



# BIOL116

## Biology in Practice

S1 External 2017

*Dept of Biological Sciences*

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## General Information

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Credit points

3

Prerequisites

Corequisites

Co-badged status

### Unit description

Biology in Practice is a skills based unit that aims to ensure you have the required laboratory, safety, field and practical skills essential to studying biology required as a basis for all units offered in the Department of Biological Sciences. The unit consists of a mixture of lectures, tutorials and practicals. You will acquire hands-on skills for working in the field and the laboratory, including the use of microscopes, data collection, analysis and graphing, aseptic techniques, and skills for microbiological and molecular work, as well as accessing and interpreting scientific literature.

## 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:

- Articulate and practice the importance of health and safety in biological sciences (lab and field).
- Develop and demonstrate competencies in set up, operation and shutting down/clean-up of standard laboratory and field equipment.
- Develop and demonstrate competencies in standard laboratory techniques (e.g. dilutions, aseptic plating, imagery and measurement, labelling).
- Maintain an experimental notebook (field and lab); includes field observations with information related to environmental parameters and conditions.
- Demonstrate competency in data collation, basic statistical analyses and representation by appropriate graphs in reports.
- Describe and practice scientific methods from generating hypotheses and predictions through to following experimental procedures, and undertaking data collection.
- Locate, synthesize, appropriately reference (Harvard style) and communicate scientific information, concepts and your own data through oral, visual and written formats (e.g. class tutorials, report, practical exam).
- Develop competency in working individually or as a team in tutorials, in the field and the laboratory.
- Demonstrate professional behaviour in conduct with colleagues and staff, and the ethical handling of organisms.

## General Assessment Information

**The on-line Safety Quiz (Prac 1) must be completed prior to the On-Campus Session 1.**

**Externally enrolled students should pay particular care of activity and assessment deadlines**, which vary from deadlines set for internal (Day) enrolled students undertaking the unit. Extensions will not be granted if External students confuse deadlines.

There are three HURDLE ASSESSMENTS to achieve a pass in BIOL116. Failure to complete a hurdle assessment will lead to a Fail grade for this unit.

"Skills Achieved" portfolio certificate will be provided through iLearn as External students achieve skills during the unit. A student's skills portfolio certificate can be used in support of CV building in 3rd year Capstone Units.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#"><u>Academic Integrity Modules</u></a>	4%	Yes	3rd March
<a href="#"><u>Australian Scientist Summary</u></a>	2%	No	5pm Friday 10th March
<a href="#"><u>Lab/Tute Prep Activities</u></a>	10%	No	Prior to each OCS
<a href="#"><u>Practical Book Maintenance</u></a>	7%	No	See times in Description
<a href="#"><u>Scientific Report</u></a>	15%	Yes	26th May 2017
<a href="#"><u>Mid-term Exam</u></a>	20%	No	27th April (during OCS 4)
<a href="#"><u>Final Exam</u></a>	30%	Yes	14th June 2017
<a href="#"><u>Skills Tests</u></a>	12%	No	OCS 2, 3, 5 & 6

### Academic Integrity Modules

Due: **3rd March**

Weighting: **4%**

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

The Macquarie University Academic Integrity Module has been developed for students to understand their responsibilities and expectations surrounding the proper citation of materials/resources in their work when completing assessments. Several videos must be viewed to enable the completion of the on-line quiz questions that must be undertaken during the first week of Semester 1. This is a hurdle assessment - you are required to participate in this assessment in order to pass BIOL116.

On successful completion you will be able to:

- Locate, synthesize, appropriately reference (Harvard style) and communicate scientific

information, concepts and your own data through oral, visual and written formats (e.g. class tutorials, report, practical exam).

- Demonstrate professional behaviour in conduct with colleagues and staff, and the ethical handling of organisms.

## Australian Scientist Summary

Due: **5pm Friday 10th March**

Weighting: **2%**

Using information from the Australian Academy of Science's *Interviews with Australian Scientists*, students must summarise in their own words the contribution that their chosen scientist has made to Australian or International science, and why this is inspiring to the student. Minimum limitation 200 words - Maximum limitation 300 words. Students must submit their paragraph to Turnitin (for plagiarism assessment).

