



Course Outline

BIOS2500

Evolution and the Modern World

Biological, Earth and Environmental Sciences

Faculty of Science

Term 2, 2022

1. Staff

Position	Name	Email	Consultation times
Convenor	Scientia Professor Rob Brooks	rob.brooks@unsw.edu.au	Email*
Lecturer	Professor Shinichi Nakagawa	s.nakagawa@unsw.edu.au	Email*
Lecturer	Assoc. Professor Michael Kasumovic	m.kasumovic@unsw.edu.au	Email*

* We are often working from home. We will reply to your emails during work hours, and perhaps not immediately.

2. Course information

Units of credit: 6

Pre-requisite(s): None

Teaching times and locations:

On your timetables you will have two classes, a “Lecture” on Tuesday at 9am-11am, and a “Workshop” on Tuesday (12-2pm – on-line), or Wednesday (2-4pm – in-person).

“Lecture” and “Workshop” are nominal descriptions of the classes. Look at what is scheduled on the timetable for a given class. In some weeks a lecture is scheduled in the slot of the Tuesday 12-2 pm online Workshop. In any class scheduled as “Lecture”, we will have an online question and answer session about the lecture, which I will have recorded and uploaded a week before the class. You should watch the recorded lecture and come to the class with questions. If you can’t make the class, send your questions to the week’s lecturer via email. We will record these discussions, but you benefit much more from seeing them live.

In weeks 5 and 10 there will be online tests in the Tuesday 9am lecture timeslot. Keep an eye on Moodle for more information about the tests.

2.1 Course summary

Evolution shaped the living world, from the coronavirus to millions-strong colonies of leaf-cutter ants, and from simple sessile invertebrates to conscious and highly cultural humans. Darwin’s insight that evolution happens by natural selection remains, in the words of philosopher Daniel Dennett, “the most important idea anybody ever had”. Unfortunately, only a small proportion of people ever gain more than a superficial understanding of natural selection and how evolution works. And that can be problematic given the important insights that evolution provides into the most difficult and persistent problems that plague 21st Century living, including viral pandemics, antibiotic resistance, obesity, overpopulation, income inequality, gender inequity and the ideological warfare that surround sex and family life.

2.2 Course aims

This course introduces students from all areas of the university to the power of evolutionary thinking, and how to use it responsibly to understand modern life and the controversial issues that inhere to it. In addition to introducing the original - often counterintuitive - insights evolution provides, we explore the relationships between evolutionary, social, cultural and economic processes.

2.3 Course learning outcomes

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

1. Provide a mature and complete explanation of how natural selection works. This will include recognising and countering common arguments against evolution.
2. Explain to an interested layperson how evolutionary processes and evolved traits interact with cultural, economic and social dimensions of human behaviour.
3. Display a capacity to use evolutionary concepts and insights responsibly, alongside other understandings of how behaviour develops and is expressed, in order to understand important phenomena that impact human society. Includes an avoidance of the pitfalls of determinism, and the impulse to take sides in a spurious nature vs nurture dichotomy.
4. Demonstrate ability to write tight and engaging English prose about issues of concern to society and their relation to evolution.
5. Display developed literacy and communication skills using scientific information in ways that are accessible to the educated lay public.

3. Strategies and approaches to learning

3.1 Learning and teaching activities

The types of teaching employed in this course are as follows:

Lecture: These will be pre-recorded on video for you to watch at a time that suits you *before* the scheduled discussion class time for that lecture. There will be assigned reading, listening and/or videos for each lecture.

Lecture discussion: In the scheduled class time (usually Tuesday 9-11am, but sometimes also/instead Tuesday 12-2pm, see timetable below) there will be an active discussion, led by the lecturer, on a videoconferencing platform (links provided in Moodle). The lecturer will have a plan for the discussion, but you should come with questions that occur to you as you review the video lecture, and read/view/listen to the week's learning materials. In weeks 2, 4, 7 & 9, when lecture discussions occur in the 2-4pm online workshop timeslot, there will be no class in the Wednesday in-person workshop timeslot. So if you are in the Wednesday workshop group and cannot make it, please send the lecturer your questions ahead of time.

Workshop: These will usually require some preparation *before* the scheduled class time. You will participate in exercises and discussions with the lecturer via a videoconferencing platform.

