KW					
13	27/5	Workshop 11; Conference Assessment 5 – Group presentations 27/5-30/5*	<i>None</i>	Presenting final group projects	
KW/ PH					

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au). 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](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

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

To find other policies relating to Teaching and Learning, visit [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au) and use the [search tool](#).

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

Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

Faculty Policy on Assessment submissions

Online quizzes, in-class activities, or scheduled tests and exam must be undertaken at the time

indicated in the unit guide. Should these activities be missed due to illness or misadventure, students may apply for Special Consideration.

All other assessments must be submitted by **5:00 pm** on their due date. Should these assessments be missed due to illness or misadventure, students should apply for Special Consideration.

PENALTY FOR LATE ASSIGNMENTS & PLAGIARISM

Overdue assignments can be submitted but they attract a penalty of 10 % per day i.e. the mark out of which they are assessed will be reduced by 10% for every day that they are late! ALL assignments must be submitted, however late, otherwise you will be excluded from the unit. **Late assignments must be submitted online via the Grademark system.** A **12-hour grace period** will be given after which the following deductions will be applied to the awarded assessment mark: 12 to 24 hours late = 10% deduction; for each day thereafter, an additional 10% per day or part thereof will be applied until five days beyond the due date. After this time, a mark of zero (0) will be given. For example, an assessment worth 20% is due 5 pm on 1 January. Student A submits the assessment at 1 pm, 3 January. The assessment received a mark of 15/20. A 20% deduction is then applied to the mark of 15, resulting in the loss of three (3) marks. Student A is then awarded a final mark of 12/20.

If you wish to seek an **extension** on the grounds of illness or misadventure, you **MUST** submit a copy of the UNIVERSITY'S form as well as a medical certificate or other appropriate proof which shows you were incapacitated. **These must be submitted through ask.mq.edu.au as Special Consideration, not directly to unit staff**, however you should advise us of your situation as early as possible. Regular work commitments are not a reasonable excuse for lateness; plan your time. However, having said that, please **DO NOT** hesitate to discuss with the unit staff any circumstances which may be preventing you from completing assignments on time or hindering your study in any other way. From experience, we know that early action is best!

Plagiarism will not be tolerated and will be checked via the Turnitin software. Quotations should be avoided and only really used if the point being made is vital to your argument and if you could not express it better yourself. If you paraphrase, you must acknowledge your authority as you would when quoting directly - after the paraphrased section or quotation, i.e., (Merali and Skinner, 2009, p. 293). Make sure you document this reference in your list of References. Remember, if you copy any sections of text word-for-word without denoting a quote this is plagiarism – even if you include a reference - **PLAGIARISM IS CHEATING! Therefore you either directly quote or paraphrase both with references.**

An example of a direct quote: **Brown et al. (1990 p. 12) conclude that 'the depth to the Moho under the oceans is less than under the continents'**. Note that for a direct quote the page must be cited.

An example of a general acknowledgement of the source of information: **As explained by Laing (1991) the mid ocean ridges are etc.**

An example of a more specific reference but not a direct quote: **The distribution of Tertiary volcanism in eastern Australia (Johnson 1990) can be used to infer etc.** From this the

reader would conclude that Johnson (1990) provided information on the distribution of...

*An example of a more general reference to sources: **Most older textbooks in geology (e.g. Rastal 1941; Stamp 1938) either ignored the deep ocean basin deposition or etc.***

Only those sources referred to in the text of the essay should be listed in the reference list at the end of the essay.

This is always a difficult topic when conducting group assignments, and data sharing is required. Unless otherwise stated, the **results of group work are group contributions** and can be disseminated amongst the group members. **However, each student is required to produce their own interpretations of this data.** Drawing up your own diagrams is an important skill, so we require that each group member present their **own** diagrams, graphs etc. The only exception to this is data that is collected as part of a group effort – e.g. an airphoto interpretation that is collectively drawn. In this case ensure that when you present this piece of work that each author is acknowledged, and if possible define who completed which part of the output. **If uncertain, ask before submission!**

APPEALS

Students have the right to appeal their final grade in this unit. Prior to initiating a formal appeal the student is required by the Division of Environmental and Life Science to have preliminary discussions with the staff member responsible for the unit. This discussion is to be undertaken in the context of unit requirements as set out in the unit outline. A full statement on appeals procedure is available in the Division Office or in the student centre.