On successful completion you will be able to:

- Locate, synthesize, appropriately reference (Harvard style) and communicate scientific information, concepts and your own data through oral, visual and written formats (e.g. class tutorials, report, practical exam).
- Develop competency in working individually or as a team in tutorials, in the field and the laboratory.

## Lab/Tute Prep Activities

Due: **Prior to each OCS**

Weighting: **10%**

Pre-class activities will be set prior to specific practicals and tutorials. Students must complete the activity prior to attending the practical or tutorial session for a grade to be awarded. Each activity will be assigned between 1% and 2% of your final grade. Most pre-class activities will require reading (e.g. articles, risk assessments, prac notes), accessing material (e.g. videos and other media) and answering questions on-line, or the advance preparation of text for a tutorial.

On successful completion you will be able to:

- Articulate and practice the importance of health and safety in biological sciences (lab and field).
- Develop and demonstrate competencies in set up, operation and shutting down/clean-up of standard laboratory and field equipment.
- Develop and demonstrate competencies in standard laboratory techniques (e.g. dilutions, aseptic plating, imagery and measurement, labelling).
- Demonstrate competency in data collation, basic statistical analyses and representation

by appropriate graphs in reports.

- Locate, synthesize, appropriately reference (Harvard style) and communicate scientific information, concepts and your own data through oral, visual and written formats (e.g. class tutorials, report, practical exam).
- Develop competency in working individually or as a team in tutorials, in the field and the laboratory.
- Demonstrate professional behaviour in conduct with colleagues and staff, and the ethical handling of organisms.

## Practical Book Maintenance

Due: **See times in Description**

Weighting: **7%**

External students will maintain an prac book during their on-campus sessions (OCS). The prac book will be assessed against set criteria that cover the completeness of activities and adherence to expected lab prac book conventions. The assessment of the prac book is worth 7% total.

OCS 1 practicals will be assessed at OCS 2

OCS 2 practicals will be assessed at OCS 3

OCS 3 & 4 practicals will be assessed at OCS 5

OCS 5 practicals will be assessed at OCS 6

OCS 6 practicals will be assessed at the final practical exam.

Each practical assessed will be worth 1% of your final grade.

On successful completion you will be able to:

- Articulate and practice the importance of health and safety in biological sciences (lab and field).
- Develop and demonstrate competencies in set up, operation and shutting down/clean-up of standard laboratory and field equipment.
- Develop and demonstrate competencies in standard laboratory techniques (e.g. dilutions, aseptic plating, imagery and measurement, labelling).
- Maintain an experimental notebook (field and lab); includes field observations with information related to environmental parameters and conditions.
- Demonstrate competency in data collation, basic statistical analyses and representation by appropriate graphs in reports.
- Describe and practice scientific methods from generating hypotheses and predictions through to following experimental procedures, and undertaking data collection.

- Develop competency in working individually or as a team in tutorials, in the field and the laboratory.

## Scientific Report

Due: **26th May 2017**

Weighting: **15%**

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

Students must use a standard scientific report structure (outlined in class and detailed on iLearn) to convey the experimental method and results of their field work survey undertaken on campus during OCS practical sessions. Minimum limitation 400 words - Maximum limitation 1000 words. Students must submit their report to Turnitin (for plagiarism assessment). This is a hurdle assessment - you are required to participate in this assessment in order to pass BIOL116.

On successful completion you will be able to:

- Articulate and practice the importance of health and safety in biological sciences (lab and field).
- Develop and demonstrate competencies in set up, operation and shutting down/clean-up of standard laboratory and field equipment.
- Demonstrate competency in data collation, basic statistical analyses and representation by appropriate graphs in reports.
- Describe and practice scientific methods from generating hypotheses and predictions through to following experimental procedures, and undertaking data collection.
- Locate, synthesize, appropriately reference (Harvard style) and communicate scientific information, concepts and your own data through oral, visual and written formats (e.g. class tutorials, report, practical exam).
- Develop competency in working individually or as a team in tutorials, in the field and the laboratory.
- Demonstrate professional behaviour in conduct with colleagues and staff, and the ethical handling of organisms.

