



BIOL121

Marine Biology and Ecosystems

S2 Day 2015

Dept of Biological Sciences

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Disclaimer

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General Information

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Unit Technical Support

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E8A 104

8-4

Credit points

3

Prerequisites

Corequisites

Co-badged status

Unit description

This unit provides students with a background to marine sciences focusing primarily on the ocean environment, its habitats, ecosystems and organisms characterising our blue planet. The unit develops basic knowledge of the chemical, physical and biological disciplines that are interwoven in the study of the marine environment and its organisms. The unit is a first step for those considering a career in this field. The unit focuses on the basic but very important physical and chemical properties of the oceans that constrain life, habitats and the dispersion of biological. It then develops into consecutive sections of the unit that are concerned with the variety of life forms and the major marine habitats and ecosystems. Three practicals will be held off campus and will involve additional entry fee costs (eg, Taronga Zoo).

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:

Explain how chemistry and oceanography constrains life in marine environments.

Describe the main forms of life in the oceans, their discriminating characteristics, habitats

and methods of dispersal.

Identify, summarise and critically evaluate primary (journal articles) and secondary (books and reports) literature pertaining to marine topics.

Effectively communicate aspects of marine biology, of interest to the general public, using visually effective and appropriately worded summary sheets.

Work effectively in a team to research and communicate marine science.

Make clear, accurate descriptions of field and laboratory observations.

Identify the most appropriate type of graph for summarising different types of basic data, and draw these graphs using a widely available graphing software package.

Assessment Tasks

Name	Weighting	Due
<u>Weekly Quiz</u>	10%	Weekly (closes 5pm Fridays)
<u>Writing Task</u>	2%	5th August 2015, 12 noon
<u>Fact Sheet Assignment</u>	13%	18th August, 2015, 12 noon
<u>Animal Behaviour Assignment</u>	10%	8th Sept 2014, 12 noon
<u>Fish Taxonomy Practical</u>	5%	7 or 8th August 2015, in prac
<u>Plankton Practical</u>	5%	28 or 29th Sept 2015, in prac
<u>Harbour excursion report</u>	15%	27th Oct 2015, 12 noon
<u>Exam</u>	40%	Semester 2 Exam Period

Weekly Quiz

Due: **Weekly (closes 5pm Fridays)**

Weighting: **10%**

Students have a series of multi-choice, short answer or diagramatic questions to answer each week based on lecture content and/or associated reading. The quizzes will be posted on-line through iLearn at the end of the week's second lecture and are accessible for assessment until the end of each week (5pm Friday). Quizzes can be accessed as basic review material for the final exam. Grades from the quiz will contribute up to 10% of a student's final grade.

On successful completion you will be able to:

- Explain how chemistry and oceanography constrains life in marine environments.
- Describe the main forms of life in the oceans, their discriminating characteristics, habitats

and methods of dispersal.

- Make clear, accurate descriptions of field and laboratory observations.
- Identify the most appropriate type of graph for summarising different types of basic data, and draw these graphs using a widely available graphing software package.

Writing Task

Due: **5th August 2015, 12 noon**

Weighting: **2%**

This is an early assessment writing task for each individual student to hand in a 200 word maximum summary on their Fact sheet topic and a list of three primary references relevant to the topic.

Note: That although you will work as a pair to produce the Fact sheet, this quick writing task should be undertaken individually and separately. Students should write in their own words and should NOT have the same references or text.

On successful completion you will be able to:

- Explain how chemistry and oceanography constrains life in marine environments.
- Describe the main forms of life in the oceans, their discriminating characteristics, habitats and methods of dispersal.
- Identify, summarise and critically evaluate primary (journal articles) and secondary (books and reports) literature pertaining to marine topics.

Fact Sheet Assignment

Due: **18th August, 2015, 12 noon**

Weighting: **13%**

In collaboration with the Sydney Institute of Marine Science (SIMS) students will produce public-oriented fact sheets, based on the Sydney Harbour marine environment or its inhabitants. Working in pairs, students will be assigned a random marine topic to produce a two-page fact sheet. The five best fact sheets will go in the running for selection to be printed into real fact sheets by the Sydney Institute of Marine Science (SIMS) for public dispersion. The fact sheets are uploaded to iLearn and are assessed against a set criteria provided to students and by TURNITIN (anti-plagiarism software). All images must be either owned by the student or Creative Commons attributed (i.e. they can not be copied or manipulated from the web). One mandatory tutorial (with an associated pre-tute task) is associated with this activity where library search skills specific to marine science are explained and put into practice. Students have two weeks to complete the task as a team in their own time. Word length: maximum 1000 words.

