



Course Outline

BIOS3171

Evolution

Biological, Earth and Environmental Sciences

Faculty of Science

T3, 2021

1. Staff

| Position | Name | Email | Consultation times and locations |
|------------------------------|----------------------|--|---|
| Course Convenor and Lecturer | Russell Bonduriansky | r.bonduriansky@unsw.edu.au | By appointment, Biological Sciences room 5101 |
| Lecturer | Michael Kasumovic | m.kasumovic@unsw.edu.au | By appointment, Biological Sciences room 5105 |

2. Course information

Units of credit: 6

Pre-requisite(s): Evolutionary and Physiological Ecology - BIOS2011

Teaching times and locations (please see the Course Schedule for additional details):

Lectures: posted online to do on your own time before the tutorial each week

Tutorials: Tuesdays 11am - 2pm (online)

<http://timetable.unsw.edu.au/2021/BIOS3171.html>

2.1 Course summary

BIOS3171 Evolution is an advanced course covering the core concepts and research techniques of modern evolutionary biology. This course is also designed to help students develop their scientific communication skills. Students have the opportunity to learn hands-on by making observations and collecting biological data. Students will analyse their data, write a research paper, and create a short video to communicate their findings.

2.2 Course aims

To prepare students for independent research at the Honours level (and possible HDR studies)

To help students to gain a deeper understanding of the core concepts of evolutionary biology

To help students learn evolutionary research techniques and improve their analysis skills

To help students improve their scientific communication skills

2.3 Course learning outcomes (CLO)

At the successful completion of this course you (the student) should be able to:

1. Be able to apply key concepts of evolutionary biology and generate valid evolutionary research questions
2. Be able to collect and analyse biological data using established techniques of evolutionary research
3. Be able to write a scientific paper
4. Be able to communicate their findings through a video targeted at a broad audience

3. Strategies and approaches to learning

3.1 Learning and teaching activities

On-line classes will include lectures and discussions of foundational concepts, and activities designed to help students with their major project (i.e., data analysis, writing). Each week, students will do a quiz designed to help students gauge their understanding of the material.

Students will also submit the Evolutionary Film Criticism Assignment. This assessment is designed to help students understand and apply evolutionary concepts.

Research project:

Students will collect data, carry out a statistical analysis, and write an empirical research paper on their results. Students will also make a research video. The major project and video assignment will help students to deepen their understanding of evolutionary ideas, learn to analyse and interpret data, and improve their scientific communication skills.

3.2 Expectations of students

Students will be expected to work through online lectures on their own time prior to the tutorial each week, attend all on-line tutorials, and to participate in class discussions. Students will also be expected to submit their assessments on time according to the instructions provided.

Lectures will be posted on Moodle, and students are responsible for working through these lectures prior to the tutorial each week. Class discussions and exercises will be conducted using Zoom (provided on Moodle), and will not be recorded. Students who miss class therefore risk missing out on important information and skills, and doing poorly on their assessments. Students will also be expected to complete a Moodle quiz each week. Quizzes will test students' understanding of topics covered in lectures and online classes.

During classes and in lectures, students will learn skills and concepts that will be essential in carrying out their independent projects. Students are expected to devote time outside of weekly classes to their assessments. Students should discuss their research topic and plan with their instructors.

During class discussions and group work, we ask students to turn on their video so everyone can see each other. Being able to see your peers contributes to an interactive classroom environment.

4. Course schedule and structure

| Week [Date/Session] | Topic [Module] | Activity [Learning opportunity] | Related CLO |
|---------------------------|---|--|-------------|
| Week 1 | Basic evolutionary concepts | Class discussion, Quiz | 1 |
| Week 2 | Adaptation and development | Class discussion, Quiz | 1 |
| Week 3 | Sexual selection | Class discussion, Quiz DUE: Evolutionary Film Criticism | 1 |
| Week 4 | Genetics and heredity Designing research studies | DUE: Research Paper outline | 1 |
| Week 5 | Evolution of sex Research methods in evolutionary biology | Class discussion, Quiz | 1, 2, 3, 4 |
| Week 6 (Flexiweek) | Question/answer session | Individual data collection | 1, 2, 3 |
| Week 7 | Life history evolution Analysing data and writing a research paper | Class discussion, Quiz | 4 |
| Week 8 | Human evolution | Class discussion, Quiz DUE: Research Video | 1, 2, 3, 4 |
| Week 9 | Parent-offspring conflict | Class discussion, Quiz DUE: Research Paper | 1 |
| Week 10 | Applying evolutionary ideas Thinking about the future | Class discussion, Quiz | 1 |

