BIOL711

Topics in Evolution

S1 Day 2015

Dept of Biological Sciences

Contents

General Information

Unit convenor and teaching staff
Unit Convenor
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E8B 209

Credit points
4

Prerequisites
Admission to MRes

Corequisites

Co-badged status

Unit description
Students will formulate a novel research question within a well-defined topic area, conduct a comprehensive review of the primary literature, synthesise this material to address their research question, and present their findings in oral and written forms. The best reviews will unite evidence from disparate areas to generate novel ideas and hypotheses. This unit provides an opportunity for students to learn about an area of scientific research that they may be unfamiliar with at the outset. The intention is to give students an opportunity to gain exposure to a research area that is completely unrelated to their masters research project. It also provides an opportunity for students to learn about the latest work in a wide variety of research areas through discussions and oral presentations presented by their peers. In the past, some literature reviews by students have been published in refereed scientific journals.

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:

- Advance skills in oral presentation of a scientific argument
- Develop skills in scientific writing
- Synthesise primary scientific literature
- Construct a scientific argument

Source and frame evidence to critique a scientific argument

Assessment Tasks

Name	Weighting	Due
Discussion participation	5%	Throughout
Proposal	15%	Thursday 30th April 4pm
Oral presentation	20%	Monday 18th May 1pm - 4pm
Literature Review	60%	Thursday 4th June 4pm

Discussion participation

Due: **Throughout**
Weighting: **5%**

Participation in class discussion (5%).

Students are required to attend the introduction meeting on the 21st of April and all seminars (date to be confirmed). Proactive participation in the discussions during these meetings is expected.

On successful completion you will be able to:

- Advance skills in oral presentation of a scientific argument
- Construct a scientific argument
- Source and frame evidence to critique a scientific argument

Proposal

Due: **Thursday 30th April 4pm**
Weighting: **15%**

Proposal (15%)

Produce a brief outline of your research topic detailing the question to be addressed, the sub-questions you will consider, an outline of the structure of your review, and six key references you intend to use. Maximum 1 side of A4 paper. The intention of this assessment task is to give early feedback to students on their planned project.

Your research plan will be assessed on

a) Formulation of a clear question and hypothesis;

b) Strength of supporting research;

c) Clarity of structure to the review;

d) Overall communication of your work.

On successful completion you will be able to:

- Develop skills in scientific writing
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- Construct a scientific argument
- Source and frame evidence to critique a scientific argument

Oral presentation

Due: **Monday 18th May 1pm - 4pm**
Weighting: **20%**

Oral presentation (20%)

You should deliver a 10-minute presentation of your research topic structured as an academic conference presentation, followed by a 5-minute period for questions. Your oral presentation should be accompanied by slides prepared in Powerpoint. This will be an open presentation, meaning any member of the university community may attend, and you should anticipate presenting to the majority of the Biology academic and student community. This should also be seen as an opportunity to gain constructive comment and feedback from your examiners and peers, which may improve your thesis.

In preparing your talk, consult the marking rubric (attached) to understand what examiners looking for in your talk.

Use the following checklist when developing your presentation

- Numbers of slides or overheads is reasonable for length of talk (rule of thumb is one slide per minute)
- Slides are clear and uncluttered (no more than 6 lines of text, at least 20 point font)
- Text is legible against the background
- Slides are interesting (text balanced with figures/illustrations)
- Figures / Tables etc are legible, and at an appropriate size and resolution
- Slides have been proofread and spell-checked
- Gimmicks such as complicated backgrounds and animation are used sparingly, or preferably not at all
- Talk runs for the allotted time
- Talk is well organized to provide a linear and coherent story
- You have checked that your talk will load up on the computer/projector beforehand

On successful completion you will be able to:

- Advance skills in oral presentation of a scientific argument
- Synthesise primary scientific literature
- Construct a scientific argument
- Source and frame evidence to critique a scientific argument

Literature Review

Due: **Thursday 4th June 4pm**
Weighting: **60%**

Literature Review/Opinion Piece (60%)

The literature review/opinion piece should be written and formatted as a submission-ready review paper in the style of an appropriate journal (eg Trends In Evolution and Ecology). Write your report for a scientifically literate but non-specialist audience. This must be fully referenced following the referencing style of the journal. The essay must not exceed 3,500 words excluding references. More information about formating your article can be found here: http://www.cell.com/trends/ecology-evolution/authors#1b

A good scientific review requires a clear definition of the problem and question, comprehensive coverage of relevant literature, a concise and unbiased summary of existing evidence, clear structure, precise spelling, grammar and use of written English and a conclusion that addresses the topic question.

You should cite at least 20 papers from the primary peer-reviewed literature in your review, but you may have to read considerably more than this to get a rounded idea of the topic. Emphasis should be placed on recent papers (last 5 years). In preparing your review, consult the standardised marking sheet (attached) to understand what features we are looking for and what mistakes you should avoid.