On successful completion you will be able to:

- Explain how chemistry and oceanography constrains life in marine environments.

- Describe the main forms of life in the oceans, their discriminating characteristics, habitats and methods of dispersal.
- Identify, summarise and critically evaluate primary (journal articles) and secondary (books and reports) literature pertaining to marine topics.
- Effectively communicate aspects of marine biology, of interest to the general public, using visually effective and appropriately worded summary sheets.
- Work effectively in a team to research and communicate marine science.

Animal Behaviour Assignment

Due: **8th Sept 2014, 12 noon**

Weighting: **10%**

This practical is preceded by a tutorial (Week 3) detailing the practical expectations. In the tutorial students will be exposed to field notebook styles and advice on data collection. Students will be allocated marine organisms found at the Taronga Zoo to observe key behaviours undertaken and then to study over a set time period the time spent on those behaviours. Students will be assessed on their field notebook and the data that they collect, collate, summarise and present in an appropriate graph form.

Students have 3 weeks to visit the zoo in their own time to undertake their observations and submit their fieldbook and graphs before the deadline.

Please note: Full-time enrolled students will incur a **\$31.50 entry fee charge** to Taronga Zoo on presentation of their current student card and any additional transport and/or parking charges to/from the Zoo. Failure to present a current Full-time student card on entry will mean you are charged at the Full Adult entry fee of \$44.00. There are no discounts for part-time enrolled students.

On successful completion you will be able to:

- Make clear, accurate descriptions of field and laboratory observations.
- Identify the most appropriate type of graph for summarising different types of basic data, and draw these graphs using a widely available graphing software package.

Fish Taxonomy Practical

Due: **7 or 8th August 2015, in prac**

Weighting: **5%**

This practical in Week 7, is hands-on and laboratory-based. Students will be guided through fish anatomical features that aid in the identification of New South Wales fish through an on-line taxonomic guide. You will be challenged on your abilities to identify mystery fish from your new taxonomic skills.

Please note: Closed-in foot ware is mandatory, and students are strongly-advised to bring a lab coat to protect their clothing.

On successful completion you will be able to:

- Explain how chemistry and oceanography constrains life in marine environments.
- Describe the main forms of life in the oceans, their discriminating characteristics, habitats and methods of dispersal.
- Work effectively in a team to research and communicate marine science.
- Make clear, accurate descriptions of field and laboratory observations.
- Identify the most appropriate type of graph for summarising different types of basic data, and draw these graphs using a widely available graphing software package.

Plankton Practical

Due: **28 or 29th Sept 2015, in prac**

Weighting: **5%**

In week 6 students will examine and identify major plankton groups under a dissecting microscope. This plankton will be sourced from Sydeny Harbour and be a basis for identification for the Field Trip. Microscopy skills will be demonstrated. An identification skill test will be the basis for assessment.

On successful completion you will be able to:

- Describe the main forms of life in the oceans, their discriminating characteristics, habitats and methods of dispersal.
- Work effectively in a team to research and communicate marine science.
- Make clear, accurate descriptions of field and laboratory observations.
- Identify the most appropriate type of graph for summarising different types of basic data, and draw these graphs using a widely available graphing software package.

Harbour excursion report

Due: **27th Oct 2015, 12 noon**

Weighting: **15%**

We take to the Harbour in Week 10 to expose students to boat-based sampling of the physical environment and its biological micro-organisms. Students will be expected to take detailed notes in their field notebook, document parameters and observations while on the water and then try their hand at identifying the micro-organisms they have just sampled. Students will be assessed on their field book and a detailed methodological-based report and graph. Word limitation for report: 1500 words.

The Field Trip is COMPULSORY and students will spend 1/2 day undertaking the experience.

Arrangements for attending (i.e making time to attend where other clashes occur) should be arranged well in advance.

