



MAR 202

Marine Environmental Issues

S1 Day 2014

Dept of Biological Sciences

Contents

<u>General Information</u>	2
<u>Learning Outcomes</u>	2
<u>Assessment Tasks</u>	3
<u>Delivery and Resources</u>	6
<u>Unit Schedule</u>	7
<u>Learning and Teaching Activities</u>	8
<u>Policies and Procedures</u>	9
<u>Graduate Capabilities</u>	10

Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

General Information

Unit convenor and teaching staff

Unit Convenor

Melanie Bishop

melanie.bishop@mq.edu.au

Contact via melanie.bishop@mq.edu.au

E8C 159 (entry via Climate Futures E8C 153)

Credit points

3

Prerequisites

6cp from (BIOL114 or BIOL121 or ENV118 or ENVE117 or GEOS126)

Corequisites

Co-badged status

Unit description

The marine environment is vitally important to humankind. It provides us with food and energy, it serves as a major transportation route, it performs critical roles in nutrient and carbon cycling and is of high recreational value. Overfishing, pollution, habitat damage, invasive species, and climate change are, however, increasingly eroding these important values of marine ecosystems. Because human communities are tightly coupled to coastal marine resources, understanding pathways to sustainability requires understanding as much about humans as about the ocean. In this unit, we will explore factors that contribute to the sustainability and resilience of marine ecosystems and the human communities that depend upon them. We will do so through a series of case studies on topics such as: deep ocean drilling; wind and wave power generation; shoreline engineering and beach management; restoration of coastal wetlands for habitat and carbon values; marine debris; and fisheries and aquaculture.

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:

Identify the key goods and services provided to humans by marine ecosystems, and explain how these are maintained by physical, chemical, geological and biological

processes

Compare and contrast how human activities have historically, are presently and are predicted to in the future modify marine ecosystems and their provision of goods and services

Compare how different stakeholder groups value marine environments, and identify and explain scenarios under which conflict among these groups might arise

Explain contemporary and historical approaches to managing marine ecosystems

Present a clear and scientifically accurate argument regarding the structure and function of marine ecosystems, their use and/or management, to a general audience using a blog

Develop and test hypotheses regarding human impacts to marine ecosystems

Critically evaluate peer-reviewed, grey and popular literature on marine ecosystems, their use and management, and integrate information from these sources in written form

Assessment Tasks

Name	Weighting	Due
<u>Letter 1</u>	5%	23/3/2014
<u>Letter 2</u>	5%	30/3/2014
<u>Journal of learning</u>	20%	1 hr prior to tutorials
<u>Graphs</u>	10%	1 week after each prac
<u>Field trip report</u>	15%	27/4/2014
<u>Persuasive blog 1</u>	15%	18/5/2014
<u>Treasure Hunt</u>	15%	15/6/2014
<u>Persuasive blog 2</u>	15%	22/6/2014

Letter 1

Due: **23/3/2014**

Weighting: **5%**

In the tutorial in week 2, you will be assigned to one of four scenarios in which a change to the management of a marine resource is proposed, and within the scenario, one of four stakeholders. From the perspective of your assigned stakeholder you will write a hypothetical letter to the authority that is proposing the change in management outlining why you object to or support the proposed management change. Your letter will be no more than **600 words** in length.

On successful completion you will be able to:

- Compare how different stakeholder groups value marine environments, and identify and explain scenarios under which conflict among these groups might arise

Letter 2

Due: **30/3/2014**

Weighting: **5%**

This assessment follows on from Letter 1. You will now assume the role of the manager. You will review letters from each of the 'stakeholders' in your group, and based on their comments make a decision to proceed with or renege on the proposed management change. You will prepare a form letter to all stakeholders, outlining your decision and the rationale behind it. Your letter will be no more than **600 words** in length.

On successful completion you will be able to:

- Compare how different stakeholder groups value marine environments, and identify and explain scenarios under which conflict among these groups might arise
- Explain contemporary and historical approaches to managing marine ecosystems

Journal of learning

Due: **1 hr prior to tutorials**

Weighting: **20%**

For each of the topics covered in weeks 4-13, you will be required to document your online learning activities in a 'journal of learning'. Your journal of learning will take the form of a single blog post, made at least 1 hr prior to your tutorial on that topic. You will be awarded a mark of up to 2% for each post, based on the quality and completeness of its content, and its on-time submission.