Use the following list when developing your essay

- Assignment is typewritten
- Text is double spaced, 12 point font in Times New Roman or Arial
- Text is printed on a single side of the paper
- Text is the required length (references not included in word count)
- Word Count is given on the Title page
- Text has been proofread and spell-checked
- References are reputable sources (not unrefereed web sites)
- References are cited at appropriate points within the text

- Formatting of references in the text and in the reference list follows the journal format
- Assignment is your own work – not copied from reference sources or other student
- Assignment submitted on time

On successful completion you will be able to:

- Develop skills in scientific writing
- Synthesise primary scientific literature
- Construct a scientific argument
- Source and frame evidence to critique a scientific argument

Delivery and Resources

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Unit Schedule

Unit Objective

"Topics in Evolution" is about getting students to think critically about the role of evolutionary processes in diverse biological phenomena and integrating mechanisms across time and levels of biological organization to form a coherent argument. We will be testing various skills, including: formulation of a well-defined topic area; retrieval of refereed papers on the subject; comprehension and coverage of the published material; synthesis of the diverse papers into a concise and coherent review; and ability to communicate these ideas in oral and written forms. The best theme topic literature review will unite evidence from disparate areas to formulate new ideas or hypotheses. In the past, some theme topic reviews have been submitted as sole-author papers to refereed journals, so this is not just another assessment exercise, but marks your transition from summarizing the thoughts of others to thinking critically and originally about a topic. The theme topic is designed to push you out of your comfort zone into an area that is not the same as your research project. It is also an opportunity to learn about the latest research in a wide variety of areas through the discussions and seminars presented by your peers.

This year the theme is entitled "In the Light of Evolution", Student will need to develop their own topic within this theme and identify a faculty mentor within the department who is willing to grade your essay and sit in on your oral presentation. After identifying your general subject area, you should refine your topic in consultation with your chosen mentor and other academic staff. The chosen topic must not be related to that chosen for BIOL799.

What kind of topics can be chosen?

Theodore Dobzhanksy (1964) noted that "nothing makes sense in biology except in the light of evolution." The key aspect of this theme is that it asks you to concentrate on the *evolutionary processes* that give rise to *contemporary phenomena*. In formulating a topic, you are free to

focus on any level of biological organization (genotype, phenotype, population, community, ecosystem).

Some examples are listed below. This list is by no means exhaustive.

Potential Topics	Academic Mentor
Animal signalling	K-Lynn Smith
Differences among species in their structural, chemical and physiological traits	Ian Wright
Evolution of communication	K-Lynn Smith
Evolution of colony shape (morphology) in colonial organisms	Josh Maddin
Evolution of visual structures (in insects) for dim light	Ajay Narendra
Functional ecology and ecological strategies of plants	Ian Wright
How will changes in rainfall timing affect plant ecology and evolution?	Melanie Zeppel
How does climatic variation affect animal reproductive physiology and behaviour?	Simon Griffith
How will climate change affect interactions between plants and insects?	Melanie Zeppel
Models of evolution for phylogenetics	Rob Lanfear
Rates of evolution	Rob Lanfear
Role of landscape heterogeneity in the evolution of animal navigation behaviour	Ajay Narendra
Somatic mutations in plants	Rob Lanfear
The (mis)behaviour of scientists	Rob Lanfear
The evolution of genome size	Rachael Gallagher
The evolution of range size in flora	Rachael Gallagher
The evolution of sociality in birds	Simon Griffith
"Unnatural evolution" of fish behaviour in harvested populations	Elizabeth Maddin

IMPORTANT DATES			
Tuesday 21st April	Initial meeting, explanation of theme topic & examples, discussion to choose choice topic areas	2:00pm - 3:00pm	EMC-G230
Monday 27th April	Round-table discussion on formulating questions, finding references, structuring literature review, writing proposal	1:00pm - 3:00pm	EMC-G240
Thursday 30th April	Proposal due [Hard copies submitted to Biology Department Office. Electronic copies submitted via Turnitin accessible through the ILearn website.]	4:00pm	
Monday 18th May	Seminars, attendance at all seminars is compulsory!	1:00pm - 4:00pm	E8A280 (Tearoom)

Thursday 4th June	Literature review due [Hard copies submitted to Biology Department Office. Electronic copies submitted via Turnitin accessible through the ILearn website.]	4:00pm	

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central. Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy http://mq.edu.au/policy/docs/assessment/policy.html

Grading Policy http://mq.edu.au/policy/docs/grading/policy.html

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

Grievance Management Policy http://mq.edu.au/policy/docs/grievance_management/policy.html

Disruption to Studies Policy http://www.mq.edu.au/policy/docs/disruption_studies/policy.html *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the Learning and Teaching Category of Policy Central.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/support/student_conduct/

Results

Results shown in *iLearn*, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au.

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to improve your marks and take control of your study.

- Workshops
- StudyWise
- Academic Integrity Module for Students
- Ask a Learning Adviser

Student Services and Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

IT Help

For help with University computer systems and technology, visit http://informatics.mq.edu.au/help/.

When using the University's IT, you must adhere to the Acceptable Use Policy. The policy applies to all who connect to the MQ network including students.

Graduate Capabilities

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 outcome

- Source and frame evidence to critique a scientific argument

Assessment tasks

- Discussion participation
- Proposal
- Oral presentation
- Literature Review

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 outcomes

- Advance skills in oral presentation of a scientific argument
- Develop skills in scientific writing

Assessment tasks

- Discussion participation
- Proposal
- Oral presentation
- Literature Review

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

- Advance skills in oral presentation of a scientific argument
- Develop skills in scientific writing
- Synthesise primary scientific literature
- Construct a scientific argument
- Source and frame evidence to critique a scientific argument

Assessment tasks

- Discussion participation
- Proposal
- Oral presentation
- Literature Review

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

- Develop skills in scientific writing
- Synthesise primary scientific literature
- Construct a scientific argument

- Source and frame evidence to critique a scientific argument

Assessment tasks

- Discussion participation
- Proposal
- Oral presentation
- Literature Review

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 outcomes

- Advance skills in oral presentation of a scientific argument
- Develop skills in scientific writing
- Synthesise primary scientific literature
- Construct a scientific argument

Assessment tasks

- Discussion participation
- Proposal
- Oral presentation
- Literature Review

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

- Synthesise primary scientific literature

Assessment tasks

- Proposal

- Oral presentation
- Literature Review