



# MAR 801

## Topics in Australian Marine Science

S1 External 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>	5
<u>Unit Schedule</u>	6
<u>Policies and Procedures</u>	7
<u>Graduate Capabilities</u>	8

---

#### **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

Other Staff

Katherine McClellan

[katherine.mcclellan@mq.edu.au](mailto:katherine.mcclellan@mq.edu.au)

Contact via [katherine.mcclellan@mq.edu.au](mailto:katherine.mcclellan@mq.edu.au)

Unit Convenor

David Raftos

[david.raftos@mq.edu.au](mailto:david.raftos@mq.edu.au)

Contact via [david.raftos@mq.edu.au](mailto:david.raftos@mq.edu.au)

Credit points

4

Prerequisites

Admission to MMarScMgt

Corequisites

Co-badged status

Unit description

This unit introduces students to current research undertaken in various disciplines of marine science in Australia. It is a multi-institutional unit taught at the Sydney Institute of Marine Science (SIMS) with contributions from the four university partners of SIMS. Lectures and tutorials are taught by leading marine science researchers. Topics cover physical and biological oceanography, climate change, molecular ecology, aquaculture, marine biology and marine geosciences. In practical classes, students analyse and interpret remote-sensing data from the Integrated Marine Observing System, which provides comprehensive information on the biological and physical processes of Australia's coastal and oceanic waters.

## 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:

The Australian Integrated Marine Observing System (IMOS) national facility is collecting comprehensive biological data as well as complex physical and oceanographic data that

give a real picture of the coast. By being exposed to the full range of IMOS data you will learn about the different instrumentation (remote sensing equipment, acoustic arrays, autonomous underwater vehicles, ocean gliders) that is used to measure marine systems.

IMOS data is being used by researchers to answer important questions such as ocean and climate change and variability, major boundary currents, continental shelf processes and biological responses. You will be able to formulate your own hypotheses associated with these topics and decide on how much data is needed to test it.

The internet has made it possible to access large amounts of data covering extensive spatial scales. New skills are needed to access and manage those large data sets. You will learn how to access and manage large datasets using online tools and other software.

You will develop skills to analyse large data sets that are specific for the marine environment using a variety of software programs and tools specifically developed for the unit.

You will learn how to effectively communicate your results through writing a scientific report on your findings.

## Assessment Tasks

Name	Weighting	Due
<a href="#"><u>Practical exercises</u></a>	50%	as per schedule
<a href="#"><u>IMOS Assignment</u></a>	20%	as per unit schedule
<a href="#"><u>Exam</u></a>	30%	as per unit schedule

### Practical exercises

Due: **as per schedule**

Weighting: **50%**

#### ***Practical Exercises (50%)***

You are required to hand in the results of your exercises as a hard copy at the beginning of the following module's practical class. In most cases results should be handed in as a scientific report with a limit of 1000 words. This includes graphs and figures that you have produced as well as short answers to the questions listed in each practical. Each practical module is worth 10%.

On successful completion you will be able to:

- The Australian Integrated Marine Observing System (IMOS) national facility is collecting comprehensive biological data as well as complex physical and oceanographic data that give a real picture of the coast. By being exposed to the full range of IMOS data you will learn about the different instrumentation (remote sensing equipment, acoustic arrays, autonomous underwater vehicles, ocean gliders) that is used to measure marine systems.
- The internet has made it possible to access large amounts of data covering extensive spatial scales. New skills are needed to access and manage those large data sets. You will learn how to access and manage large datasets using online tools and other software.
- You will develop skills to analyse large data sets that are specific for the marine environment using a variety of software programs and tools specifically developed for the unit.
- You will learn how to effectively communicate your results through writing a scientific report on your findings.

## IMOS Assignment

Due: **as per unit schedule**

Weighting: **20%**

### ***IMOS Assignment - Assignment 1: Project Scientific Report (500 words) (20%)***

The IMOS assignment is worth 20% of your total mark and is a report based on the IMOS OceanCurrents portal.

