ENVS3439

Geomorphic Analysis of Rivers and Wetlands for Conservation and Management

Session 3, In person-scheduled-intensive, North Ryde 2022

School of Natural Sciences

Contents

General Information

Unit convenor and teaching staff
Unit convenor
Kirstie Fryirs
kirstie.fryirs@mq.edu.au

Lecturer
Tim Ralph
tim.ralph@mq.edu.au

Credit points
10

Prerequisites
130cp at 1000 level or above including ENVE266 or ENVS266 or ENVS2266 or GEOS266 or ENV267 or ENVS2467 or ENVE237 or ENVS2237

Corequisites

Co-badged status

Unit description
This unit is an intensive, block-mode unit. It is offered at both advanced undergraduate level and as a professional development course. Pre-course private study and assessment is followed by 4 days on-campus focussed on developing knowledge for the geomorphic analysis of rivers. Topics include interactions of river forms and processes, assessment of river behaviour and change, river evolution, impacts of human disturbance to rivers, and sedimentology. Students then apply their skills and knowledge to geomorphic analysis of rivers in a real-world setting during a 4-day off-campus fieldtrip, as well as explore pressing challenges for their conservation and management. This is followed by 4 days on-campus focussed on principles and strategies for river and wetland conservation, management and rehabilitation within an Australian context. Graduates are employed in a range of local, state and federal agencies, catchment management authorities, consultancies, and industry. For further information about the professional development micro-credential option, please contact the unit convenor.

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 geomorphic knowledge and skills to the characterisation and interpretation of rivers to explain their character and behaviour

ULO2: Use a range of historical resources to evaluate the geomorphic impacts of human disturbance and modification of rivers

ULO3: Identify and use appropriate field techniques to measure, analyse and interpret river morphology, behaviour and evolution

ULO4: Find and use a range of suitable information sources to develop an understanding of the pressing challenges faced in river conservation and management in Australia

ULO5: Apply geomorphic river science to the solution of river conservation, management and rehabilitation issues

ULO6: Identify and use appropriate field assessment approaches to measure, analyse and interpret river conservation, management and rehabilitation solutions

ULO7: Demonstrate skills in communicating using oral, visual and written formats to convey an advanced understanding of scientific information, geomorphic concepts and applications of geomorphology in river management

Assessment Tasks

Name	Weighting	Hurdle	Due
Assignment 1	15%	No	Mon 9/1/23, in-class
Assignment 2	35%	No	Sat 14th Jan 2023 on fieldtrip, 11.55pm, TurnItIn
Assignment 3	15%	No	Thurs 19th Jan 2023, in-class
Assignment 4	35%	No	Sun 22nd Jan 2023, 11.55pm, TurnItIn

Assignment 1

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 5 hours
Due: **Mon 9/1/23, in-class**
Weighting: **15%**

Series of in-class pop quizzes and other in-class activities to test your knowledge of the pre-unit

webinars and readings

On successful completion you will be able to:

- Apply your geomorphic knowledge and skills to the characterisation and interpretation of rivers to explain their character and behaviour
- Demonstrate skills in communicating using oral, visual and written formats to convey an advanced understanding of scientific information, geomorphic concepts and applications of geomorphology in river management

Assignment 2

Assessment Type [1]: Report
Indicative Time on Task [2]: 10 hours
Due: **Sat 14th Jan 2023 on fieldtrip, 11.55pm, TurnItIn**
Weighting: **35%**

River character, behaviour and evolution

On successful completion you will be able to:

- Apply your geomorphic knowledge and skills to the characterisation and interpretation of rivers to explain their character and behaviour
- Use a range of historical resources to evaluate the geomorphic impacts of human disturbance and modification of rivers
- Identify and use appropriate field techniques to measure, analyse and interpret river morphology, behaviour and evolution
- Demonstrate skills in communicating using oral, visual and written formats to convey an advanced understanding of scientific information, geomorphic concepts and applications of geomorphology in river management