FEEDBACK

At all stages in this unit we will try to give you critical feedback on your understanding and performance. The unit has been structured so that assessable practicals and field reports allow us to monitor your progress and understanding throughout the unit. This includes both conceptual and practical (such as field skills) components.

We will do our best to return assessment items to you within 2 weeks of submission (sometimes faster). Feedback will be given you as individual comments on each piece of work and also some comments delivered to the group in class. The assessed practicals concentrate on specific practical skills where feedback is detailed but usually short. The field reports will normally carry longer comments addressing both specific skills and generic skills.

If at any stage you wish to receive guidance on the content of the unit or your performance then we encourage you to approach one of the staff and arrange a meeting. Likewise, if you would like more detailed feedback or explanation of the feedback you have received then please approach the staff member who gave this feedback to arrange a meeting.

Finally, we appreciate your (constructive) feedback too. This is especially the case given that this is only the fourth time we are running this unit. Our goal is to improve our teaching (and your learning) continuously. We ask for your feedback at the end of semester and value your specific comments via the **TEDS** survey (please attend the final lecture so that you can contribute). We are also happy to receive your comments throughout the semester.

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the 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

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support including information about finances, tenancy and legal issues](#)
- [Student Advocacy](#) provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via [AskMQ](#), or contact [Service Connect](#).

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

Background to the unit

ENV53240 AND THE EARTH SURFACE SCIENCE PROGRAM AT MACQUARIE

ENV53240 -formerly ENV5340 and ENVE340 is one of the core 300-level unit in Earth Surface Science (formerly Geocology), and alongside ENV5 339 (Fluvial Geomorphology and River Management), ENV5 338 (Environmental Quality, capstone), ENV5 341 (Advanced Environmental Earth Science) make up the requirements for a major in Environmental Earth Science. Other units that are suggested as part of an Environmental Earth Science program include ENV5 361 (Environmental Management) and ENV5 382 (Environmental Analysis Using GIS), and ENVE 389 (Special interest seminar).

Earth Surface Science aims to describe the diverse physical processes found at the earth's surface and the connections between them. This area lies at the nexus between earth systems and biological systems – it is often concerned with landscapes and the landforms, sediments and soils within them but also, and crucially, the interaction of plants and animals in directing processes and shaping habitat. Earth Surface Science combines aspects of Geomorphology, Soil Science, Natural Hazards, Environmental Management and Ecology. As a consequence, graduates gain skills essential for management of natural resources, including rural rivers and lands, and highly altered landscapes, including urban environments and mining areas.

Graduates of the Earth Surface Science major are in a wide range of workplaces including: environmental and geotechnical consultancies, local government (environmental officers), state government departments (Infrastructure, Planning and Natural Resources; Environment and Conservation), National Parks and Wildlife Service, Sydney Water, mining companies (environmental officers), teaching (primary and secondary) and research.

This major is offered within the Bachelor programs of Science and Environment. It is highly compatible with a double major in Environmental Management, SIS, Climate Science, Ecology, Environmental Geology, Marine Science and Museum Studies. Depending on your own goals you may decide to combine EES units with other fields e.g. geology, atmospheric science, biology, Geographic Information Science (GIS).

