



# BIOL777

## Scientific Research Diving

FY1 Day 2014

*Dept of Biological Sciences*

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## General Information

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Credit points

4

Prerequisites

Admission to MRes

Corequisites

Co-badged status

Unit description

BIOL777 provides required skills for students wishing to continue with underwater marine research. Level 1 (AS2815.1) Occupational Diving Certification or equivalent will be obtained as part of successful completion of this Unit. BIOL777 applies the practical and theoretical aspects of scientific methods used in underwater research and reflects the philosophies and shortcomings that students may have prior to embarking on such research. BIOL777 helps provide students with a well rounded background of scientific research involving a range of underwater techniques, thus making them highly competitive in the field of aquatic research. Dates for BIOL777 may be obtained from the Department. This unique and research-based unit in marine conservation and management will provide students with a practical and marketable skill sets across both temperate and tropical marine ecosystems (Sydney Harbour and Heron Island). Additionally, it will equip them with the necessary communication skills to present complex marine conservation issues to the local community.

## 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:

- work effectively and safely in a diving situation of 30 metres or less
- understand the basic anatomy, physiology and physics related to diving techniques
- effectively and quickly assess diving casualties and how to implement emergency procedures for SCUBA
- understand and demonstrate competency in pre and post diving preparations for scientific diving involving SCUBA
- demonstrate the application of knowledge and skills with initiative and judgement in basic research methods used in marine ecological assessment including the appropriate use of equipment, the need for replication and common statistical techniques
- communicate issues involved in scientific research diving effectively to peers using both written and verbal formats
- identify and provide solutions to complex issues involved in scientific diving with intellectual independence.

## Assessment Tasks

Name	Weighting	Due
<a href="#"><u>Museum Visit</u></a>	5%	Week 1
<a href="#"><u>Diving Equipment</u></a>	15%	Week 3
<a href="#"><u>ADAS 1</u></a>	25%	Week 2
<a href="#"><u>ADAS 2</u></a>	25%	Week 3-4
<a href="#"><u>Report</u></a>	30%	Week 5

### Museum Visit

Due: **Week 1**

Weighting: **5%**

Following on from the 'History of scuba diving in Australia' lecture, we will all meet at the Australian National Maritime Museum on the agreed date and time. The education, registration and archaeology teams at the museum have kindly agreed to show us some historical diving equipment. This will be a fantastic opportunity to take a closer look and get some hands on experience to understand what it would have been like to dive underwater ~150 years ago.

In the lecture we talked about the function each piece of equipment aimed to achieve, all of which are still important to modern commercial and recreational scuba divers. Although not all of these analogies are immediately obvious. This visit will also allow you to ask questions and take advantage of experts with knowledge in these historical artifacts, which will be very beneficial to you all for the 'history of scuba diving (Part 2)' assessment.

On successful completion you will be able to:

- understand the basic anatomy, physiology and physics related to diving techniques

## Diving Equipment

Due: **Week 3**

Weighting: **15%**

You are required to make a comparison between the equipment / practices used by a 'standard tight dress diver' (~mid to late 1800's) and a modern scuba diver (21st Century). Not every piece of equipment in each era will have an obvious and analogous counterpart, although the function of an alternate piece of equipment and / or practice will be present. Your objective is to critically evaluate as many of these within the word limit to display your understanding of underwater diving equipment (please do not consider re-breathers).

On successful completion you will be able to:

- work effectively and safely in a diving situation of 30 metres or less
- understand the basic anatomy, physiology and physics related to diving techniques
- identify and provide solutions to complex issues involved in scientific diving with intellectual independence.

## ADAS 1

Due: **Week 2**

Weighting: **25%**

Australian Divers Accredited Scheme Part 1 R - Theory Exam

On successful completion you will be able to:

- work effectively and safely in a diving situation of 30 metres or less
- understand the basic anatomy, physiology and physics related to diving techniques
- effectively and quickly assess diving casualties and how to implement emergency procedures for SCUBA
- understand and demonstrate competency in pre and post diving preparations for scientific diving involving SCUBA

## ADAS 2

Due: **Week 3-4**

Weighting: **25%**

Australian Divers Accredited Scheme Part 1 R - Practical demonstration of dive skills over 12+ dives.

On successful completion you will be able to:

- work effectively and safely in a diving situation of 30 metres or less
- understand the basic anatomy, physiology and physics related to diving techniques
- effectively and quickly assess diving casualties and how to implement emergency procedures for SCUBA
- understand and demonstrate competency in pre and post diving preparations for scientific diving involving SCUBA

## Report

Due: **Week 5**

Weighting: **30%**

You will be asked to perform an ecological impact assessment on the pearling industry.

The datasets will be available upon request. We will be testing your experimental design, statistical analysis, report writing, project management, and ability to assess risk.

On successful completion you will be able to:

- demonstrate the application of knowledge and skills with initiative and judgement in basic research methods used in marine ecological assessment including the appropriate use of equipment, the need for replication and common statistical techniques
- communicate issues involved in scientific research diving effectively to peers using both written and verbal formats

## Delivery and Resources

Week 1 and 5 will be delivered via a virtual classroom.

Week 2 will be delivered at Macquarie University. This is an intensive block of theory required to complete the ADAS Part 1 R course. You will sit an exam at the end of this week in class.

Weeks 3-4 will be practical diving skills. You will demonstrate these on a minimum of 12 dives in and around Sydney Harbour and off shore.

## Unit Schedule

Week 1 - Lecture Program (History of SCUBA, Limitations of underwater research, Experimental design)

Week 2 - ADAS Dive Theory

Week 3 - ADAS Dive Practical

Week 4 - ADAS Dive Practical

Week 5 - Summary, guest speakers, assessments

## 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.