



BIOL188

Advanced Science (Biology) 1

FY1 Day 2018

Dept of Biological Sciences

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General Information

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Credit points

3

Prerequisites

Admission to BAdvSc and permission by special approval

Corequisites

Co-badged status

Unit description

This unit consists of weekly tutorials examining hot topics in biology with a variety of scientists from a diverse background. Students are expected to actively contribute during the tutorials and produce a presentation on their favourite topic of the year. Opportunities for research internships in biology are provided.

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:

Read, interpret and discuss major contributions to biological research published in the peer-reviewed literature.

Evaluate how the experimental design and approach of biological studies influences the validity and impact of conclusions.

Demonstrate skills in teamwork and collegial discussion.

Evaluate how effective your communication has been to an audience.

Communicate hot topics in biology for a non-specialist audience.

General Assessment Information

Unit completion requirements

Students must complete all the assessment tasks. A Satisfactory (or Participated) grade is required in each assessment task in order to pass this subject.

Assessment descriptions

Student learning in this unit is evaluated using two different systems:

Participation tasks are graded as Participated or Did not participate to indicate your level of engagement with learning opportunities. The weekly discussion groups and the weekly online questions track active participation rather than performance level. Similarly, active participation is required during “The Big Science Day Out” project.

Feedback assessment tasks allow evaluations of capability. Your written paper on a selected hot topic and your written report on the ‘Big Science Day Out’ project are feedback assessments. High standards are expected. You will be provided with feedback pointing to strengths and to potential for improvement in these assessments. They will be graded as Satisfactory or Unsatisfactory.

Preparation for, and Participation in Discussion Groups

Readings for each week’s meeting will be posted on the Advanced Biology iLearn space, along with at least one discussion question to think about. These readings and questions will be provided by the week’s presenter.

You will be required to prepare for the discussion groups by reading the required articles. Each week, you must then provide a brief (max 500 words) written response to the discussion question posed. The question will be posted on iLearn and answer can be submitted through the iLearn blog space for that week. You can submit your answer to the discussion question anytime until **9 am on the morning before the meeting**. This gives other participants opportunity to look at responses before the discussion meeting.

Attendance at discussion groups is compulsory and a roll will be marked. It is extremely important to prepare for each week’s discussion group. Students who have not read the required material may be asked to leave by the presenter, in which case they will be marked as absent. All students are expected to take part in the discussion.

Participation in group project and reflection upon it

(a) Scoping phase. During this phase the challenge will be to identify aspects of biology that are interesting to non-specialists, that are well-founded in current research and that can be successfully conveyed via the 'Science Race' where participants have to complete activities at your stations. Your participation will be assessed via group presentations on progress, project summaries, timely requests for materials and via observations by staff supervising the activities.

(b) Detailed design and implementation phase. During this phase, planning will be needed for individual stations during the Race. You will investigate the detailed science via reading and consulting experts, and you will road-test and overcome issues of implementation. Again, participation will be assessed via summaries, meetings and observations by staff supervising the activities.

(c) Written report reflecting on the group project (1000-1500 words, due week 8, Semester 2, at the end of the mid-session break). The purpose of this report is to assess how well the group project worked, what evidence there is to make that claim, and how the project might be improved in future. Here are examples of questions you might consider:

- How many people did the project reach or communicate with? How do you know this? How might this reach be widened?
- To what extent did participants learn something that they didn't previously know? To what extent were their values and motivations changed? What evidence do you have to make these claims, and what evidence would you like to collect if it were possible?
- How widely did the science that you communicated spread across different aspects of biology? For instance, to different groups of organisms, or different levels of function from molecular to ecosystem, or mechanistic versus evolutionary types of explanation?
- If in general you wanted to communicate science to schoolchildren, do you think The Science Race was a good way to do so, or can you think of better ways? In what aspects would they be better?
- Do you think that developing this project as a group produced an outcome that was better than if you had each worked individually? If so, how do you think that was brought about? Was it different sorts of knowledge or skills being complementary? Or different personality types? or cultural backgrounds?

Written paper on a hot topic

Word limit: 1500 words (excluding references)

Figures: no more than 2 Figures may be included.

This written paper gives you opportunity to enlarge on a particular topic you found exciting. It will arise from one or other of the hot topics discussed during the year, but it need not correspond exactly to that topic as formulated by the presenter.