## Mid-term Exam

Due: **27th April (during OCS 4)**

Weighting: **20%**

External students will be examined on the skills they have experienced during the first three on-campus sessions (OCS 1-3 of the semester). Skills tested during the exam will include activities taken from material covered in OCS-delivered practicals and tutorial sessions. The mid-term exam will occur on the morning of the 27th April during the OCS 4.

On successful completion you will be able to:

- Develop and demonstrate competencies in set up, operation and shutting down/clean-up of standard laboratory and field equipment.
- Develop and demonstrate competencies in standard laboratory techniques (e.g. dilutions, aseptic plating, imagery and measurement, labelling).
- Demonstrate competency in data collation, basic statistical analyses and representation by appropriate graphs in reports.
- Locate, synthesize, appropriately reference (Harvard style) and communicate scientific information, concepts and your own data through oral, visual and written formats (e.g. class tutorials, report, practical exam).
- Develop competency in working individually or as a team in tutorials, in the field and the laboratory.
- Demonstrate professional behaviour in conduct with colleagues and staff, and the ethical handling of organisms.

## Final Exam

Due: **14th June 2017**

Weighting: **30%**

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

External students will be examined on the skills they have experienced within all six on-campus sessions (OCS 1- 6) of the semester. Skills tested during the exam will include activities taken from material covered in practicals and tutorial sessions. The final exam date for External students is scheduled within the University Examinations Week 1 (12 - 16th June, 2017). This is a hurdle assessment - you are required to attain at least 50% in this assessment in order to pass BIOL116.

As the final exam is a hurdle assessment, if students have made a serious first attempt but still fail, they must be given one more opportunity. **A serious first attempt in this assessment is defined as a mark of 40% or greater.** Students will be able to re-sit the final exam during the supplementary exam offering.

On successful completion you will be able to:

- Articulate and practice the importance of health and safety in biological sciences (lab and field).
- Develop and demonstrate competencies in set up, operation and shutting down/clean-up of standard laboratory and field equipment.
- Develop and demonstrate competencies in standard laboratory techniques (e.g.



dilutions, aseptic plating, imagery and measurement, labelling).

- Demonstrate competency in data collation, basic statistical analyses and representation by appropriate graphs in reports.
- Locate, synthesize, appropriately reference (Harvard style) and communicate scientific information, concepts and your own data through oral, visual and written formats (e.g. class tutorials, report, practical exam).
- Develop competency in working individually or as a team in tutorials, in the field and the laboratory.
- Demonstrate professional behaviour in conduct with colleagues and staff, and the ethical handling of organisms.

## Skills Tests

Due: **OCS 2, 3, 5 & 6**

Weighting: **12%**

External students will undertake four in-class skill assessment tasks during their on-campus sessions throughout the semester. Each test is worth 3%, thus contributing to a total of 12% of the final grade.

**On-campus session 2 (1 April 2017):** Microscopy and digital imagery assessment task. Students will need to show competence in using a compound microscope and Motic (TM) image software to capture appropriate images.

**On-campus session 3 (26th April 2017):** Harvard References. Students will need to demonstrate competence in searching for on line journal articles and the application of the Dept of Biological Sciences Harvard referencing style.

**On-campus session 5 (13th May 2017):** Students need to calculate basic statistics from a data set and graph appropriately using Microsoft Excel (TM) on the lab computers.

**On-campus session 6 (3rd June 2017):** Micro-pipette handling skill. Students will be required to show competence in micro-pipetting techniques.

On successful completion you will be able to:

- Develop and demonstrate competencies in set up, operation and shutting down/clean-up of standard laboratory and field equipment.
- Develop and demonstrate competencies in standard laboratory techniques (e.g. dilutions, aseptic plating, imagery and measurement, labelling).
- Demonstrate competency in data collation, basic statistical analyses and representation by appropriate graphs in reports.
- Locate, synthesize, appropriately reference (Harvard style) and communicate scientific information, concepts and your own data through oral, visual and written formats (e.g.

class tutorials, report, practical exam).