Assignment 3

Assessment Type [1]: Debate
Indicative Time on Task [2]: 3 hours
Due: **Thurs 19th Jan 2023, in-class**
Weighting: **15%**

Design and participate in a role play

On successful completion you will be able to:

- Apply your geomorphic knowledge and skills to the characterisation and interpretation of rivers to explain their character and behaviour
- Find and use a range of suitable information sources to develop an understanding of the pressing challenges faced in river conservation and management in Australia
- Apply geomorphic river science to the solution of river conservation, management and rehabilitation issues
- Identify and use appropriate field assessment approaches to measure, analyse and interpret river conservation, management and rehabilitation solutions
- Demonstrate skills in communicating using oral, visual and written formats to convey an advanced understanding of scientific information, geomorphic concepts and applications of geomorphology in river management

Assignment 4

Assessment Type [1]: Report
Indicative Time on Task [2]: 14 hours
Due: **Sun 22nd Jan 2023, 11.55pm, TurnItIn**
Weighting: **35%**

River management design

On successful completion you will be able to:

- Apply your geomorphic knowledge and skills to the characterisation and interpretation of rivers to explain their character and behaviour
- Find and use a range of suitable information sources to develop an understanding of the pressing challenges faced in river conservation and management in Australia
- Apply geomorphic river science to the solution of river conservation, management and rehabilitation issues
- Identify and use appropriate field assessment approaches to measure, analyse and interpret river conservation, management and rehabilitation solutions
- Demonstrate skills in communicating using oral, visual and written formats to convey an advanced understanding of scientific information, geomorphic concepts and applications of geomorphology in river management

[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

INTENSIVE, BLOCK MODE STRUCTURE

This is a block mode intensive unit, meaning that it will start with a recorded Online Introduction session in November and then run for 12 days inclusive in January. Attendance is required for all aspects of this unit and the online tutorial. Be prepared to work hard and eat, breath and sleep rivers! This unit is designed to assist learning by encouraging your active participation in all activities.

TEXTBOOK AND COMPUTER RESOURCES

There is a textbook for this unit that you should purchase well in advance as you will need it for pre-course preparation and during all days of the unit (see below for further details). You will need your own personal laptop for each day of this course and wi-fi on the fieldtrip.

ONLINE INTRODUCTION MODULE AND QUESTIONNAIRE WITH INFORMAL FEEDBACK

There is a recorded Online Introduction module that will be available via iLearn in late-November. In this module students will be introduced to the unit, and the logistics and arrangements for groupwork and fieldtrip that need to be made before Christmas.

Students will also undertake a questionnaire in iLearn. This is NOT an assessment task, rather it is a reflection exercise where students will be asked about their current knowledge or fluvial geomorphology and river management. Summary feedback for the class will be provided, and students will have access to a copy of their own individual answers for future reference. This questionnaire is designed so students can consider how much pre-course work they need to do and to reflect on their current knowledge base. It will also help the unit instructors tailor their teaching during the intensive mode classes and fieldtrip to the pedagogic needs of the class.

PRE-COURSE WORK AND ASSIGNMENT 1

Before the intensive course starts, students are required to complete pre-course work ready for Assignment 1. The pre-course preparation involves listening to 6 x short webinars and undertaking reading from the textbook. These webinars provide the content necessary to get students 'up to speed' and engaged in the key areas of geomorphic analysis of rivers so they are prepared to tackle the course. If students are new to fluvial geomorphology they should supplement them by reading, especially from the textbook. If students are not new to fluvial geomorphology these will be a refresher, but should still be supplemented by reading, especially

from the textbook. Assignment 1 will comprise a series of pop-quizzes and other in-class activities that will be conducted on the morning of Day 1 of the unit. It will test knowledge from the pre-course work.

DAYS 1-4 - ON-CAMPUS - GEOMORPHIC ANALYSIS OF RIVERS

Days 1-4 of the unit are based on-campus at Macquarie University. This part of the course focusses on the geomorphic analysis of rivers. A mix of interactive activities comprising short information sessions, practical exercises and other activities are undertaken. This is not your standard lecture and practical structure! All the materials are scaffolded and students will be working on building Assignment 2 during these 4 days. Further information about these Days will be available on the iLearn site.