CHANGES TO THIS UNIT IN 2024

In 2010 this unit changed from a 4cp to a 3cp, as well as changing code from GEOS337 to ENVE377 and in 2011 changed to ENVE340 due to curriculum changes. In order to meet the workload requirements of the reduced credit point load, we have changed the unit by removing lectures, the number of practical classes and the time demands of the field trip assignment. However we feel that we are still trying to get the balance right – and that is partly because we need to get more information on how long each of the assessment tasks takes to complete. We will seek your feedback to try and make sure this is manageable. In response to feedback over the last few years we have removed lectures in place of online content and workshops and we have removed the exam in place of a mid semester test and field report. This provides more face-to-face time for activities and practical tasks. We have focused the face-to-face teaching in the

weeks fieldtrip and reduced the workshop and prac time across the 13 weeks - this should cut down on workload and make the unit more manageable. We have also introduced an in-field component to the second assessment so that students can get credit for their hard work in the field.

COVID information

COVID Information and on-campus classes

On-campus teaching continues to be scheduled for Session 1, 2022. Masks are compulsory for all classes in indoor spaces and social distancing will be implemented wherever possible. Students will also be required to sanitise surfaces before and after use.

Students are requested to minimise the risk of spreading COVID to themselves and others in accordance with the university and NSW Health guidelines: <https://www.mq.edu.au/about/corona-virus-faqs> and <https://www.nsw.gov.au/covid-19/stay-safe>.

Off-shore students

Off-shore students **must** email the convenor as soon as possible to discuss study options.

Fieldwork

FIELDWORK

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

Transport: Nerrandera/Wee Jasper: We will meet at the University 11WW or first rest stop (TBA) on the 16th of April. We will arrange accommodation bookings.

Cost: You must cover your own food and accommodation and transport costs. We have booked accommodation on behalf of the group, and you will need to pay this amount to the online cashier and email us the receipt – amount is to be advised.

Accommodation: Field accommodation is Sheep sheaers quarters in Wee Jasper and a caravan Park in Nerrandera. There will be communal kitchens, dining, bathroom/toilet and work areas with limited power. You should bring (apart from the gear listed below) a sleeping bag, pillow and towel. The cost is the same no matter what accommodation option you choose (amount to be advised).

Departure: Mid semester field trip: we will aim to depart in time to return to the University by 6 pm on Sunday night. However, given the distance involved this time should be considered an aim rather than an absolute.

PERSONAL FIELD EQUIPMENT

We will be working in a remote environment – both remote from help and in a regional part of

Australia, so you will not be able to buy any equipment after departing Sydney.

What we will provide:

- tape measures, augers, spades, soil kits, GPS, geological hammer, grain size card, safety equipment.

Personal field equipment required (i.e. you will need to buy and bring it)

- sturdy shoes ('no visible skin below the ankles')- sandals, thongs, or high heels are for après-field activities
- water bottle (full, of course!)
- wet weather gear - we go whatever the weather! If it rains at Kosi it will get very, very muddy, so at least two sets of old clothes are recommended.
- hat (with a wide brim, front and back) and sunscreen
- field note book and pencils (see note below)
- calculator, hand lens
- camera
- your lunch, drinks & snacks for the day - we do not stop at shops!!!
- a back pack to store it all in

If you have a laptop computer you may find it useful for compiling data while in the field. It is not essential that everyone bring a laptop, but at least one per group is suggested. At least two will be available for loan from Environmental Science (but competition for them might be high).

Other personal items for the mid-semester field trip

sleeping bag and sheet – may be necessary for the shearers quarters – we will inform you closer to the departure date.

cooking/eating – no utensils necessary; but we will cook in the cabins.

towel/toiletries – bring these

food – there will be limited opportunities to purchase food, but the accommodation should have fridges. Expect to stock up on before arriving at Wee Jasper. However, it is feasible that the local supermarket at Nerrandera might not have the exact brand of exotic spice/unusual vegetable/vegan expresso chocolate that you covet, so if you can't go without for the week bring it along with you. Be a bit sensible here though as it's a long drive...

FIELD NOTE BOOK: 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). Use only ball-point pen, felt tip pen will run in wet weather and pencil will smudge or rip wet paper. The best, and most expensive, option is a waterproof 'rite-in-the-rain' notebook. Write your personal details on the first page, and a table of contents inside the front cover. On each field day, write the date and project title, the site details, and all observations and measurements, including details of methodology.

