UNSW Course Outline

BIOS3171 Evolution - 2024

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General Course Information

Course Code : BIOS3171
Year : 2024
Term : Term 3
Teaching Period : T3
Is a multi-term course? : No
Faculty : Faculty of Science
Academic Unit : School of Biological, Earth and Environmental Sciences
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

BIOS3171 is a project-based course covering the core concepts and research techniques of modern evolutionary biology, including natural selection, evolutionary genetics, macroevolution, and applications of evolutionary ideas to practical questions such as human health. For their major assessment, students develop and carry out an independent research project, typically

involving data collection during a 5-day field-trip to Smith's Lake Field Research Station. Students then analyse their data, and write a manuscript in the style of a scientific research paper. Students also engage with pre-recorded lectures and attend in-person tutorials, which are designed to help students acquire the skills and knowledge necessary to carry out their independent project, and to familiarize students with the key ideas and approaches used in evolutionary biology.

Assumed Knowledge: BIOS2011 Evolutionary and Physiological Ecology

Course Aims

The aims of this course are:
(1) to prepare students for independent research at the Honours level (and possible HDR studies).
(2) to help students gain a deeper understanding of the core concepts of evolutionary biology.
(3) to help students learn evolutionary research techniques and improve their analysis skills.
(4) to help students improve their scientific communication skills.

Relationship to Other Courses

BIOS3171 students are assumed to have taken Level 1 and Level 2 biology courses (e.g. **BIOS1101** and **BIOS2011** or equivalent), and to be familiar with basic ecological and evolutionary concepts. BIOS3171 builds on concepts and skills acquired in Level 1 and Level 2 biology courses, and offers students an opportunity to apply those concepts and skills in carrying out their independent research project.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Develop an evolutionary research question and appropriate methodology.
CLO2 : Collect data to address evolutionary research questions.
CLO3 : Carry out an appropriate statistical analysis of the empirical data collected during the field-trip, and interpret the results in relation to the research question.
CLO4 : Communicate research findings in the format of a scientific article and video.

Course Learning Outcomes	Assessment Item
CLO1 : Develop an evolutionary research question and appropriate methodology.	• Quizzes • Research Paper • Research Project Outline
CLO2 : Collect data to address evolutionary research questions.	• Quizzes • Research Paper
CLO3 : Carry out an appropriate statistical analysis of the empirical data collected during the field-trip, and interpret the results in relation to the research question.	• Quizzes • Research Paper
CLO4 : Communicate research findings in the format of a scientific article and video.	• Research Video • Quizzes • Research Paper

Learning and Teaching Technologies

Moodle - Learning Management System

Learning and Teaching in this course

Many of the resources required to complete this course are availabe on Moodle.

Lectures are pre-recorded and available on Moodle. The lectures are PowerPoint files with narration. Students are advised to download these files and play them from their computer (playing the files directly from Moodle will reduce the quality of videos included in the lectures).

Lectures contain **questions** designed to test understanding. Students are encouraged to answer these questions (and check their answer using the hyperlink) before proceeding with the lecture. Answers to questions within the lectures are not graded.

Note: If the lectures fail to play, please update your version of MS Office from the UNSW software

distribution website.

Each week, optional **readings** are available on Moodle. The readings provide additional resources for students interested in exploring topics in greater depth. The readings also include studies that might be relevant to the independent projects.

Tutorials are face-to-face and are not recorded. Students are expected to attend all tutorials. Quizzes will be written and submitted during tutorials.

Students are also expected to attend the **5-day field-trip** to Smith's Lake Field Research Station in Week 6.

Additional Course Information

Strategies for success in this course:

1. Work through the weekly lectures and make sure that you understand the key ideas
2. Use feedback from instructors on the 1-page project outline to improve your research paper
3. Attend tutorials and participate in exercises and discussions, which are designed to help you understand key ideas and acquire skills necessary to complete the independent research project
4. Attend the 5-day field-trip to Smith's Lake Field Research Station and use the time productively to collect data for your independent research project
5. Read the primary scientific literature to familiarise yourself with concepts and information relevant to your research project, and cite the literature appropriately in writing your research paper
6. Write clearly, and proof-read your written work
7. Complete quizzes during weekly tutorials, and submit all assignments on time

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Quizzes Assessment Format: Individual	20%	
Research Paper Assessment Format: Individual Short Extension: Yes (3 days)	60%	
Research Project Outline Assessment Format: Individual	10%	
Research Video Assessment Format: Individual Short Extension: Yes (3 days)	10%	

Assessment Details

Quizzes

Assessment Overview

You will complete 9 short weekly quizzes. The quizzes are equally weighted and will help you to gauge your understanding and to review ideas from the lectures and tutorials. Correct answers will be provided at the end of each quiz.