Two alternative styles or formats are permitted:

(1) "News and Views" style article. These are a feature of the leading general-science journal

Nature (although other journals also feature similarly-styled pieces). They are targeted for a broad readership, not just specialists in that particular field. They are based on one or a few recent papers. Their role is to explain why these particular results are of broad interest and importance. They do this by summarizing the key questions and results, and putting them into a much broader context. You are strongly recommended to look at several examples in order to get a feel for the format.

(2) Article for The Conversation (<https://theconversation.com/au>). This is a website with a variety of contributors, mainly academics seeking to influence policy-makers, the thinking public and politicians. Again, your article should explain recent research results or an important concept that you believe should be more widely understood. In this format, the target audience is intelligent non-scientists more so than fellow-researchers. You are strongly recommended to look at several examples in order to get a feel for the format. Although contributions to The Conversation do not always carry referencing, for purpose of this assignment we would like you to cite following standard scientific-paper practice for facts or opinions attributable to others besides yourself.

You can discuss suitability of your topic and format with the Convenor. The paper is due by midnight on Friday of the last week of Semester 2 (the Friday before exams begin).

Assignment Submission

All assessments are to be submitted via iLearn. Your work may be submitted to the anti-plagiarism detection software (Turnitin) via iLearn. Your work will automatically be compared to work of your classmates, previous students from Macquarie and other universities, with material available on the Internet, both freely available and subscription-based electronic journals and book chapters. The results will be sent only to the unit convenor, who will analyse them with reference to the University's Policy on Academic Honesty.

Extensions and penalties

Deadlines for assignments are not negotiable. Late assignments will be penalised. Extensions are granted only on grounds of disruption to study policy, and appropriate supporting documentation must be submitted via ask.mq. All applications for special consideration or extension must be sought before the due date.

Work submitted after 3 weeks beyond the due date, or the date for which an extension has been given, will not be accepted. If you are having problems completing an assignment, please contact the Convenor as soon as possible.

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>weekly discussions</u>	40%	No	Weekly, 9 am each Tuesday
<u>written paper on hot topic</u>	20%	No	9 November 2018

Name	Weighting	Hurdle	Due
Group project scoping	10%	No	Week 8
group project design	20%	No	Week 9
Written report about project	10%	No	2nd October 2018

weekly discussions

Due: **Weekly, 9 am each Tuesday**

Weighting: **40%**

Preparation for and participation in weekly discussions. Each week read the required articles, contribute at the blog some response to the discussion question posed by the week's presenter (max 500 words), be prepared to participate constructively in the discussion.

On successful completion you will be able to:

- Read, interpret and discuss major contributions to biological research published in the peer-reviewed literature.
- Evaluate how the experimental design and approach of biological studies influences the validity and impact of conclusions.
- Demonstrate skills in teamwork and collegial discussion.

written paper on hot topic

Due: **9 November 2018**

Weighting: **20%**

A written paper (max 1500 words) in one of two possible formats, for different audiences. You should take one of the "hot topics" discussed during the year, and develop it into both a clear explanation and a forward vision of what might be possible in the future.

On successful completion you will be able to:

- Read, interpret and discuss major contributions to biological research published in the peer-reviewed literature.
- Evaluate how the experimental design and approach of biological studies influences the validity and impact of conclusions.
- Evaluate how effective your communication has been to an audience.
- Communicate hot topics in biology for a non-specialist audience.

Group project scoping

Due: **Week 8**

Weighting: **10%**

Group project scoping phase and test run.

assessed via a combination (a) Summary (one page) of activity and communication with project mentors and (b) observations of your contribution by staff during the project

On successful completion you will be able to:

- Demonstrate skills in teamwork and collegial discussion.

group project design

Due: **Week 9**

Weighting: **20%**

Group project detailed design and implementation phase.

assessed via a combination of (a) One page summary of activity and communication with project mentors and (b) observations of your contribution by staff during the project and c) demonstration of the activity to the class and mentors.

On successful completion you will be able to:

- Demonstrate skills in teamwork and collegial discussion.
- Communicate hot topics in biology for a non-specialist audience.

Written report about project

Due: **2nd October 2018**

Weighting: **10%**

Written report about group project.

assessed via effectiveness of the project in communicating good science and reflective statement on group work, the activity and your contributions to the team.

On successful completion you will be able to:

- Demonstrate skills in teamwork and collegial discussion.
- Evaluate how effective your communication has been to an audience.

Delivery and Resources

This unit is for students enrolled in the Advanced Science (Biology) Program. The Advanced Biology Program offers expansion and enrichment of the standard undergraduate curriculum. It is designed for students who have good grades in their regular Biology units and who have energy and curiosity to spare.

