



# ENVE270

## Environmental Science Fieldwork

WV Day 2015

*Dept of Environmental Sciences*

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#### **Disclaimer**

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## General Information

Unit convenor and teaching staff

Unit Convenor

Damian Gore

[damian.gore@mq.edu.au](mailto:damian.gore@mq.edu.au)

Contact via Email

Lab 1, Building EMC2

Any time except April/May. Arrange appointment via email.

Credit points

3

Prerequisites

ENVE117(P) or GEOS112(P)

Corequisites

Co-badged status

Unit description

This unit introduces students to widely used field practices, equipment and analytical methods used in environmental science. Quantitative measurement and analytical techniques for water, soil, sediment and contaminants are emphasised. The field school will be offered from 11-19 July, and although the location and content of the unit varies each year, students will undertake their studies in the field or remote laboratories. Students should enrol in this unit at the start of Session 1, and attend a compulsory lecture during March-April. The unit is ideal for students in one of the majors in natural and environmental sciences, and should be taken by those planning to work in environmental and engineering consulting or research.

## 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:

Better appreciate the complexities of management of a semi-arid rangeland. Understand operation of a sheep station from a grazier's perspective.

Through description and mapping, students will be able to understand and recognise erosional and depositional settings, and be able to describe the soil materials at each

setting.

Descriptive and analytical methods will be used to characterise the types of sediments in erosional and depositional environments.

Through rapid surveying techniques, areas and volumes of depositional materials will be calculated.

Simple calculations will allow bankfull discharge of dry streams to be calculated, providing insight to the behaviour of semi-arid and arid land streams.

Semi-quantitative dating and mineralogical analysis techniques will be used to help understand the depositional history of the valley fill sediments.

## General Assessment Information

**Assessment task submission:** The literature review (A1) and field report (A3) will be submitted via turnitin on the unit website. The examination will be submitted on paper at the field location.

### Criteria and standards for grading:

- **Addressing the question that is asked.** Fantastic submissions on different topics unfortunately cannot be awarded the same marks as those that address the question. Check against the assignment question frequently to ensure that your answer stays on track, and that you have not inadvertently redefined the question to something you would prefer to answer.
- **Scientific content.** I can see relevant reasons for including every type of data collected during the trip. Make sure your argument is supported by these data – this is not a fictional account. Conjecture is OK but it must be identified clearly and be separated from evidence-based conclusions. Using the data collected in the field in innovative ways will be recognised and rewarded.
- **Coherence and consistency.** Your story should hang together and flow in a logical pattern. Numbered subheadings will help with the flow of the document, but the structural arrangement of it will also help.
- **Use of the literature.** Do not ignore the literature in this assignment.
- **Aesthetics.** Care and presentation (including grammar and spelling) is also an important aspect of scientific endeavour, and will be rewarded with marks.

## Assessment Tasks

Name	Weighting	Due
<u>A1 - Lit Review</u>	30%	1300 h, 06 Jul

Name	Weighting	Due
<u>Field exam</u>	30%	Last day of field trip
<u>Field Report</u>	40%	09 Aug

## A1 - Lit Review

Due: **1300 h, 06 Jul**

Weighting: **30%**

Critical review of evidence for and against **post-European settlement sedimentation** in NSW.

On successful completion you will be able to:

- Better appreciate the complexities of management of a semi-arid rangeland. Understand operation of a sheep station from a grazier's perspective.
- Through description and mapping, students will be able to understand and recognise erosional and depositional settings, and be able to describe the soil materials at each setting.
- Descriptive and analytical methods will be used to characterise the types of sediments in erosional and depositional environments.
- Semi-quantitative dating and mineralogical analysis techniques will be used to help understand the depositional history of the valley fill sediments.

## Field exam

Due: **Last day of field trip**

Weighting: **30%**

Field examination. 1 hour, 1600-1700 h on the last day of the field trip.

On successful completion you will be able to:

- Through description and mapping, students will be able to understand and recognise erosional and depositional settings, and be able to describe the soil materials at each setting.
- Descriptive and analytical methods will be used to characterise the types of sediments in erosional and depositional environments.
- Through rapid surveying techniques, areas and volumes of depositional materials will be calculated.
- Simple calculations will allow bankfull discharge of dry streams to be calculated, providing insight to the behaviour of semi-arid and arid land streams.