Course Learning Outcomes

- CLO1 : Develop an evolutionary research question and appropriate methodology.
- CLO2 : Collect data to address evolutionary research questions.
- CLO3 : Carry out an appropriate statistical analysis of the empirical data collected during the field-trip, and interpret the results in relation to the research question.
- CLO4 : Communicate research findings in the format of a scientific article and video.

Detailed Assessment Description

Quizzes will be written duting tutorials.

Assessment Length

10 questions

Submission notes

In class

Assessment information

Quizzes can cover material from that week's lectures and tutorial, as well as any material

covered in previous weeks of this course. The quizzes will include multiple choice and short-answer questions.

Assignment submission Turnitin type

Not Applicable

Generative AI Permission Level

No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.
For more information on Generative AI and permitted use please see here.

Research Paper

Assessment Overview

Based on the research question and methodology that you have outlined and the feedback from your instructors, you will collect data during the field-trip to Smith's Lake Field Research Station. You will analyse and interpret your data, with assistance from your instructors and demonstrators during the field-trip and during the Week 7 tutorial. You will then write a report in the form of an empirical research paper (due in Week 10). The tutorial in Week 5 is designed to help you develop your skills in scientific writing and referencing.

To help you complete your research paper, you will submit a draft of the paper in Week 8, and will receive feedback on this draft by Week 9. The draft is worth 10% of the course mark, and the completed research paper is worth an additional 50% (60% total).

Individual written feedback on the final submission will be provided within two weeks.

Course Learning Outcomes

- CLO1 : Develop an evolutionary research question and appropriate methodology.
- CLO2 : Collect data to address evolutionary research questions.
- CLO3 : Carry out an appropriate statistical analysis of the empirical data collected during the field-trip, and interpret the results in relation to the research question.
- CLO4 : Communicate research findings in the format of a scientific article and video.

Detailed Assessment Description

This assessment is worth a combined 60% of the course mark

Assessment Length

The research paper should be up to 2,500 words (not including the reference list).

Submission notes

Please submit the Research Paper Draft through the Turnitin link provided. Please submit your data file, R code, and completed Research Paper using the Turnitin link provided.

Assessment information

- The link to submit the **Research Paper** will consist of three parts:
  - Research Paper (including figures, tables, and Referece list)
  - Data
  - R code

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

Generative AI Permission Level

Planning/Design Assistance

You are permitted to use generative AI tools, software or services to generate initial ideas, structures, or outlines. However, you must develop or edit those ideas to such a significant extent that what is submitted is your own work, i.e., what is generated by the tool, software or service should not be a part of your final submission. You should keep copies of your iterations to show your Course Authority if there is any uncertainty about the originality of your work.
If your Convenor has concerns that your answer contains passages of AI-generated text or media that have not been sufficiently modified you may be asked to explain your work, but we recognise that you are permitted to use AI generated text and media as a starting point and some traces may remain. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.
For more information on Generative AI and permitted use please see here.

Detailed guidelines and advice on use of generative AI in BIOS3171 will be provided on Moodle.

Research Project Outline

Assessment Overview

You will submit an outline of the proposed research question and methodology for your independent research project. The outline will be one page in length, and will be due in Week 4.

The tutorials in Weeks 2, 3 and 4 are designed to help you develop your research question and methodology.

You will receive feedback on the outline prior to the field-trip.

Course Learning Outcomes

- CLO1 : Develop an evolutionary research question and appropriate methodology.

Detailed Assessment Description

A one-page outline of the research project will be submitted, and feedback will be provided, prior to the field-trip to Smith's Lake Field Research Station. The purpose of the 1-page outlines is to help students formulate their research questions and design their studies.

Assessment Length

One page (not including reference list)

Submission notes

A Turnitin link will be provided.

Assessment information

This assessment provides an opportunity for students to get feedback on their research question and study design prior to the field-trip. Students are strongly encouraged to read the feedback and take it into account when collecting their data during the field-trip. An incorrectly designed experiment or observational study makes it extremely difficult or impossible to analyse the data and get meaningful results.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

Generative AI Permission Level

Simple Editing Assistance

In completing this assessment, you are permitted to use standard editing and referencing functions in the software you use to complete your assessment. These functions are described below. You must not use any functions that generate or paraphrase passages of text or other media, whether based on your own work or not.
If your Convenor has concerns that your submission contains passages of AI-generated text or media, you may be asked to account for your work. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.