It is important that you get into the habit of writing thorough, accurate and legible notes at the outset - after all, if you are an expert witness for some environmental issue, your notebook can be tendered as evidence in legal proceedings, either in the Land and Environment court or at a Commission of Inquiry. Get into the practice of structuring your notebook at the start of each exercise and continually taking notes. Do not depend on others, unless prescribed roles are allocated and this is one of the designated tasks.

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).
- 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.

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.

Grading of assessed tasks

Grading of assessed tasks

All assessment tasks will be assessed according to the following criteria:

- level of accuracy and detail in description.
- use of terminology
- presentation
- use of resources
- use of theoretical concepts to support your evaluation

Other specific criteria are given with each Practical and Assignment description elsewhere in this book.

Each assessment item will be returned to you with a letter grade (HD, D, Cr, P, PC, F)

determined by the marker according to the University’s guidelines.

Academic Senate has a set of guidelines on the distribution of grades across the range from fail to high distinction. Your final result will include one of these grades plus a standardised numerical grade (SNG). On occasion your raw mark for a unit (i.e. the total of your marks for each assessment item) may not be the same as the SNG which you receive. Under the Senate guidelines, results may be scaled to ensure that there is a degree of comparability across the university, so that units with the same past performances of their students should achieve similar results. It is important that you realise that the policy does not require that a minimum number of students are to be failed in any unit. In fact it does something like the opposite, in requiring examiners to explain their actions if more than 20% of students fail in a unit. The process of scaling does not change the order of marks among students. A student who receives a higher raw mark than another will also receive a higher final scaled mark. For an explanation of the policy see: <http://www.mq.edu.au/senate/MQUOnly/Issues/Guidelines2003.doc> or <http://www.mq.edu.au/senate/MQUOnly/Issues/detailedguidelines.doc>

Grades for each assessment item and for the unit as a whole will be awarded according to the following general criteria:

	<i>Developing</i>	<i>Functional</i>	<i>Proficient</i>	<i>Advanced</i>
General description of the level of attainment	Has not yet reached the desired standard. Limited understanding of required concepts and knowledge. A fail grade (or under some circumstances, a conceded pass) would be given.	Has reached basic academic standards. Work has limited translation of concepts and procedures to new contexts unless aided. A pass grade would be awarded.	Has completely reached the standards expected. Can work independently in new contexts, adapting procedures to meet the context. Demonstrates awareness of own limitations. A credit grade would be awarded.	Has gone beyond the expected standards. Exhibits high levels of independence and can use concepts to generate new ways of completing procedures. Can engage in productive critical reflection. A grade of distinction or high distinction would be awarded.

What is required to complete this unit satisfactorily?

- **Attendance:** make the most of the opportunities available to you: attend lectures and practicals and the two fieldtrips. You may only submit assessment items based on practicals and fieldwork if you attended those sessions.
- **Assignments:** you must hand in/complete ALL the assessment tasks to complete the unit
- **Attitude:** look, read, ask, discuss, debate, enjoy
- **Quality:** your assessment items will be graded according to your achievement of the learning outcomes. We are looking for deep understanding as well as competence in particular skills of data collection, analysis, interpretation and presentation.
- **Honesty and sharing:** you will often work in groups in the field and the laboratory but all

the assessment tasks are individual. Group data must be shared freely but presentation, writing up and interpretation are to be the efforts of each individual. Macquarie's procedures relating to **plagiarism** can be found at <http://www.student.mq.edu.au/plagiarism/>

- Macquarie University has a range of policies that relate to learning and teaching, including
 - o - assessment
 - o - unit guide
 - o - special consideration
 - o They can be found at Policy Central (<http://www.mq.edu.au/policy/>).
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Unit information based on version 2024.05 of the [Handbook](#)