5. Assessment

5.1 Assessment tasks

| Assessment task | Length | Weight | Mark | Due date (normally midnight on due date) |
|---|--|-----------|-------------------------------------|--|
| Assessment 1: Evolutionary Film Criticism | 1 page | 10% | 20 | Week 3 |
| Assessment 2: Research Video | 5-min video | 10% | 20 | Week 8 |
| Assessment 3: Research Paper (including 1-page proposal) | Proposal: 1 page Paper: 2,500 words | 60% | 10 (proposal) + 50 (paper) = 60 | Outline due week 4 Paper due week 9 |
| Assessment 4: Weekly quizzes | 10 questions | 20% total | 9 x 10 = 90 | Weeks 1, 2, 3, 4, 5, 7, 8, 9, 10 |

Further information

UNSW grading system: <https://student.unsw.edu.au/grades>

UNSW assessment policy: <https://student.unsw.edu.au/assessment>

5.2 Assessment criteria and standards

Evolutionary Film Criticism

| Assessment criteria | Marks |
|---|-----------|
| Original and interesting critique | 4 |
| Demonstrates understanding of at least one evolutionary principle | 10 |
| Engagingly written, with correct grammar and spelling | 6 |
| TOTAL | 20 |

Research Video

| Assessment criteria | Marks |
|---|-----------|
| <p>Content</p> <ul style="list-style-type: none"> - Presents the research question in an interesting, logical manner. - Explains technical concepts in an easy-to-understand manner, without being condescending - Provides enough background that the audience understands why the question is important. - Evidence of your own ideas and/or critical thought - Demonstrates a clear understanding of the processes by which evolution works. | 10 |
| <p>Video style</p> <ul style="list-style-type: none"> - Avoids jargon - Enthusiasm. Sounds interested in the topic and holds the audience's interest - Eye contact with the audience (if applicable) | 5 |
| <p>Quality of video</p> <ul style="list-style-type: none"> - Appropriate length - Images are used properly - Any text isn't obtrusive, and if used, easily read - Does not use excessive animation or have spelling mistakes - Visually appealing layout without the feeling of being hurried | 5 |
| TOTAL | 20 |

Option 1: Research paper (based on data that you obtained)

| Assessment criteria | Marks |
|---|-----------|
| 1-page Proposal Outlines a clear research question, explains why the question is interesting and important, proposes a suitable methodology, written in good scientific English | 10 |
| Title - Appropriate title that summarizes the aims of the project | 1 |
| Abstract - Clear summary of the question, methods and findings | 4 |
| Introduction - Explains why this research is necessary and how it will improve our understanding of the field. - Articulates a clear research question | 10 |
| Methods - Clearly outlines how the data were collected - Clearly explains how the data were analysed - Explains why the methods are appropriate to answer the research question | 10 |
| Results - Clearly describes what was found - Reports statistical results (if any) correctly | 10 |
| Discussion - Links results back to the research question posed in the Introduction - Places findings in broader context of previous research - Clearly connects the findings to evolutionary principles | 10 |
| References - Cites at least 6 (preferably 10) relevant references to provide background for your project - Uses referencing and in-text citations correctly, and in an appropriate and consistent format | 5 |
| TOTAL | 60 |

Option 2: Research grant application

| Assessment criteria | Marks |
|--|-----------|
| 1-page Proposal Outlines a clear research question, explains why the question is interesting and important, proposes a suitable methodology, written in good scientific English | 10 |
| Title - Appropriate title that summarizes the aims of the project | 1 |
| Background - A coherent outline of existing knowledge showing what is <u>not</u> yet known and why it's important to fill this gap in knowledge | 9 |
| Research aims (or question) - Articulates clear research aims (or a clear research question) - Clear outline of predictions (if any) | 10 |
| Methods - Clearly outlines how the data were collected - Clearly explains how the data were analyzed - Explains why the methods are appropriate to answer the research question | 10 |
| Anticipated outcomes and interpretation - Clearly outlines what the research project will achieve - Describes possible outcomes from the research, and explains how these outcomes will be interpreted | 10 |
| Benefit and importance - Links results back to the research question posed in the Introduction - Clearly connects the findings to evolutionary principles - Explains why the proposed research is important (e.g., what valuable knowledge it will provide, or what practical outcomes it might lead to) | 5 |
| References - Cites at least 6 (preferably 10) relevant references to provide background for your project - Uses referencing and in-text citations correctly, and in an appropriate and consistent format | 5 |
| TOTAL | 60 |

Weekly quizzes (9 quizzes)

Correct answers to questions.

5.3 Submission of assessment tasks

The Evolutionary Film Criticism assignment and Research Paper will be submitted through Turnitin.