- Develop competency in working individually or as a team in tutorials, in the field and the laboratory.
- Demonstrate professional behaviour in conduct with colleagues and staff, and the ethical handling of organisms.

## Delivery and Resources

### Tutorials.

Tutorials are formulated around both independent and team activities that focus on problem solving and development of resource inquiry and writing skills. Access to the internet and the use of spreadsheet software (e.g. Excel (TM)) is assumed. External students should refer to the ***External Students Activity Submission Timetable*** below to ensure that they undertake tutorial activities by the correct due date.

### On-campus sessions (practicals).

External students have **SIX COMPULSORY** on-campus sessions to attend. OCS are an intense and stimulating blend of activities and will also include assessments such as skill tests, student presentations and formal examinations. As the unit is focused on a student's handling of basic equipment in the lab/field, and development of technical and analytical skills, students will be expected to maintain a prac book during their OCS sessions.

External students should also take due note of the following:

- On Campus sessions run **from 9am to 5pm.**

- External students MUST WEAR ENCLOSED FOOT WARE to all practical sessions.
- Lab coats are not compulsory.
- All other personal protection such as gloves and safety glasses will be supplied as required by our approved risk assessment procedures.
- There are no dissections of animals in BIOL116, however, we do handle insects and take the ethical handling of all organisms very seriously.
- Students that have a medically-assessed allergy to gloves (latex, plastics, nitrile), pollen or crustaceans, or have a disability should make staff aware in advance so that alternative equipment and activities for certain practicals can be prepared in advance to ensure completion of the unit. Contact: [biol116@mq.edu.au](mailto:biol116@mq.edu.au) and in the subject line use the flag: *Confidential Prac Allergy Notification - External*.
- Failure to attend set OCS will result in automatic failure of the unit, as alternative on-campus catch-up sessions are not possible. Externally-enrolled students cannot attend Internal (Day) offered practical classes due to the lack of class space and University Workplace Health and Safety regulations.

- Due to University policy on Workplace Health and Safety, access to all laboratory classes will be closed 10 minutes after the start time. **Late entries will not be permitted under any circumstances.**
- Practical attendance is compulsory and an attendance roll will be taken.

## Exams.

External students have two practical exams. The first on the morning of the fourth on-campus session and the second in the official exam period of semester 1 (week 1). Practical exams will cover the following:

- **OCS 4 (Thursday 27th April, 2017)**. The mid-term practical exam will cover Tutorial, Pre-prac activities and Practical experiences or material covered up to and inclusive of the first 3 OCS. External students will be tested on equipment use or will need to answer technique or analytical questions at ~6-8 stations.
- **Semester 1 Exam Session (Wednesday 14h June, 2017)**. The final practical exam will cover Tutorial, Pre-prac activities, and Practical material or experiences across the whole semester. External students will be tested on equipment use or will need to answer technique or analytical questions at ~8-10 stations.

## Unit Schedule

### Dates set for OCS sessions and External Exam

OCS 1 (1 day) Sat 11th March

OCS 2 (1 day) Sat 1st April

OCS 3-4 (2 days- will include mid semester prac exam) Wed-Thurs, 26-27th April - in mid-semester break.

OCS 5 (1 day) Sat 13th May

OCS 6 (1 day) Sat 3rd June

Final prac exam for Externals in Exam week 1 on Wed 14th June at 10am

## 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\\_2016.html](http://mq.edu.au/policy/docs/assessment/policy_2016.html)

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Complaint Management Procedure for Students and Members of the Public [http://www.mq.edu.au/policy/docs/complaint\\_management/procedure.html](http://www.mq.edu.au/policy/docs/complaint_management/procedure.html)

Disruption to Studies Policy (in effect until Dec 4th, 2017): [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](http://www.mq.edu.au/policy/docs/disruption_studies/policy.html)

Special Consideration Policy (in effect from Dec 4th, 2017): <https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration>

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/)

## 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](http://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](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://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](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.

