



BIOL3440

Aquatic Ecosystems

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

School of Natural Sciences

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General Information

Unit convenor and teaching staff

Anthony Chariton

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Credit points

10

Prerequisites

130cp at 1000 level or above including (BIOL2410 or BIOL227) or (BIOL2310 or BIOL228) or (ENVS3239 or ENVS339)

Corequisites

Co-badged status

Unit description

This unit introduces the diverse nature of aquatic ecosystems, from catchment to coast, their biota, and the physical and chemical factors that have shaped their structure and function. The unit provides a holistic catchment perspective, covering lakes, rivers and estuaries communities, fish, invertebrates and ecosystem processes, with a focus on Australian systems. Students will come to understand the key ecological components and processes in aquatic systems, and how ecological knowledge can be applied to management issues. The unit will provide students with experience in environmental monitoring and manipulative experiments, including formulating hypotheses, designing experiments, data collection, analyses, and communication of results. Students will also gain fundamental field-based skills which underpin the monitoring and assessment of aquatic systems. A basic knowledge of statistics is assumed. This unit has a strong emphasis on fieldwork, with essential supporting and contextual knowledge provided by laboratory classes and lectures. This unit helps prepare individuals for employment in aquatic sciences and is beneficial for those continuing to postgraduate studies in aquatic ecology and management.

This unit also requires ALL students to attend a multi-day fieldtrip in the greater Sydney area. The cost of the fieldtrip is approximately \$120.

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: Describe the characteristics and ecological roles of the major biotic groups in aquatic ecosystems. This includes the identification of invertebrates commonly used for monitoring aquatic systems.

ULO2: Comprehensively understand the physical, chemical, and biotic factors in oceans, estuaries, rivers, streams, lakes, and aquifers that influence biota, and ecosystem functions and services.

ULO3: Apply various field and experimental methods for sampling aquatic ecosystems. This includes familiarization with the collection of data and the health and safety requirements associated with both lab and field work.

ULO4: Prepare, edit and analyse scientific data and reports to a professional standard. This includes developing aims and hypotheses, the statistical analysis and presentation of data.

General Assessment Information

Requirements to pass this Unit:

Achieve a total mark equal to or greater than 50%

Late Penalties

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.

Assessments where Late Submissions will be accepted

- Freshwater Mesocosm, Class Quiz and Aquatic Environmental Assessment Report : YES, Standard Late Penalty applies
- Field work attendance and participation - NO, unless Special Consideration is Granted. **This is a hurdle.**

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Aquatic Environmental Assessment Report</u>	45%	No	7th June

Name	Weighting	Hurdle	Due
Freshwater mesocosm experiment	35%	No	8/3/2023;12/4/2024 and 17/5/2024
Field work attendance and participation	0%	Yes	Week 4
Class quiz	20%	No	1st May

Aquatic Environmental Assessment Report

Assessment Type ¹: Report

Indicative Time on Task ²: 33 hours

Due: **7th June**

Weighting: **45%**

As a practicing ecologist or environmental manager, you will be expected to prepare or review documents that describe or predict the likely effects of developments on aquatic ecosystems. The objectives of this assessment task is for you to develop skills in preparing such a report.

Students will complete an environmental assessment report based on a provided scenario. . The report will follow the standard format for a professional scientific report, i.e., it will have an abstract/summary, introduction, materials and methods, results and discussion sections and appendices. It will be appropriately referenced. Further details of the assignment requirements will be provided during the semester.

On successful completion you will be able to:

- Describe the characteristics and ecological roles of the major biotic groups in aquatic ecosystems. This includes the identification of invertebrates commonly used for monitoring aquatic systems.
- Comprehensively understand the physical, chemical, and biotic factors in oceans, estuaries, rivers, streams, lakes, and aquifers that influence biota, and ecosystem functions and services.
- Apply various field and experimental methods for sampling aquatic ecosystems. This includes familiarization with the collection of data and the health and safety requirements associated with both lab and field work.
- Prepare, edit and analyse scientific data and reports to a professional standard. This includes developing aims and hypotheses, the statistical analysis and presentation of data.