During the year, students meet with diverse academics, and are exposed to the advancing frontiers of research. Students will be challenged to think about topics where biological

knowledge is changing and advancing rapidly.

Learning and thinking about how new knowledge is acquired will help those students who might go on to become career researchers, but it will also be of great benefit to students who enter other fields, such as media, politics, government or business.

The first year (BIOL188) and third year (BIOL388) units meet for at least one hour on a weekly basis throughout the year. The timetable has a two hour session booked each week, so that we can extend discussions if the need arises. Most weeks will be discussions about hot topics and recent research advances in biology. These discussions will be led by researchers who work actively in these areas. Topic areas will include medical science, molecular biology, synthetic biology, ecology, evolution, palaeontology, and biology in the media, to name a few. Some speakers may choose to show you their laboratories and focus on research within their groups to enable you to see the research in the Department first hand.

Students will also participate in a group project to develop research-based material for Science Week at the Royal Botanic Garden as part of the 'Big Science Day Out'. This is an opportunity to meet researchers from science based industry and interpret research activities for communication to the general public. In some weeks, activities will revolve around this project.

- Successful completion of this unit will earn you 3 credit points.
- The unit is offered internally for a full year (FY1)

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#) (**Note:** *The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.*)

Undergraduate students seeking more policy resources can visit the [Student Policy Gateway](https://students.mq.edu.au/support/study/student-policy-gateway) (<https://students.mq.edu.au/support/study/student-policy-gateway>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/p) (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/p>

[olicy-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/study/getting-started/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://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 outcome

- Demonstrate skills in teamwork and collegial discussion.

Assessment tasks

- weekly discussions
- written paper on hot topic
- Group project scoping
- group project design
- Written report about project

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

- Read, interpret and discuss major contributions to biological research published in the peer-reviewed literature.
- Evaluate how the experimental design and approach of biological studies influences the validity and impact of conclusions.
- Demonstrate skills in teamwork and collegial discussion.
- Evaluate how effective your communication has been to an audience.
- Communicate hot topics in biology for a non-specialist audience.

Assessment tasks

- weekly discussions
- written paper on hot topic
- group project design
- Written report about project

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

- Evaluate how the experimental design and approach of biological studies influences the validity and impact of conclusions.
- Demonstrate skills in teamwork and collegial discussion.
- Evaluate how effective your communication has been to an audience.
- Communicate hot topics in biology for a non-specialist audience.

Assessment tasks

- weekly discussions
- written paper on hot topic

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

- Read, interpret and discuss major contributions to biological research published in the peer-reviewed literature.
- Evaluate how the experimental design and approach of biological studies influences the validity and impact of conclusions.
- Communicate hot topics in biology for a non-specialist audience.

Assessment tasks

- weekly discussions
- written paper on hot topic
- group project design

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

- Read, interpret and discuss major contributions to biological research published in the peer-reviewed literature.
- Evaluate how the experimental design and approach of biological studies influences the validity and impact of conclusions.
- Demonstrate skills in teamwork and collegial discussion.
- Communicate hot topics in biology for a non-specialist audience.

Assessment tasks

- weekly discussions
- written paper on hot topic
- group project design
- Written report about project

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

- Evaluate how the experimental design and approach of biological studies influences the validity and impact of conclusions.
- Demonstrate skills in teamwork and collegial discussion.
- Evaluate how effective your communication has been to an audience.

Assessment tasks

- weekly discussions
- written paper on hot topic

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

- Read, interpret and discuss major contributions to biological research published in the peer-reviewed literature.
- Evaluate how the experimental design and approach of biological studies influences the validity and impact of conclusions.
- Demonstrate skills in teamwork and collegial discussion.
- Evaluate how effective your communication has been to an audience.
- Communicate hot topics in biology for a non-specialist audience.

Assessment tasks

- weekly discussions
- written paper on hot topic
- Group project scoping
- Written report about project

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

- Demonstrate skills in teamwork and collegial discussion.
- Evaluate how effective your communication has been to an audience.

Assessment tasks

- weekly discussions
- Group project scoping
- Written report about project

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

- Demonstrate skills in teamwork and collegial discussion.
- Evaluate how effective your communication has been to an audience.

Assessment tasks

- weekly discussions
- Written report about project

Group activity - Big Science Day Out

In the last offering the group activity was run at Taronga Zoo (Wild Science Race). This year we will work with the Royal Botanical Gardens and the Australian Museum to co-develop and deliver the Big Science Day out.