For both online workshops and lecture discussions, the platform/meeting will open on the hour and class activity will begin at 5 past. So make sure to login promptly. Links to login will be provided in the week-by-week instructions. Classes will end when discussion and/or planned exercises are complete, but plan your other obligations so that you can attend the full 2-hour class.

Students will also participate in independent research, reading, and assignment work outside of class. Lecturers will provide some guidance on readings. These form a starting point. The subject of the course is broad and can seem all-encompassing at times, given our stated aim to understand our modern lives and world with the help of concepts from evolutionary science. Students may find a great deal that is of interest outside the suggested readings, and they are always encouraged to share them on the Moodle tools or in class discussions for this purpose.

The major assignment is an essay which will require some critical reading, planning and writing. We will provide opportunities in some workshop periods to discuss the steps involved in the assignment and to support you as you work on this important piece of assessment. The rest of the course assessment will take the form of two short tests (Tests) run online during the lecture time. These are designed to test your understanding of key concepts covered in class and the reading material.

3.2 Expectations of students

The main platform for course materials will be Moodle. From time to time you will be directed to resources outside of Moodle that you need to use for the course. That might include logging in to another site ahead of a class time. Please check Moodle regularly for instructions on upcoming classes.

Students are expected to attend all classes: the lecture discussion and their assigned workshop session every week. Changes of workshop session can be made for a given week by prior email arrangement with the lecturer responsible.

Students are expected to prepare for lecture period online discussions by viewing the assigned videos and viewing/reading assigned materials. Students are expected to attend online classes prepared, motivated, and willing to participate, and to think about the highly conceptual subject and its relevance to modern life.

Workshops are interactive events, and students are expected to be active throughout the duration of the workshop. You might be dismissed from the workshop before the end of the class time in some weeks, but this should not be seen as standard practice: expect to be in the virtual class for the full 2 hours.

Handheld devices: Course activities will often involve the use of handheld devices (smartphones or tablets) with connection to the Internet. We will advise you of any software apps you need to install, but please be sure to have a browser (e.g. Chrome or Safari) and a QR Code reader installed on your device to make things easier.

There is no examination for this course.

4. Course schedule and structure

This course consists of ~48 hours of class contact hours. You are expected to take an additional 48 hours of non-class contact hours to complete assessments, readings and class preparation.

Week	Activity	Lecturer
1	Lecture 1: Course Introduction; Natural selection & human evolution	RB
	Workshop: Exploring natural selection: <i>Eat, Prey, Live</i>	MK
2	Lecture 2: Diet and the obesity crisis	RB
	Lecture 3: Population growth, overpopulation, poverty & economic development	RB
3	Lecture 4: Sexual selection and human mating systems	RB
	Workshop: Essay preparation – topic choice and argument structure	RB
4	Lecture 5: Sexual conflict	RB
	Lecture 6: Violence, homicide and property crime	RB
5	Test 1 in Lecture period	
	Workshop: Sexual selection game (<i>Spinder</i>)	MK
6	No formal teaching this week	
7	Lecture 7: Arms races, infectious diseases, parasites and pharmaceuticals	SN
	Lecture 8 & Workshop: Deception and self-deception: plagiarism, placebos & plane crashes	SN
8	Lecture 9: Parent-offspring conflict	RB
	Workshop: Essay preparation and writing workshop	RB
9	Lecture 10: Living fast and slow: development, poverty and social environments	RB
	Lecture 11: Dying, growing old and falling apart	RB
10	Test 2 in the lecture period 11am-1pm	RB
	Workshop: Life-history trade-offs, & Parenting game (<i>Hungry Birds</i>).	MK

5. Assessment

5.1 Assessment tasks

Assessment task	Length	Weight	Due date
Assessment 1: Test 1	60 minutes	25%	Week 5 lecture period Tuesday 28 June
Assessment 2: Test 2	60 minutes	25%	Week 10 lecture period Tuesday 2 August
Assessment 3: Short Essay	1500 word maximum	50%	Monday 8 August 11.59pm

Tests 1 and 2

(Worth 25% of the Course Mark each; total = 50%).