Date: Monday 12th October in two groups (morning and afternoon sessions).

Please Note: Buses from Macquarie University will be organised to transport students to/from SIMS (Chowder Bay) relevant to a student's practical session. Alternatively, students can make their own way there by public transport (Bus 244 from near Wynyard Station - pre-paid tickets required, 1 bus per hour generally). Car parking at, or near, SIMS is possible but not recommended due to the fact that it is metered, expensive and very well patrolled by parking inspectors who give out hefty fines.

On successful completion you will be able to:

- Explain how chemistry and oceanography constrains life in marine environments.
- Make clear, accurate descriptions of field and laboratory observations.
- Identify the most appropriate type of graph for summarising different types of basic data, and draw these graphs using a widely available graphing software package.

Exam

Due: **Semester 2 Exam Period**

Weighting: **40%**

Students will be assessed on their understanding of basic concepts covered in the unit by means of multichoice questions. Additional short answer questions that test their understanding of the marine environment and ecosystems will also be included.

On successful completion you will be able to:

- Explain how chemistry and oceanography constrains life in marine environments.
- Describe the main forms of life in the oceans, their discriminating characteristics, habitats and methods of dispersal.
- Make clear, accurate descriptions of field and laboratory observations.
- Identify the most appropriate type of graph for summarising different types of basic data, and draw these graphs using a widely available graphing software package.

Delivery and Resources

DELIVERY

This unit has two lectures per week, six practicals sessions (2hrs duration) and one 1/2 day compulsory field trip to the Sydney Institute of Marine Science at Chowder Bay. One of the practicals is external and needs to be completed at your own convenience during a three week window. All dates and times of lectures and practicals are provided in the Unit Schedule and are provided/updated on the iLearn portal for BIOL121. All assessments have detailed instructions and marking criteria provided in advance through iLearn.

PRACTICALS

Students will need to select a single practical stream that they will attend through the semester. Swapping of practical streams is not permitted due to laboratory seating, resource and staffing allocations. Practicals are compulsory and impart skills that are relevant to assignments, external practicals and the field trip.

For all tutorials and practicals closed in foot ware is mandatory. Students will be excluded from the laboratory or practical if they do not have appropriate shoes on.

The Taronga Zoo Animal Behaviour Observation Practical is undertaken relevant to a student's personal timetable prior to the assessment submission deadline. No extensions or alternative timings are provided for this off-campus practical.

The Chowder Bay, Sydney Institute of Marine Science, Field Trip is compulsory and students are advised to **plan in advance and request 1/2 day leave on Monday the 12 October particularly if you have signed up into Tuesday practical stream**. Placements will be allotted dependent on final student enrolment numbers.

If you fail to attend or complete associated external tasks/field notebooks your grades will be affected. There is NO alternative catch-up practical experience to replace this activity.

TECHNOLOGY USED

Audio recordings ONLY (**no visual recording**) of the lecture presentation are normally provided. These recordings can be accessed via direct links through iLearn on BIOL121's homepage. These recordings are not a substitute for attendance, and should only be considered as a starting point for revision. There is a very clear association between students that attend and participate in lectures and their doing well in this unit.

We use Microsoft EXCEL™ as a basic statistical package during practicals. However, you can use the Macquarie supported, free-access, to Minitab. The latest version of Minitab can be downloaded from the **myMQ**portal website (<https://my.mq.edu.au/>) by selecting the drop-down menu "online Tools" and then "Software Downloads".

During practicals you may wish to access the free web stats sites: vassarstats

USE OF ANTI-PLAGIARISM TECHNOLOGY

Macquarie University treats plagiarism very seriously with harsh penalties for students that consider this an option in their education. Plagiarism is not tolerated at any level or in any manner. **Ensure that your work is written in your own words and is not shared with others.** Student work assessed in BIOL121 will be scrutinised by TURNITIN and tutor assessments. Aside from failing a set task, all instances of plagiarism will be reported directly to the Faculty Discipline Panel and kept on record for the entirety of your degree. If you are doing a double-degree/major that includes Law be aware that a recording of University plagiarism will end your career before it starts.