On successful completion you will be able to:

- Identify the key goods and services provided to humans by marine ecosystems, and explain how these are maintained by physical, chemical, geological and biological processes
- Compare and contrast how human activities have historically, are presently and are predicted to in the future modify marine ecosystems and their provision of goods and services
- Compare how different stakeholder groups value marine environments, and identify and explain scenarios under which conflict among these groups might arise
- Explain contemporary and historical approaches to managing marine ecosystems

- Present a clear and scientifically accurate argument regarding the structure and function of marine ecosystems, their use and/or management, to a general audience using a blog
- Critically evaluate peer-reviewed, grey and popular literature on marine ecosystems, their use and management, and integrate information from these sources in written form

Graphs

Due: **1 week after each prac**

Weighting: **10%**

During the semester you will complete 5 pracs, in addition to the fieldtrip. For each of the pracs there will be a graphing exercise, worth 2% each.

On successful completion you will be able to:

- Identify the key goods and services provided to humans by marine ecosystems, and explain how these are maintained by physical, chemical, geological and biological processes
- Develop and test hypotheses regarding human impacts to marine ecosystems

Field trip report

Due: **27/4/2014**

Weighting: **15%**

On the field trip we will test hypotheses about how groynes directly and indirectly modify marine ecosystems. You will write a report on data acquired during the field-trip, in the style of an article for the journal, Marine and Freshwater Research.

On successful completion you will be able to:

- Develop and test hypotheses regarding human impacts to marine ecosystems
- Critically evaluate peer-reviewed, grey and popular literature on marine ecosystems, their use and management, and integrate information from these sources in written form

Persuasive blog 1

Due: **18/5/2014**

Weighting: **15%**

You will choose one of the topics covered in weeks 4-8, and prepare a blog clearly communicating the marine environmental issue and, using evidence, your view on the issue.

On successful completion you will be able to:

- Present a clear and scientifically accurate argument regarding the structure and function of marine ecosystems, their use and/or management, to a general audience using a blog

- Critically evaluate peer-reviewed, grey and popular literature on marine ecosystems, their use and management, and integrate information from these sources in written form

Treasure Hunt

Due: **15/6/2014**

Weighting: **15%**

Throughout the semester you will engage in a multimedia treasure-hunt, where you are asked to find items that pertain to learning modules. You will submit your ‘treasure’ in a portfolio at the end of semester.

On successful completion you will be able to:

- Identify the key goods and services provided to humans by marine ecosystems, and explain how these are maintained by physical, chemical, geological and biological processes

Persuasive blog 2

Due: **22/6/2014**

Weighting: **15%**

You will choose one of the topics covered in weeks 9-13, and prepare a blog clearly communicating the marine environmental issue and, using evidence, your view on the issue.

On successful completion you will be able to:

- Present a clear and scientifically accurate argument regarding the structure and function of marine ecosystems, their use and/or management, to a general audience using a blog
- Critically evaluate peer-reviewed, grey and popular literature on marine ecosystems, their use and management, and integrate information from these sources in written form

Delivery and Resources

This unit will make use of a ‘flipped classroom’ approach to explore contemporary marine environmental issues.

The flipped classroom describes a reversal of traditional teaching where students gain first exposure to new material outside of class, via readings and videos, and then use class time to do the harder work of assimilating that knowledge through problem-solving, discussion, or debates.

This means that instead of attending lectures, you will complete on-line activities and participate in tutorials. The on-line activities will require you to explore a variety of media, including peer-reviewed and grey literature, as well as newspaper articles and radio interviews, in order to view marine resources through the lenses of the multiple stakeholders. **You must complete each online module at least 1 hr prior to the corresponding tutorial.** The tutorials will provide opportunities to further explore topics through roll-play and discussion while the practicals and field trips will provide you with hands-on experience of a variety of marine environments. Through this

approach it is hoped that you will gain a better understanding of the complexities of maintaining and managing marine resources.

The flipped classroom is a new approach to teaching and learning at Macquarie – please let us know what you think!

Required and recommended texts and/or materials

There is no prescribed text book for this course. Instead, you will be directed to required and optional readings through the learning modules in ilearn. Throughout this unit, you are encouraged to keep track of contemporary issues in the marine environment by reading newspaper, listening to the radio and following expert tweets.

