BIOL3110

Evolutionary and Conservation Genetics

Session 2, Infrequent attendance, North Ryde 2020

Department of Biological Sciences

Contents

General Information 2

Learning Outcomes 2

Assessment Tasks 3

Delivery and Resources 6

Policies and Procedures 7

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Notice

As part of Phase 3 of our return to campus plan, most units will now run tutorials, seminars and ot her small group learning activities on campus for the second half-year, while keeping an online ver sion available for those students unable to return or those who choose to continue their studies onli ne.

To check the availability of face-to-face and onlin e activities for your unit, please go to timetable vi ewer. To check detailed information on unit asses sments visit your unit's iLearn space or consult yo ur unit convenor.

General Information

Unit convenor and teaching staff Adam Stow adam.stow@mq.edu.au
Credit points 10
Prerequisites 130cp at 1000 level or above including BIOL2110 or BIOL206
Corequisites
Co-badged status
Unit description Ongoing advances in molecular technology, statistics and bioinformatics have revolutionized our ability to gather and apply genetic information. This unit deals with the distribution of genetic variation among individuals, populations and species, and the relevance of such variation to evolutionary processes. Specific topics include selection and adaptive potential; mutation; inbreeding; population divergence; speciation; effective population size and extinction risk. Approaches to the study of genetic variation are explored at levels ranging from pedigree analysis to molecular genomics. Particular emphasis is placed on the importance of evolutionary genetics to the conservation, management and restoration of wild populations.

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:

ULO1: Explain why and how genetic factors have key importance in conservation biology

ULO2: Explain the importance of genetic diversity, and identify the phenomena that influence and maintain genetic diversity in populations

ULO3: Identify and apply appropriate statistical formulae to solve questions in conservation and evolutionary genetics

ULO4: Apply conservation genetic theory in order to propose management strategies for both wild and captive populations

ULO5: Synthesise and evaluate information on contemporary topics in conservation and evolutionary genetics

Assessment Tasks

Name	Weighting	Hurdle	Due
Commentary Article	5%	Yes	21/8/20
Scientific Report	20%	No	16/10/20
Problem Tests	30%	No	Week 6 and Week 13
Seminar	15%	No	Week 9-10
Final Examination	30%	No	13/11/20

Commentary Article

Assessment Type [1]: Professional writing
Indicative Time on Task [2]: 6 hours
Due: **21/8/20**
Weighting: **5%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

You are required to write a short commentary article on a published paper dealing with genetic variation and conservation. This will require a short literature search to identify a relevant paper from among the leading journals in conservation genetics (incl. *Science, Nature, PNAS, PLOS biology, Evolution, Molecular Ecology, Conservation Biology, Conservation Genetics* + many others). You should then familiarize yourself with the paper and its methodologies and write a commentary in the style of those appearing in the 'Perspectives' section of the journal *Science*. This is an early assessment task, with assessment criteria weighted for participation and genuine effort (given the early stage of unit material delivery).You willsubmit this assignment via TURNITIN.

On successful completion you will be able to:

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- Synthesise and evaluate information on contemporary topics in conservation and evolutionary genetics

Scientific Report

Assessment Type [1]: Report
Indicative Time on Task [2]: 34 hours
Due: **16/10/20**
Weighting: **20%**

You are required to prepare a scientific manuscript based on the data analysed in the computer lab tutorial. Your manuscript should structured according to the author instructions for 'original articles' in the journal *Evolution*:

http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291558-5646/homepage/ForAuthors.html

This will be submitted via TURNITIN. Further information, discussion and resources (including a marking rubric) will be provided prior to and during the computer lab tutorial.

On successful completion you will be able to:

- Explain why and how genetic factors have key importance in conservation biology
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Problem Tests

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 16 hours
Due: **Week 6 and Week 13**
Weighting: **30%**

Students will submit two mathematical problem sets based tutorial work.

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Seminar

Assessment Type [1]: Presentation
Indicative Time on Task [2]: 8 hours
Due: **Week 9-10**
Weighting: **15%**

You are required to give an oral presentation using Powerpoint, based on one to several topical research paper(s) in conservation/ecological genetics. Conference presentations are a primary means of communicating knowledge in science, and these sessions will be conducted in the manner of a formal scientific conference. Time limits will be strictly enforced, and will constitute part of the assessment criteria for this task.

On successful completion you will be able to:

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- Synthesise and evaluate information on contemporary topics in conservation and evolutionary genetics

Final Examination

Assessment Type [1]: Examination

Indicative Time on Task [2]: 38 hours
Due: **13/11/20**
Weighting: **30%**

You will be tested on your knowledge of course content, including information from all lectures and tutorials, plus prescribed reading from the textbook (Frankham *et al.*) and other sources. No mathematical problem solving will be required in this examination. Check online (www.mq.edu.au) for scheduling updates towards the end of the teaching session.

On successful completion you will be able to:

- Explain why and how genetic factors have key importance in conservation biology
- Explain the importance of genetic diversity, and identify the phenomena that influence and maintain genetic diversity in populations
- Identify and apply appropriate statistical formulae to solve questions in conservation and evolutionary genetics
- Apply conservation genetic theory in order to propose management strategies for both wild and captive populations
- Synthesise and evaluate information on contemporary topics in conservation and evolutionary genetics

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[1] If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the Writing Centre for academic skills support.

[2] Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Unit materials will be available on iLearn™ (https://ilearn.mq.edu.au). This is the primary conduit for communication in this subject. Use it for:

- Regularly checking subject announcements and communications;
- Downloading lecture, laboratory and reference materials;
- Uploading Assignments to TURNITIN via embedded links;
- Checking your grades.

Your user name is your student number, and your password is your myMQ student portal password.

If you are having problems logging on, please contact Student IT Help, Phone: (02) 9850 4357 (in Sydney) or 1 800 674 357 (outside Sydney).

If you are having trouble accessing your online unit due to a disability or health condition, please go to the Student Enquiry Services website at http://www.student.mq.edu.au/ses/ for information on how to get assistance.

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). 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.)*

Students seeking more policy resources can visit the 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/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/study/getting-started/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) 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 or if you are a Global MBA student contact globalmba.support@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 help you improve your marks and take control of your study.

- Getting help with your assignment
- Workshops
- StudyWise
- Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

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

If you are a Global MBA student contact globalmba.support@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.