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Research Video

Assessment Overview

You will prepare a short (up to 5-min) video explaining the research question, methodology and findings from your research project. The task is due in Week 8.

The video will be assessed by your peers and instructors. You will be assessed on the clarity and effectiveness of your video as a means of communicating scientific ideas in an accessible way.

Feedback will be provided within two weeks of submission.

Course Learning Outcomes

- CLO4 : Communicate research findings in the format of a scientific article and video.

Detailed Assessment Description

This short video (up to 5 min) should provide an overview of your research question and methodology. You should document your data collection in the field at Smith's Lake Field Research Station by taking photos and making short videos, and use these in your video to show and explain your research methodology. Your video should communicate clearly how your methodology will enable you to address your research question.

You are encouraged to try to make your video creative, engaging, and accessible to a non-expert audience. However, you will not be assessed on your video-editing skills.

Additional information and resources for this assignment are available on Moodle.

Assessment Length

Up to 5 minutes

Submission notes

Upload your video to YouTube and submit the link as a text file through Turnitin. Make sure that you set your video to be visible to other people who have the link (e.g. use the "Unlisted" option).

Assessment information

Additional information and resources for this assignment are available on Moodle.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students do not see Turnitin similarity reports.

Generative AI Permission Level

No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.
For more information on Generative AI and permitted use please see here.

Detailed guidelines and advice on the use of generative AI in BIOS3171 will be provided on Moodle.

General Assessment Information

This is a project-based course: 80% of the course mark is based on the **independent research project**.

The independent research project involves each student (1) developing a research question, (2) submitting a 1-page research project outline, (3) collecting data, (4) analysing the data, and (5) writing a research paper.

Students also make a brief video explaining their research question and methodology.

The remaining 20% of the course mark is based on quizzes that test understanding of material in pre-recorded lectures and face-to-face weekly tutorials.

Grading Basis

Standard

Requirements to pass course

To pass this course, students need to:

(1) Work through each week's **pre-recorded lecture(s)** on their own time prior to the face-to-face tutorial. The lectures provide an overview of key concepts and examples required to complete the quizzes. The concepts and examples covered in the lectures are also useful to students in carrying out their independent projects.

(2) Attend weekly **face-to-face tutorials** and participate in the discussions and activities. The tutorials provide an opportunity to clarify concepts from lectures. Some tutorials focus on key skills, such as scientific writing and statistical analysis, that students require to complete their independent projects. Students are expected to attend all tutorials.

(3) Complete the **quizzes**.

(4) Attend the **5-day field-trip to Smith's Lake Field Research Station** during Week 6. During this field-trip, students collect data for their independent research projects, and to document their work by making photos and videos. This field-work component of the course provides students with an opportunity to do interesting research on a question of their choice.

(5) Submit **assessments** on time. There is a penalty of 10% per day for late submission.

(6) Consider **written and verbal feedback** from the instructors on their 1-page research project outline, and use this feedback in carrying out their research project. The activities and assessments in this course are designed to help students develop key skills.

(7) Students are strongly encouraged to participate in group and class discussions during tutorials.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 9 September - 15 September	Module	Lectures: • 1A: Selection, drift and environment • 1B: Speciation and the history of life on Earth Tutorial: • Overview of the course • Exercise on selection, drift, and environment • Exercise on phylogenetic inference Readings
Week 2 : 16 September - 22 September	Module	Lectures: • 2A: Adaptation • 2B: Plasticity and development Tutorial: • Exercise on adaptation • Introduction to potential research projects Assigned: • Research Paper • 1-page research outline Quiz: Week 2 Readings
Week 3 : 23 September - 29 September	Module	Lectures: • 3A: Sexual selection • 3B: Sexual conflict Tutorial: • Examples of evolutionary studies Quiz: Week 3 Readings
Week 4 : 30 September - 6 October	Module	Lectures: • 4A: Genetics and genomics • 4B: Nongenetic inheritance Tutorial: • Exercise on designing experiments Quiz: Week 4 Readings
Week 5 : 7 October - 13 October	Module	Lectures: • 5: Evolution of sex Tutorial: • Exercise on scientific writing and citation Due: • 1-page research project outline (DUE 7/10) Quiz: Week 5 Readings
Week 6 : 14 October - 20 October	Fieldwork	Lectures: None Tutorial: None Activity: Field-trip to Smith's Lake Field Research Station
Week 7 : 21 October - 27 October	Module	Lectures: • 7A: Life history • 7B: Evolution of ageing Tutorial: • Exercise on data analysis and presentation of results Quiz: Week 7 Readings
Week 8 : 28 October - 3 November	Module	Lectures: • 8A: Human evolution 1 • 8B: Human evolution 2 Tutorial: • Exercise on life histories and ageing • Exercise on human evolution Due: • Research video (DUE: 28/10) Quiz: Week 8 Readings
Week 9 : 4 November - 10 November	Module	Lectures: • N/A Tutorial: • Exercise on trade-offs and life history evolution • Peer-marking of videos Quiz: Week 9 Readings