## 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

- Develop and demonstrate competencies in standard laboratory techniques (e.g. dilutions, aseptic plating, imagery and measurement, labelling).
- Maintain an experimental notebook (field and lab); includes field observations with information related to environmental parameters and conditions.
- Describe and practice scientific methods from generating hypotheses and predictions through to following experimental procedures, and undertaking data collection.
- Locate, synthesize, appropriately reference (Harvard style) and communicate scientific information, concepts and your own data through oral, visual and written formats (e.g. class tutorials, report, practical exam).

### Assessment tasks

- Academic Integrity Modules
- Australian Scientist Summary
- Lab/Tute Prep Activities
- Practical Book Maintenance
- Scientific Report
- Mid-term Exam
- Final Exam
- Skills Tests

### 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

- Articulate and practice the importance of health and safety in biological sciences (lab and field).
- Develop and demonstrate competencies in set up, operation and shutting down/clean-up of standard laboratory and field equipment.
- Develop and demonstrate competencies in standard laboratory techniques (e.g. dilutions, aseptic plating, imagery and measurement, labelling).
- Maintain an experimental notebook (field and lab); includes field observations with information related to environmental parameters and conditions.
- Describe and practice scientific methods from generating hypotheses and predictions through to following experimental procedures, and undertaking data collection.
- Locate, synthesize, appropriately reference (Harvard style) and communicate scientific information, concepts and your own data through oral, visual and written formats (e.g. class tutorials, report, practical exam).
- Develop competency in working individually or as a team in tutorials, in the field and the laboratory.
- Demonstrate professional behaviour in conduct with colleagues and staff, and the ethical handling of organisms.

## Assessment tasks

- Academic Integrity Modules
- Australian Scientist Summary
- Lab/Tute Prep Activities
- Practical Book Maintenance
- Scientific Report
- Mid-term Exam
- Final Exam
- Skills Tests

## 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 outcomes

- Articulate and practice the importance of health and safety in biological sciences (lab and field).
- Develop and demonstrate competencies in set up, operation and shutting down/clean-up of standard laboratory and field equipment.
- Develop and demonstrate competencies in standard laboratory techniques (e.g. dilutions, aseptic plating, imagery and measurement, labelling).
- Maintain an experimental notebook (field and lab); includes field observations with information related to environmental parameters and conditions.
- Locate, synthesize, appropriately reference (Harvard style) and communicate scientific information, concepts and your own data through oral, visual and written formats (e.g. class tutorials, report, practical exam).
- Demonstrate professional behaviour in conduct with colleagues and staff, and the ethical handling of organisms.

## Assessment tasks

- Academic Integrity Modules
- Australian Scientist Summary
- Lab/Tute Prep Activities
- Practical Book Maintenance
- Scientific Report
- Mid-term Exam
- Final Exam
- Skills Tests

## 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

- Articulate and practice the importance of health and safety in biological sciences (lab and



field).

- Develop and demonstrate competencies in set up, operation and shutting down/clean-up of standard laboratory and field equipment.
- Develop and demonstrate competencies in standard laboratory techniques (e.g. dilutions, aseptic plating, imagery and measurement, labelling).
- Maintain an experimental notebook (field and lab); includes field observations with information related to environmental parameters and conditions.
- Demonstrate competency in data collation, basic statistical analyses and representation by appropriate graphs in reports.
- Describe and practice scientific methods from generating hypotheses and predictions through to following experimental procedures, and undertaking data collection.
- Locate, synthesize, appropriately reference (Harvard style) and communicate scientific information, concepts and your own data through oral, visual and written formats (e.g. class tutorials, report, practical exam).

## Assessment tasks

- Academic Integrity Modules
- Australian Scientist Summary
- Lab/Tute Prep Activities
- Practical Book Maintenance
- Scientific Report
- Mid-term Exam
- Final Exam
- Skills Tests

## 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

- Develop and demonstrate competencies in standard laboratory techniques (e.g. dilutions, aseptic plating, imagery and measurement, labelling).
- Maintain an experimental notebook (field and lab); includes field observations with information related to environmental parameters and conditions.



- Demonstrate competency in data collation, basic statistical analyses and representation by appropriate graphs in reports.
- Describe and practice scientific methods from generating hypotheses and predictions through to following experimental procedures, and undertaking data collection.
- Locate, synthesize, appropriately reference (Harvard style) and communicate scientific information, concepts and your own data through oral, visual and written formats (e.g. class tutorials, report, practical exam).