- Semi-quantitative dating and mineralogical analysis techniques will be used to help understand the depositional history of the valley fill sediments.

## Field Report

Due: **09 Aug**

Weighting: **40%**

Characteristics and origin of valley fill sediments in a study catchment near White Cliffs, NSW.

- This study encapsulates all field data collected on the trip.
- Due 2300 h, Sun 09 Aug.

On successful completion you will be able to:

- Better appreciate the complexities of management of a semi-arid rangeland. Understand operation of a sheep station from a grazier's perspective.
- Through description and mapping, students will be able to understand and recognise erosional and depositional settings, and be able to describe the soil materials at each setting.
- Descriptive and analytical methods will be used to characterise the types of sediments in erosional and depositional environments.
- Through rapid surveying techniques, areas and volumes of depositional materials will be calculated.
- Simple calculations will allow bankfull discharge of dry streams to be calculated, providing insight to the behaviour of semi-arid and arid land streams.
- Semi-quantitative dating and mineralogical analysis techniques will be used to help understand the depositional history of the valley fill sediments.

## Delivery and Resources

**Classes** - The only contact (face to face) hours are a 1 hour pre-departure meeting, and the field trip. This unit is taught via in-field classes and practical exercises, and readings and assessment tasks. Students should use iLearn to access learning and teaching materials.

**Workload** - ENVE270 earns 3 credit points towards your degree. University guidelines state that this will involve a minimum of 3 hours per week per credit point, which for this field unit translates to around 117 hours. The field trip accounts for 9 x 8 hour days, leaving 45 hours for group and individual study, and individual assignment preparation.

**Assignment Submission** - Assignments must be submitted via turnitin as .doc or .docx files for assignment 1 and powerpoint or pdf for assignment 3. If there are any problems regarding file size, contact me via email beforehand and submit on a flash drive. In doing so you agree to comply with the university's policy regarding academic honesty. Submitting assignments after the

due time will incur a late penalty unless previously approved in writing by the unit convenor. You must attach a copy of your medical certificate to justify a late submission.

**Penalties for Late Assignments** - The penalty for late submission of assignments is 10% of the assignment per day. This means that if the assignment is worth 30% of the unit you will lose 3% of the unit total per day late. This penalty will be applied over weekdays and weekends unless you are granted an extension or lodge a case for special consideration with the Faculty. The final decision regarding the late penalty imposed lies with the unit convenor.

**Return of Marked Assignments** - I aim to return your assignments, with written feedback, via email within four weeks of submission. Your marked assignments will be returned with comments and a letter grade only.

**Exam** - The exam will be held at the field accommodation at 1600 h on the final day of fieldwork (i.e. the night before you return home). It will be 1 hour duration, we will supply the exam on paper, and you will need to supply writing implements.

**Technologies used and required** - You will need to use Excel or a similar spreadsheet program, word processing software, drafting software, powerpoint or similar presentation software. A scanner (or good digital image via camera) will help with assignment creation.

**Recommended Texts** - There is no prescribed text, but recommended readings are on iLearn.

**What has changed?** - This unit changes most years in response to what is relevant or important for the discipline of environmental science.

## Unit Schedule

13-21 July. Travel on 13th and 21st. Seven days of fieldwork 14-20 July.

You will form small (4-6 students each) groups in the field, and you will work together. Tasks to be accomplished by your group on the different days depend on logistics, and groups will rotate through different tasks, but in general;

- Day 1, 2 – Overview. Sediment source areas. Characterisation, evidence for erosion.
- Days 3, 4 – Depositional areas – stratigraphy, geometry, hydraulics
- Day 5, 6 – Mineralogy, relative dating
- Day 7 – Synthesis, working up data, review. Examination.

## Learning and Teaching Activities

### Field trip

9 day field trip to north western NSW, to examine rangeland soils, sediments and geomorphic systems in detail.