Week 10 : 11 November - 17 November	Module	Lectures: • 10: Evolutionary medicine Tutorial: • Exercise on applying evolutionary concepts • Thinking about the future: Honours, PhD, and careers in research Due: • Research paper (DUE: 11/11) Quiz: Week 10 Readings

Attendance Requirements

Students are expected to attend weekly face-to-face **tutorials** (except in Week 6).

Students are also expected to attend the **5-day field-trip** to Smith's Lake Field Research station in Week 6.

General Schedule Information

Please note that course materials will be made available in separate folders for each week on Moodle. Detailed instructions for all assessments, and Turnitin links, will also be posted on Moodle in the **Assessments** folder.

There is a penalty for late submission.

Course Resources

Prescribed Resources

Pre-recorded lectures (on Moodle)

Recommended Resources

The recommended textbook is: Futuyma, D. and Kirkpatrick, M. *Evolution*

Extra readings (in weekly folders on Moodle)

Additional Costs

There is a fee to cover costs of transportation and food for the field-trip to Smith's Lake Field Research Station. The fee is based on current costs, and students will be informed of the exact amount prior to the field-trip.

Course Evaluation and Development

Students are encouraged to provide feedback on the course through MyExperience responses.

Students are especially encouraged to write comments explaining what they liked about the course, and what could be improved, and to provide any other ideas that they might have on how to make this course more effective and enjoyable. MyExperience scores and comments are considered carefully by the course convener, and revisions are made to the course each year to address students' concerns and suggestions.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Russell Bondu riansky		E26 room 5101			No	Yes

Other Useful Information

Academic Information

Upon your enrolment at UNSW, you share responsibility with us for maintaining a safe, harmonious and tolerant University environment.

You are required to:

- Comply with the University's conditions of enrolment.
- Act responsibly, ethically, safely and with integrity.
- Observe standards of equity and respect in dealing with every member of the UNSW community.
- Engage in lawful behaviour.
- Use and care for University resources in a responsible and appropriate manner.
- Maintain the University's reputation and good standing.

For more information, visit the UNSW Student Code of Conduct Website.

Academic Honesty and Plagarism

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism.
Further information about referencing styles can be located at https://student.unsw.edu.au/referencing

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness, respect, responsibility and courage. At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.
Further information about academic integrity, plagiarism and the use of AI in assessments can be located at:

- The Current Students site,
- The ELISE training site, and
- The Use of AI for assessments site.

The Student Conduct and Integrity Unit provides further resources to assist you to understand your conduct obligations as a student: https://student.unsw.edu.au/conduct

Submission of Assessment Tasks

Penalty for Late Submissions

UNSW has a standard late submission penalty of:

- 5% per day,
- for all assessments where a penalty applies,
- capped at five days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

Any variations to the above will be explicitly stated in the Course Outline for a given course or assessment task.

Students are expected to manage their time to meet deadlines and to request extensions as early as possible before the deadline.

Special Consideration

If circumstances prevent you from attending/completing an assessment task, you must officially apply for special consideration, usually within 3 days of the sitting date/due date. You can apply by logging onto myUNSW and following the link in the My Student Profile Tab. Medical documentation or other documentation explaining your absence must be submitted with your application. Once your application has been assessed, you will be contacted via your student email address to be advised of the official outcome and any actions that need to be taken from there. For more information about special consideration, please visit: https://

student.unsw.edu.au/special-consideration

Important note: UNSW has a “fit to sit/submit” rule, which means that if you sit an exam or submit a piece of assessment, you are declaring yourself fit to do so and cannot later apply for Special Consideration. This is to ensure that if you feel unwell or are faced with significant circumstances beyond your control that affect your ability to study, you do not sit an examination or submit an assessment that does not reflect your best performance. Instead, you should apply for Special Consideration as soon as you realise you are not well enough or are otherwise unable to sit or submit an assessment.

Faculty-specific Information

Additional support for students

- The Current Students Gateway
- Student Support
- Academic Skills and Support
- Student Wellbeing, Health and Safety
- Equitable Learning Services
- UNSW IT Service Centre
- Science EDI Student Initiatives, Offerings and Guidelines