The Research Video will be uploaded to Youtube, and students will email the link to their video to the lecturers. Make sure that your video is designated as "Public" so that other people can see it!

5.4. Feedback on assessment

Written feedback will be provided through Turnitin on the Evolutionary Film Criticism assignment, the 1-page project proposal, and the Research Paper. Rubrics showing the breakdown of marks will also be provided to students.

The Research Video will be marked by your peers and lecturers, and feedback will be provided during class and in written form. The rubric will also be returned to students with their marks.

6. Academic integrity, referencing and plagiarism

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.¹ 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 and **plagiarism** can be located at:

- The *Current Students* site <https://student.unsw.edu.au/plagiarism>, and
- The *ELISE* training site <http://subjectguides.library.unsw.edu.au/elise/presenting>

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

Students will be expected to use the referencing style of the journal *Evolution*.

7. Readings and resources

Required readings will be provided on Moodle. The textbook *Evolution* 4th edition (D. Futuyma and M. Kirkpatrick) is recommended as a resource. This textbook is available from the UNSW bookshop.

¹ International Center for Academic Integrity, 'The Fundamental Values of Academic Integrity', T. Fishman (ed), Clemson University, 2013.

8. Administrative matters

| | |
|--|---|
| <p>School information</p> | <p>School website: http://www.bees.unsw.edu.au/</p> <p>Questions regarding courses, enrolment, programs etc. Web Forms Enquire Now</p> <p>Director, Teaching & Learning: A/Prof. Stephen Bonser</p> <p>School Student Integrity Advisers (SSIA): A/Prof. Stephen Bonser or Prof. Alistair Poore</p> <p>Head of School: Prof. Alistair Poore</p> |
| <p>Occupational Health and Safety</p> | <p>Information on relevant Occupational Health and Safety policies and can be found on the following website: http://www.bees.unsw.edu.au/health-and-safety</p> <p>UNSW OHS Home page: http://safety.unsw.edu.au/</p> |
| <p>Equity and Diversity</p> | <p>Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course Convenor prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equity and Diversity Unit (9385 4734 or http://www.studentequity.unsw.edu.au/).</p> <p>Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.</p> |
| <p>Student complaint procedure</p> | <p>http://student.unsw.edu.au/complaints</p> <p>School contact</p> <p>A/Prof. Scott Mooney</p> <p>Faculty contact</p> <p>A/Prof Chris Tisdell, Associate Dean (Education) cct@unsw.edu.au, Tel: 9385 6792</p> <p>University contact</p> <p>Student Conduct and Appeals Officer (SCAO) within the Office of the Pro-Vice-Chancellor (Students) and Registrar. Email studentcomplaints@unsw.edu.au</p> |

9. Additional support for students

- The Current Students Gateway: <https://student.unsw.edu.au/>
- Academic Skills and Support: <https://student.unsw.edu.au/academic-skills>
- Student Wellbeing, Health and Safety: <https://student.unsw.edu.au/wellbeing>
- Disability Support Services: <https://student.unsw.edu.au/disability-services>
- UNSW IT Service Centre: <https://www.it.unsw.edu.au/students/index.html>

BIOS3171 Outline at a Glance

Tutorials: Tuesdays 11am-2pm ONLINE (see Moodle for Zoom link)
Lectures: Online, on your own time (prior to the tutorial each week)

Note: Students are required to attend all tutorials, and to work through the lectures prior to the tutorial each week. Attendance will be taken. There will be a quiz each week. Tutorials involve interactive, problem-based, and “flipped classroom” learning activities. Data for the Research Paper will be collected individually by the students on their own time. Skills required to analyse the data and write the Research Paper will be taught during weekly tutorials. Resources provided on-line cannot not replace these learning activities. Students who miss tutorials (without a valid excuse) are therefore unlikely to pass the course.

Week 1: Tutorial-Basic concepts

Week 2: Tutorial-Basic concepts

Week 3: Tutorial-Evolutionary research
DUE: Evolutionary film criticism

Week 4: Designing research and collecting data

Week 5: Tutorial-Research methods in evolutionary biology

Week 6: Question/Answer session; individual data collection

Week 7: Tutorial-Analysing data and writing a research paper

Week 8: Tutorial-Human evolution and life history
DUE: Research Video

Week 9: Tutorial-Parent-offspring conflict; video peer-marking
DUE: Research Paper

Week 10: Tutorial-Applying evolutionary ideas

Assessments:

| | |
|--|------------|
| Evolutionary film criticism (1-page): | 10% |
| Research Video: | 10% |
| Research Paper (including 1-page outline): | 60% |
| Quizzes (weeks 1-10 combined): | <u>20%</u> |
| | 100% |