Unit web page

The format of this unit requires that you complete learning modules in ilearn. Hence, it is absolutely essential that you log in on a regular basis.

To access the online unit, go to <https://iLearn.mq.edu.au/login/MQ/> and type in your Macquarie OneID Username and password.

New to iLearn? You can find out more at: http://www.mq.edu.au/iLearn/student_info/

Experiencing difficulties? Visit: <http://informatics.mq.edu.au/help/>

Unit communications

Discussion board: In order to discuss issues of relevance to all students with the teaching staff, please use the Discussion Board feature of ilearn. The chances are that if you are confused about something in the unit, so are your peers, so it will be useful to share your questions with all. These questions may be regarding the content of the modules (i.e. a concept you don't understand) or about the logistics and requirements of the unit. You can also use the discussion board feature of ilearn to arrange car-pooling to the Kurnell field trip, and to the mangrove prac. Separate areas of the Discussion Board have been set up for this purpose.

Email: For matters of a more personal nature, and that do not concern other students (i.e. requests for extensions etc), you should contact the Unit Convener, Melanie Bishop, by email. Contact details are provided at the start of this document.

Twitter: Students are encouraged to sign up to twitter, and use it to follow contemporary issues in marine science. We will explain how to sign up for twitter in the week 1 tutorial. In the twitter folder of ilearn, you will find three feeds on sea-level rise, blue carbon and marine protected areas. You should use these feeds to follow debate and discussion on these topics throughout semester. A hashtag has also been established for this unit: #MAR202. Feel free to tweet to this hashtag: interesting newspaper articles that you see; retweet posts of interest to the unit, and interesting observations of the marine environment that you may see when you are out and about. General questions and concerns about the unit can also be tweeted to this hashtag, for quick response by the student body. However, the teaching staff cannot guarantee that they will respond to questions that are tweeted. If you need a response from teaching staff, please use the discussion board.

Unit Schedule

The topics we will cover, and the corresponding dates of tutorials, are listed below. Students must have completed the online module relating to each tutorial topic **at least 1 hr prior to attending the tutorial**. Hence, if you are in a Monday tutorial class, you should be working through the online module the

week prior to what is indicated below.

Week 1 (3, 5 March)	An introduction to MAR202
Week 2 (10, 12 March)	Marine environments and their ecosystem services
Week 3 (17, 19 March)	Valuing marine ecosystem services
Week 4 (24, 26 March)	Shoreline erosion and protection
Week 5 (31 Mar, 3 Apr)	Recreational and commercial fisheries
Week 6 (7, 9 April)	Aquaculture

MID SEMESTER RECESS

Week 7 (28, 30 April)	Carbon cycling in coastal environments
Week 8 (5, 7 May)	Fossil fuel formation in the marine environment
Week 9 (12, 14 May)	Marine renewable energy sources
Week 10 (19, 21 May)	Marine pollutants
Week 11 (26, 28 May)	Oceans and estuaries as transport routes
Week 12 (2, 4 June)	Marine ecotourism
Week 13 (9, 11 June)	Marine conservation and habitat mapping

Practical Timetable

Week 2 (14 March) - Introduction / WHS brief (E8A labs)
Week 3 (21 March) - Snorkelling practical in MQ pool (MQ Sports and Aquatic Centre)
Week 4 (28-29 March) - field trip (Silver Beach, Kurnell)
Week 8 (9 May) - mangrove fieldwork (Buffalo Creek Park, morning prac slots only)
Week 9 (16 May) - mangrove fieldwork (Buffalo Creek Park, afternoon prac slot only)
Week 11 (30 May) – Using Google Earth to explore patterns of seagrass loss (E8A labs)
Week 13 (13 June) – Exploring the deep sea using photo and video analysis

Learning and Teaching Activities

Online modules

Each week you will complete an on-line module in ilearn (with a blog documenting learning activities posted at least 1 hr prior to your tutorial). This should take you ~3 hrs to complete.

Tutorials

During compulsory 3 hr tutorials we will engage in role-play activities and discussion to further unpack some of the topics.

Practicals

In addition, you will complete five practicals during the semester (the dates for these are provided later in this document) and attend a compulsory fieldtrip to Silver Beach Kurnell on Fri 28 and Sat 29 March.