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy [http://mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://mq.edu.au/policy/docs/academic_honesty/policy.html)

Assessment Policy <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy <http://mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Grievance Management Policy [http://mq.edu.au/policy/docs/grievance\\_management/policy.html](http://mq.edu.au/policy/docs/grievance_management/policy.html)

Disruption to Studies Policy [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](http://www.mq.edu.au/policy/docs/disruption_studies/policy.html) *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of 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/support/student\\_conduct/](https://students.mq.edu.au/support/student_conduct/)

## Results

Results shown in *iLearn*, 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](http://ask.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](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

## 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](http://ask.mq.edu.au)

## IT Help

For help with University computer systems and technology, visit <http://informatics.mq.edu.au/help/>.

When using the University's IT, you must adhere to the [Acceptable Use Policy](#). The policy applies to all who connect to the MQ network including students.

## Graduate Capabilities

### Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

#### Learning outcomes

- Better appreciate the complexities of management of a semi-arid rangeland. Understand operation of a sheep station from a grazier's perspective.
- Semi-quantitative dating and mineralogical analysis techniques will be used to help understand the depositional history of the valley fill sediments.

#### Assessment tasks

- A1 - Lit Review
- Field Report

### Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

#### Learning outcomes

- Better appreciate the complexities of management of a semi-arid rangeland. Understand operation of a sheep station from a grazier's perspective.
- Through description and mapping, students will be able to understand and recognise erosional and depositional settings, and be able to describe the soil materials at each setting.
- Descriptive and analytical methods will be used to characterise the types of sediments in



erosional and depositional environments.

- Through rapid surveying techniques, areas and volumes of depositional materials will be calculated.
- Simple calculations will allow bankfull discharge of dry streams to be calculated, providing insight to the behaviour of semi-arid and arid land streams.
- Semi-quantitative dating and mineralogical analysis techniques will be used to help understand the depositional history of the valley fill sediments.

## **Assessment tasks**

- A1 - Lit Review
- Field exam
- Field Report

## **Commitment to Continuous Learning**

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

## **Learning outcomes**

- Better appreciate the complexities of management of a semi-arid rangeland. Understand operation of a sheep station from a grazier's perspective.
- Through rapid surveying techniques, areas and volumes of depositional materials will be calculated.

## **Assessment tasks**

- A1 - Lit Review
- Field Report

## **Discipline Specific Knowledge and Skills**

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

## Learning outcomes

- Better appreciate the complexities of management of a semi-arid rangeland. Understand operation of a sheep station from a grazier's perspective.
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## Assessment tasks

- A1 - Lit Review
- Field exam
- Field Report

## Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

## Learning outcomes

- Better appreciate the complexities of management of a semi-arid rangeland. Understand operation of a sheep station from a grazier's perspective.
- Through description and mapping, students will be able to understand and recognise erosional and depositional settings, and be able to describe the soil materials at each setting.
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## **Assessment tasks**

- A1 - Lit Review
- Field exam
- Field Report

## **Problem Solving and Research Capability**

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

## **Learning outcomes**

- Better appreciate the complexities of management of a semi-arid rangeland. Understand operation of a sheep station from a grazier's perspective.
- Through description and mapping, students will be able to understand and recognise erosional and depositional settings, and be able to describe the soil materials at each setting.
- Descriptive and analytical methods will be used to characterise the types of sediments in erosional and depositional environments.
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## **Assessment tasks**

- A1 - Lit Review
- Field exam
- Field Report

## Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

### Learning outcome

- Better appreciate the complexities of management of a semi-arid rangeland. Understand operation of a sheep station from a grazier's perspective.

### Assessment tasks

- A1 - Lit Review
- Field exam
- Field Report

## Engaged and Ethical Local and Global citizens

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

### Learning outcome

- Better appreciate the complexities of management of a semi-arid rangeland. Understand operation of a sheep station from a grazier's perspective.

### Assessment tasks

- A1 - Lit Review
- Field Report

## Socially and Environmentally Active and Responsible

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

This graduate capability is supported by:

## Learning outcomes

- Better appreciate the complexities of management of a semi-arid rangeland. Understand operation of a sheep station from a grazier's perspective.
- Through description and mapping, students will be able to understand and recognise erosional and depositional settings, and be able to describe the soil materials at each setting.
- Descriptive and analytical methods will be used to characterise the types of sediments in erosional and depositional environments.

## Assessment tasks

- A1 - Lit Review
- Field Report