## **Assessment tasks**

- Academic Integrity Modules
- Australian Scientist Summary
- Lab/Tute Prep Activities
- Practical Book Maintenance
- Scientific Report
- Mid-term Exam
- Final Exam
- Skills Tests

## **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 demonstrate competencies in set up, operation and shutting down/clean-up of standard laboratory and field equipment.
- Develop and demonstrate competencies in standard laboratory techniques (e.g. dilutions, aseptic plating, imagery and measurement, labelling).
- Maintain an experimental notebook (field and lab); includes field observations with information related to environmental parameters and conditions.
- Demonstrate competency in data collation, basic statistical analyses and representation by appropriate graphs in reports.
- Describe and practice scientific methods from generating hypotheses and predictions through to following experimental procedures, and undertaking data collection.
- Locate, synthesize, appropriately reference (Harvard style) and communicate scientific

information, concepts and your own data through oral, visual and written formats (e.g. class tutorials, report, practical exam).

- Develop competency in working individually or as a team in tutorials, in the field and the laboratory.

## **Assessment tasks**

- Academic Integrity Modules
- Australian Scientist Summary
- Lab/Tute Prep Activities
- Practical Book Maintenance
- Scientific Report
- Mid-term Exam
- Final Exam
- Skills Tests

## **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**

- Articulate and practice the importance of health and safety in biological sciences (lab and field).
- Develop and demonstrate competencies in standard laboratory techniques (e.g. dilutions, aseptic plating, imagery and measurement, labelling).
- Maintain an experimental notebook (field and lab); includes field observations with information related to environmental parameters and conditions.
- Demonstrate competency in data collation, basic statistical analyses and representation by appropriate graphs in reports.
- Describe and practice scientific methods from generating hypotheses and predictions through to following experimental procedures, and undertaking data collection.
- Locate, synthesize, appropriately reference (Harvard style) and communicate scientific information, concepts and your own data through oral, visual and written formats (e.g. class tutorials, report, practical exam).
- Develop competency in working individually or as a team in tutorials, in the field and the

laboratory.

- Demonstrate professional behaviour in conduct with colleagues and staff, and the ethical handling of organisms.

## Assessment tasks

- Academic Integrity Modules
- Australian Scientist Summary
- Lab/Tute Prep Activities
- Practical Book Maintenance
- Scientific Report
- Mid-term Exam
- Final Exam
- Skills Tests

## 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

- Maintain an experimental notebook (field and lab); includes field observations with information related to environmental parameters and conditions.
- Develop competency in working individually or as a team in tutorials, in the field and the laboratory.
- Demonstrate professional behaviour in conduct with colleagues and staff, and the ethical handling of organisms.

## Assessment tasks

- Academic Integrity Modules
- Australian Scientist Summary
- Lab/Tute Prep Activities
- Practical Book Maintenance
- Scientific Report
- Mid-term Exam

- Final Exam
- Skills Tests

## 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

- Articulate and practice the importance of health and safety in biological sciences (lab and field).
- Maintain an experimental notebook (field and lab); includes field observations with information related to environmental parameters and conditions.
- Develop competency in working individually or as a team in tutorials, in the field and the laboratory.
- Demonstrate professional behaviour in conduct with colleagues and staff, and the ethical handling of organisms.

### Assessment tasks

- Academic Integrity Modules
- Australian Scientist Summary
- Lab/Tute Prep Activities
- Practical Book Maintenance
- Scientific Report
- Mid-term Exam
- Final Exam
- Skills Tests

## Changes from Previous Offering

2016: Addition of Academic Integrity Module assessment and decrease in value of prac book assessment. Addition of 2 new On-campus sessions, and rescheduling of assessment task due dates.

2015: This is the first year that BIOL116 has been offered both Internally (Day) and Externally.

## Changes since First Published

Date	Description
24/02/2017	Hurdles updated.
21/02/2017	Update teaching co-ordinator details
13/02/2017	Change preferred contact of teaching coordinator