Freshwater mesocosm experiment

Assessment Type ¹: Practice-based task

Indicative Time on Task ²: 25 hours

Due: **8/3/2023;12/4/2024 and 17/5/2024**

Weighting: **35%**

The experiment will be run virtually. Three assessment tasks will be based on this semester long project.

On successful completion you will be able to:

- Describe the characteristics and ecological roles of the major biotic groups in aquatic ecosystems. This includes the identification of invertebrates commonly used for monitoring aquatic systems.
- Comprehensively understand the physical, chemical, and biotic factors in oceans, estuaries, rivers, streams, lakes, and aquifers that influence biota, and ecosystem functions and services.
- Apply various field and experimental methods for sampling aquatic ecosystems. This includes familiarization with the collection of data and the health and safety requirements associated with both lab and field work.
- Prepare, edit and analyse scientific data and reports to a professional standard. This includes developing aims and hypotheses, the statistical analysis and presentation of data.

Field work attendance and participation

Assessment Type ¹: Field work task

Indicative Time on Task ²: 0 hours

Due: **Week 4**

Weighting: **0%**

This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)

All students must attend and participate in a field trip. Students will be required to arrange their own travel arrangements. Attendance and participation is compulsory for both internal and external students.

On successful completion you will be able to:

- Describe the characteristics and ecological roles of the major biotic groups in aquatic ecosystems. This includes the identification of invertebrates commonly used for monitoring aquatic systems.

- Comprehensively understand the physical, chemical, and biotic factors in oceans, estuaries, rivers, streams, lakes, and aquifers that influence biota, and ecosystem functions and services.
- Apply various field and experimental methods for sampling aquatic ecosystems. This includes familiarization with the collection of data and the health and safety requirements associated with both lab and field work.

Class quiz

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 10 hours

Due: **1st May**

Weighting: **20%**

The quiz will cover all unit material, including additional reading material prior to the quiz date.

On successful completion you will be able to:

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- Comprehensively understand the physical, chemical, and biotic factors in oceans, estuaries, rivers, streams, lakes, and aquifers that influence biota, and ecosystem functions and services.
- Apply various field and experimental methods for sampling aquatic ecosystems. This includes familiarization with the collection of data and the health and safety requirements associated with both lab and field work.

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

Lectures will be mostly given live online (via zoom) with recordings available via ECHO.

Practicals will be face to face as will the field trip. Resources will be made available via ilearn.

Details on practicals and the field trip are provided in Wk 1.

Field Trip

The field trip is now at Lake Macquarie, NSW (about 90 min North from the university).

You need to find your own way there and will need to drive around the various sites around the lake. We will have some mini buses for students who don't have access to a vehicle. There is a small fee associated with the minibuses., We will pick people up and drop them off at a train station near Lake Macquarie- details will be discussed in lectures.

We will provide you with details regarding accommodation in the lectures. You will need to arrange this yourself, however, we do organise places at a local tourist park. There are range of accommodation options for every budget, from camping to sharing a cabin.

Give the size of the class, there will be two field trip groups, **YOU ONLY ATTEND ONE FIELD TRIP**, ie Group 1 or 2.

Group 1: Monday 11th and Tuesday 12th March, 2024

Group 2: Wednesday 13th and Thurs 14th March, 2024

Practicals

You will need to attend four practicals across the semester. There are 2 x 3 hr practicals for processing and organising the data you collected from the Lake Macquarie field trip. This will be done in the assigned practical times subsequent to the field trip to Lake Macquarie. Dates will be provided in Lecture 1.

In addition, an 8-hr practical, which focuses on freshwater sampling (performed on campus) and processing is held. All practicals for external students will be held during the mid-semester break.

Details on the practicals will be provided in Lecture 1 and iLearn.

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/coronaviruses-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

Details are provided in the delivery and resources section.

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](#).

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

CHANGES TO THE FIELD TRIP. The field trip is now at Lake Macquarie, NSW (about 90 min

North from the university).

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Changes since First Published

Date	Description
07/02/2024	Nicole made changes removing the location of the field trip as it was redundant.

Unit information based on version 2024.03 of the [Handbook](#)