TEXT BOOK

We HIGHLY RECOMMEND (or in the words of an anonymous student from last year's feedback - "you need a text book!") that students, particularly those interested in pursuing Marine Science, purchase their own e-book or the Mind-Tap version, which includes the e-book (via the BIOL121 iLearn page or Co-Op bookshop) or a hardcopy (from the Co-Op Bookshop on campus) as we can not guarantee a copy will be available for you to use from the library:

Introduction to Marine Biology, 4th Edition by Karleskint, Turner and Small. Publisher Brooks/Cole Cengage Learning.

Two copies of this text can be found in the RESERVE collection of the library.

Other Marine Science textbooks can be found in the general section of the library and can be used as alternative sources for the same material we cover.

If you need assistance with writing reports for Biological Sciences we highly recommend the following as a very useful guide for the next three years of your degree:

J.A. Pechenik: *A short guide to writing about biology*. 7th or 8th Edition (Available in the co-op bookshop or second hand or many copies in the library).

Unit Schedule

Please refer to the iLearn unit page for a detailed weekly unit schedule.

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/

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](#).

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

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

- Effectively communicate aspects of marine biology, of interest to the general public, using visually effective and appropriately worded summary sheets.
- Identify the most appropriate type of graph for summarising different types of basic data, and draw these graphs using a widely available graphing software package.

Assessment tasks

- Weekly Quiz
- Fact Sheet Assignment
- Animal Behaviour Assignment
- Fish Taxonomy Practical
- Plankton Practical
- Harbour excursion report
- Exam

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

- Identify, summarise and critically evaluate primary (journal articles) and secondary (books and reports) literature pertaining to marine topics.
- Effectively communicate aspects of marine biology, of interest to the general public, using visually effective and appropriately worded summary sheets.
- Work effectively in a team to research and communicate marine science.

Assessment tasks

- Writing Task
- Fact Sheet Assignment
- Fish Taxonomy Practical
- Plankton Practical

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 outcome

- Effectively communicate aspects of marine biology, of interest to the general public, using visually effective and appropriately worded summary sheets.

Assessment task

- Fact Sheet Assignment

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

- Explain how chemistry and oceanography constrains life in marine environments.
- Describe the main forms of life in the oceans, their discriminating characteristics, habitats and methods of dispersal.
- Identify, summarise and critically evaluate primary (journal articles) and secondary (books and reports) literature pertaining to marine topics.
- Make clear, accurate descriptions of field and laboratory observations.
- Identify the most appropriate type of graph for summarising different types of basic data, and draw these graphs using a widely available graphing software package.

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- Exam

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

- Explain how chemistry and oceanography constrains life in marine environments.
- Describe the main forms of life in the oceans, their discriminating characteristics, habitats and methods of dispersal.
- Identify, summarise and critically evaluate primary (journal articles) and secondary (books and reports) literature pertaining to marine topics.
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- Exam

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

- Explain how chemistry and oceanography constrains life in marine environments.
- Describe the main forms of life in the oceans, their discriminating characteristics, habitats and methods of dispersal.
- Identify, summarise and critically evaluate primary (journal articles) and secondary (books and reports) literature pertaining to marine topics.
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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

- Identify, summarise and critically evaluate primary (journal articles) and secondary (books and reports) literature pertaining to marine topics.
- Effectively communicate aspects of marine biology, of interest to the general public, using visually effective and appropriately worded summary sheets.
- Work effectively in a team to research and communicate marine science.

- Make clear, accurate descriptions of field and laboratory observations.
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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

- Effectively communicate aspects of marine biology, of interest to the general public, using visually effective and appropriately worded summary sheets.
- Work effectively in a team to research and communicate marine science.

Assessment tasks

- Fact Sheet Assignment
- Fish Taxonomy Practical
- Plankton Practical

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 outcome

- Work effectively in a team to research and communicate marine science.

Assessment tasks

- Fact Sheet Assignment
- Fish Taxonomy Practical
- Plankton Practical

Changes from Previous Offering

CHANGES TO THIS UNIT IN 2015

This is the last year that this unit will be offered.

The unit was previously offered in S1 and is in 2015 offered in S2.

No assessment changes from the 2014 offering have been made.

Changes since First Published

Date	Description
14/07/2015	Revised dates for practicals and assessments. Indicated the detailed weekly unit outline is available from the iLearn unit page.