DAYS 5-7 - FIELDTRIP

There is a compulsory fieldtrip for all students, to the Hunter Valley. We will be undertaking fieldwork activities including site assessments and mapping, surveying, sediment analysis, consideration of river manaement problems and river condition etc. Students will be using this information to complete Assignment 2 which is due in the evening of Day 2 of the fieldtrip. On the fieldtrip we will also start preparing and gathering field data for Assignments 3 and 4 which are framed around geomorphologically-informed river management. Further information about the fieldtrip will be available on the iLearn site.

DAY 8 - DAY OFF

DAYS 9-12 - ON-CAMPUS - RIVER CONSERVATION AND MANAGEMENT

Days 9-12 of the unit are based on-campus at Macquarie University. This part of the course focusses on the river management practice in an Australian context. The skills students learn in this part of the unit are best practice in the workplace. A mix of interactive activities comprising short information sessions, practical exercises, a role play and other activities are undertaken. This is not your standard lecture and practical structure! All the materials are scaffolded and students will be working on building Assignment 4 during these 4 days. Assignment 3 is a role play that will be peer-assessed. Further information about these Days will be available on the iLearn site.

TEXTBOOK

The textbook for this unit is: Fryirs, K.A. and Brierley, G.J. 2013. Geomorphic Analysis of River Systems: An approach to Reading the Landscape. John Wiley and Sons, Chichester, 345pp. You can purchase a paperback copy of the book for ~$70 or an e-book version for ~$83 at Booktopia at:

https://www.booktopia.com.au/geomorphic-analysis-of-river-systems-kirstie-a-fryirs/book/9781405192743.html

OTHER READING

Students will never be discouraged from reading widely and including the most up-to-date science in you work. You are encouraged to use your database searching skills as well to source relevant information on geomorphology and river management.

ASSESSMENTS

There are four assessments overall with percentage weightings as described above.

Unit Schedule

A Workbook for the unit will be distributed on Day 1. This will contain a detailed, day-by-day schedule of the on-campus days.

A Fieldbook will be distributed on Day 3. This will contain a detailed, day-by-day schedule of the fieldtrip.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (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). 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) 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.

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 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.

General Fieldtrip Information

A detailed fieldtrip booklet will be distributed to you at the start of the unit.

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 be driving your own vehicles and carpooling.

Cost: You will pay for your own accommodation, food and other expenses (e.g. petrol).

Food: You will need to bring all food for the fieldtrip and cater for yourself.

Accommodation: You will book your own accommodation. A range of accommodation options from campsites to cabins to motel rooms are available.

Departure: We aim to meet you at the first field site in the Hunter Valley on Day 1. You will make your way and sign on to the fieldtrip.

Returning home: We will be meeting everyone at a pre-designated location to officially sign-off from the fieldtrip. After you have signed off you will be free to travel home.

Signing on and signing off from the fieldtrip and each day: We will have a QR code system in place. Each student will be required to sign on and sign off at the start of the fieldtrip, at the end of the fieldtrip and at the start and end of each fieldtrip day.

Behaviour and conduct: When you sign the Field Friendly trip plan, you are also required to acknowledge that you will abide by Macquarie University policies associated with conducting fieldwork, travel, and behaviour as Macquarie University citizens.

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

- sturdy shoes - no sandals, thongs, or open shoes
- wet shoes – for walking over gravel in river channels
- swimmers and towel
- water bottle (full, of course!)
- wet weather gear - we go whatever the weather!!!
- hat and sunscreen
- field note book and pencils (see note below)
- calculator
- camera and download cable
- laptop, charger and wi-fi
- all your food

- a mini-first aid kit
- a day back pack to store it all in

Safety in the field: Any student who has a disability or health condition that may limit their participation in field work fieldwork commences. You will be filling in Field Friendly participant forms and sign off on your participation prior to the fieldtrip. 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.
- 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.