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

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

Disruption to Studies Policy 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/

Student Support

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

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to 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

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

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

- Compare how different stakeholder groups value marine environments, and identify and explain scenarios under which conflict among these groups might arise
- Develop and test hypotheses regarding human impacts to marine ecosystems
- Critically evaluate peer-reviewed, grey and popular literature on marine ecosystems, their use and management, and integrate information from these sources in written form

Assessment tasks

- Letter 1
- Letter 2
- Persuasive blog 1
- Persuasive blog 2

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:

Assessment task

- Treasure Hunt

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

- Identify the key goods and services provided to humans by marine ecosystems, and explain how these are maintained by physical, chemical, geological and biological processes
- Compare and contrast how human activities have historically, are presently and are predicted to in the future modify marine ecosystems and their provision of goods and services
- Compare how different stakeholder groups value marine environments, and identify and explain scenarios under which conflict among these groups might arise
- Explain contemporary and historical approaches to managing marine ecosystems
- Present a clear and scientifically accurate argument regarding the structure and function of marine ecosystems, their use and/or management, to a general audience using a blog
- Develop and test hypotheses regarding human impacts to marine ecosystems
- Critically evaluate peer-reviewed, grey and popular literature on marine ecosystems, their use and management, and integrate information from these sources in written form

Assessment tasks

- Letter 1
- Letter 2
- Journal of learning
- Graphs
- Field trip report

- Persuasive blog 1
- Treasure Hunt
- Persuasive blog 2

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

- Identify the key goods and services provided to humans by marine ecosystems, and explain how these are maintained by physical, chemical, geological and biological processes
- Compare how different stakeholder groups value marine environments, and identify and explain scenarios under which conflict among these groups might arise
- Develop and test hypotheses regarding human impacts to marine ecosystems
- Critically evaluate peer-reviewed, grey and popular literature on marine ecosystems, their use and management, and integrate information from these sources in written form

Assessment tasks

- Letter 1
- Letter 2
- Journal of learning
- Graphs
- Field trip report
- Persuasive blog 1
- Treasure Hunt
- Persuasive blog 2

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

- Develop and test hypotheses regarding human impacts to marine ecosystems
- Critically evaluate peer-reviewed, grey and popular literature on marine ecosystems, their use and management, and integrate information from these sources in written form

Assessment tasks

- Graphs
- Field trip report
- Persuasive blog 1
- Treasure Hunt
- Persuasive blog 2

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

- Present a clear and scientifically accurate argument regarding the structure and function of marine ecosystems, their use and/or management, to a general audience using a blog
- Develop and test hypotheses regarding human impacts to marine ecosystems

Assessment tasks

- Letter 1
- Letter 2
- Field trip report
- Persuasive blog 1
- Treasure Hunt
- Persuasive blog 2

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 outcomes

- Present a clear and scientifically accurate argument regarding the structure and function of marine ecosystems, their use and/or management, to a general audience using a blog
- Critically evaluate peer-reviewed, grey and popular literature on marine ecosystems, their use and management, and integrate information from these sources in written form

Assessment tasks

- Letter 1
- Letter 2
- Journal of learning
- Graphs
- Field trip report
- Persuasive blog 1
- Treasure Hunt
- Persuasive blog 2

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 outcomes

- Identify the key goods and services provided to humans by marine ecosystems, and explain how these are maintained by physical, chemical, geological and biological processes
- Present a clear and scientifically accurate argument regarding the structure and function of marine ecosystems, their use and/or management, to a general audience using a blog
- Critically evaluate peer-reviewed, grey and popular literature on marine ecosystems, their use and management, and integrate information from these sources in written form

Assessment tasks

- Letter 1
- Letter 2
- Journal of learning

- Persuasive blog 1
- Persuasive blog 2

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

- Identify the key goods and services provided to humans by marine ecosystems, and explain how these are maintained by physical, chemical, geological and biological processes
- Compare and contrast how human activities have historically, are presently and are predicted to in the future modify marine ecosystems and their provision of goods and services
- Explain contemporary and historical approaches to managing marine ecosystems
- Present a clear and scientifically accurate argument regarding the structure and function of marine ecosystems, their use and/or management, to a general audience using a blog
- Critically evaluate peer-reviewed, grey and popular literature on marine ecosystems, their use and management, and integrate information from these sources in written form

Assessment tasks

- Letter 1
- Letter 2
- Persuasive blog 1
- Persuasive blog 2