On successful completion you will be able to:

- The Australian Integrated Marine Observing System (IMOS) national facility is collecting comprehensive biological data as well as complex physical and oceanographic data that give a real picture of the coast. By being exposed to the full range of IMOS data you will learn about the different instrumentation (remote sensing equipment, acoustic arrays, autonomous underwater vehicles, ocean gliders) that is used to measure marine systems.
- IMOS data is being used by researchers to answer important questions such as ocean and climate change and variability, major boundary currents, continental shelf processes and biological responses. You will be able to formulate your own hypotheses associated with these topics and decide on how much data is needed to test it.

- The internet has made it possible to access large amounts of data covering extensive spatial scales. New skills are needed to access and manage those large data sets. You will learn how to access and manage large datasets using online tools and other software.
- You will develop skills to analyse large data sets that are specific for the marine environment using a variety of software programs and tools specifically developed for the unit.
- You will learn how to effectively communicate your results through writing a scientific report on your findings.

## Exam

Due: **as per unit schedule**

Weighting: **30%**

### ***Exam (30%)***

The exam is worth 30% of your total mark and will consist of 6 short answer questions based on the modules you have covered during the practical sessions.

On successful completion you will be able to:

- The Australian Integrated Marine Observing System (IMOS) national facility is collecting comprehensive biological data as well as complex physical and oceanographic data that give a real picture of the coast. By being exposed to the full range of IMOS data you will learn about the different instrumentation (remote sensing equipment, acoustic arrays, autonomous underwater vehicles, ocean gliders) that is used to measure marine systems.
- You will develop skills to analyse large data sets that are specific for the marine environment using a variety of software programs and tools specifically developed for the unit.

## Delivery and Resources

### **Study commitment**

All classes in MAR801 are held on Thursdays at the Sydney Institute of marine science. See the Unit schedule below.

### **Practical classes**

The practical classes will introduce you to IMOS – Australia's Integrated Marine Observing

System, a national infrastructure facility that collects oceanographic data from Australia's coasts and oceans. These data are made publicly available and used by scientists to explore and monitor biological and oceanographic processes in the coastal and marine environment.

During most weeks of the semester there is a weekly one-hour tutorial followed by a two-hour practical class. Attendance to the tutorials and practical classes is compulsory.

Students absent from more than one practical class without approval will be penalized 5% from their final semester mark for every class missed.

Please inquire with your university about special consideration for longer absences.

## Seminars

The seminar series is built around the most current research questions in Australian marine science. Scientists from a number of disciplines will present their research and the most important research questions in their field in a one-hour seminar. Seminar topics may include marine plankton and primary producers, coastal dynamics, ocean currents, eddies and water masses, exploration of the sea floor, marine communities and their responses to a changing environment amongst other topics.

Seminars take place weekly.

## Unit Schedule

### 2014 Schedule for MAR801

Week	Tutorials/Practicals	Seminars
beginning	9:30am – 12:30pm	1:15 – 2:15 pm
Week 1 (6 Mar)	PRAC 1: Introduction to the IMOS Ocean Portal (IMOS) SIMS Laboratory Tour (SIMS staff)	Martina Doblin (UTS)
Week 2 (13 Mar)	PRAC 2: Satellite remote sensing (Martina Doblin UTS)	Fisheries - DPI
Week 3 (20 Mar)	PRAC 3: Satellite remote sensing (Martina Doblin UTS)	Moninya Roughan (UNSW)
Week 4 (27 Mar)	PRAC 4: Moorings (Moninya Roughan UNSW)	Maria Byrne (USYD)
Week 5 (3 Apr)	PRAC 5: Moorings (Moninya Roughan UNSW)	Erik Van Sebille (UNSW)

Week 6 (10 Apr)	PRAC 6: Drifters (Erik Van Sebille UNSW)	Iain Suthers (UNSW)
Week 7 (17 April)	PRAC 7: Argo floats (Iain Suthers UNSW) Pre-assessment Project	Fisheries - DPI
<b>Mid-semester break : 18 – 25 April</b>		
Week 8 (1 May)	PRAC 8: Ocean gliders (Iain Suthers UNSW)	Aldo Steffe (Fishing Survey Solutions)
Week 9 (8 May)	PRAC 9: Recreational Fishing Data (Aldo Steffe Fishing Survey Solutions)	Steph Brodie (UNSW)
Week 10 (15 May)	PRAC 10: Australian Animal Tagging and Monitoring System (AATAMS) (Steph Brodie UNSW)	David Raftos (MQ) / Andre Steckenreuter (AATAMS)
Week 11 (22 May)	PRAC 11: Australian Animal Tagging and Monitoring System (AATAMS) (Steph Brodie UNSW)	Stefan Williams (USYD)
Week 12 (29 May)	PRAC 12: Autonomous Underwater Vehicles (AUVs) (Stefan Williams USYD)	PRACTICAL GLIDER SESSION (AUV group USYD)
Week 13 (5 Jun)	PRAC 13: Autonomous Underwater Vehicles (AUVs) (Ziggy Marzinelli UNSW)	Marine Parks Estate / Coastal Erosion or DPI
Week 14 (12 Jun)	EXAM	BBQ at SIMS

## 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/)

## 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

### PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of



knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

### **Learning outcome**

- The Australian Integrated Marine Observing System (IMOS) national facility is collecting comprehensive biological data as well as complex physical and oceanographic data that give a real picture of the coast. By being exposed to the full range of IMOS data you will learn about the different instrumentation (remote sensing equipment, acoustic arrays, autonomous underwater vehicles, ocean gliders) that is used to measure marine systems.

## **PG - Critical, Analytical and Integrative Thinking**

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

### **Learning outcomes**

- The Australian Integrated Marine Observing System (IMOS) national facility is collecting comprehensive biological data as well as complex physical and oceanographic data that give a real picture of the coast. By being exposed to the full range of IMOS data you will learn about the different instrumentation (remote sensing equipment, acoustic arrays, autonomous underwater vehicles, ocean gliders) that is used to measure marine systems.
- IMOS data is being used by researchers to answer important questions such as ocean and climate change and variability, major boundary currents, continental shelf processes and biological responses. You will be able to formulate your own hypotheses associated with these topics and decide on how much data is needed to test it.
- The internet has made it possible to access large amounts of data covering extensive spatial scales. New skills are needed to access and manage those large data sets. You will learn how to access and manage large datasets using online tools and other software.
- You will develop skills to analyse large data sets that are specific for the marine environment using a variety of software programs and tools specifically developed for the unit.

## PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

### Learning outcomes

- The Australian Integrated Marine Observing System (IMOS) national facility is collecting comprehensive biological data as well as complex physical and oceanographic data that give a real picture of the coast. By being exposed to the full range of IMOS data you will learn about the different instrumentation (remote sensing equipment, acoustic arrays, autonomous underwater vehicles, ocean gliders) that is used to measure marine systems.
- IMOS data is being used by researchers to answer important questions such as ocean and climate change and variability, major boundary currents, continental shelf processes and biological responses. You will be able to formulate your own hypotheses associated with these topics and decide on how much data is needed to test it.
- The internet has made it possible to access large amounts of data covering extensive spatial scales. New skills are needed to access and manage those large data sets. You will learn how to access and manage large datasets using online tools and other software.
- You will develop skills to analyse large data sets that are specific for the marine environment using a variety of software programs and tools specifically developed for the unit.

## PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

### Learning outcome

- You will learn how to effectively communicate your results through writing a scientific report on your findings.

## PG - Engaged and Responsible, Active and Ethical Citizens

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of connectedness with others and country and have a sense of mutual obligation. They will be able to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues

This graduate capability is supported by:

### Learning outcome

- IMOS data is being used by researchers to answer important questions such as ocean and climate change and variability, major boundary currents, continental shelf processes and biological responses. You will be able to formulate your own hypotheses associated with these topics and decide on how much data is needed to test it.

## PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

### Learning outcomes

- IMOS data is being used by researchers to answer important questions such as ocean and climate change and variability, major boundary currents, continental shelf processes and biological responses. You will be able to formulate your own hypotheses associated with these topics and decide on how much data is needed to test it.
- The internet has made it possible to access large amounts of data covering extensive spatial scales. New skills are needed to access and manage those large data sets. You will learn how to access and manage large datasets using online tools and other software.
- You will learn how to effectively communicate your results through writing a scientific report on your findings.