Information about the format of each Test, including the content to be examined and the mode of examination will be provided in lecture classes and on the course Moodle site at least one week prior to the Test. You are being assessed on your understanding of concepts covered in lectures, prac/tute exercises and reading

Essay – A Contemporary News Story from an Evolutionary Perspective

Discuss how a concept from evolutionary biology provides insight into a current or recent news event. The news story or event must have appeared in the news on or after 1 June 2021. Your job is to *explain to a recent high school graduate who has heard of evolution but not taken a course like this one how the concept/s from evolution help to make sense of what happened in the news story or how that story was interpreted by the media and the public.* The evolutionary concept should have been discussed in the course; if you are not sure about the relevance of the concept please discuss in the workshops in weeks 3 and 8.

Components

You will submit your essay via the course's online portal. Your essay will include the following. Make sure that i to iii are presented at the top of your submission before you step into the essay (iv) itself.

- i. **Title** for your essay. This should be informative and attention-grabbing.
- ii. Name the **key evolutionary concept** or concepts involved. Can be a single concept, or multiple.
- iii. **Source material** concerning the original story (e.g. URL to a relevant news articles that drew your attention to the story) dated on or after 1 June 2021.
- iv. Your **essay**. This should be written in an engaging and interesting way, using simple language and sentence structures, and well-structured paragraphs. The body of the essay should not exceed 1500 words. Use numbered references (eg. [1]) to refer to published papers, website articles, YouTube videos etc. Normally these would be hyperlinks in your article.
- v. Numbered **references** (see above). Please check your numbered call-outs match your references above. You need to cite at least four academic papers.
- vi. A **word count** for part iv.

Mark Breakdown

As this is a rich exercise in original writing, there is no marking rubric, only an area-based breakdown of marks. Marks will be allocated as follows:

Non-essay components (i-iii, v-vi above)	5 marks
Essay	
- Your introduction to the news story	5 marks
- Argument	20 marks
- Essay writing & style	20 marks

You will be assessed on how well you explain to the reader the evolutionary concepts and on how creative, interesting and insightful your analysis of the news story/event is.

Your essay should include an introduction to the salient parts of the news story: the actual story being reported on, not necessarily the account that you refer to in ii, unless the account is an important aspect of your analysis. Usually (but not in every case) this introduction will fit best at or near to the beginning of the article. There are 5 marks for this specific part of the essay.

Your argument includes the account you give of the evolutionary concepts and how you explain to your reader how evolutionary knowledge makes sense of the news story. Although we are concerned with coherence and accuracy of your interpretation, we are more interested in the way you argue your case. In most cases, only further scientific research will be able to settle if your argument is correct. But if you could write an article that led to new predictions, and thus to a productive new stream of research or new angles in public debate and policy development, then you will have done a great service.

So take care in choosing the news story well. Take time to explain the relevant concepts, but make it part of the argument. Tracts quoted from textbooks, or definitions of terms do not suit an essay of this nature.

Essay Writing & Style

Your essay should be of a level you might read in *The Conversation*, *Slate*, or *Huffington Post*.

This is both an exercise in critical analysis and in communicating effectively. In science communication, if you don't articulate yourself well, then your ideas, no matter how excellent, will not get the readers you need. So aim to use active verbs, simple sentences, short words, and short (usually 2-4 sentence) paragraphs.

Pay attention to people, places, events, and actions. These are the elements of narrative storytelling make your essay relatable and make it clear what is really involved. *Do not* copy a journalist's narrative, but *do* quote people and describe events involved, with proper attribution of quotes to their original source, to help make your case in an

Reading Ease

A higher score indicates easier readability; scores usually range between 0 and 100.

Readability Formula	Score
Flesch-Kincaid Reading Ease	64.4

Grade Levels

A grade level (based on the USA education system) is equivalent to the number of years of education a person has had. A score of around 10-12 is roughly the reading level on completion of high school. Text to be read by the general public should aim for a grade level of around 8.

Readability Formula	Grade
Flesch-Kincaid Grade Level	7.3
Gunning-Fog Score	9.6
Coleman-Liau Index	11.1
SMOG Index	7.1
Automated Readability Index	6.2
Average Grade Level	8.3

Text Statistics

Character Count	2,007
Syllable Count	675
Word Count	439
Sentence Count	36
Characters per Word	4.6
Syllables per Word	1.5
Words per Sentence	12.2

interesting way. And do not cobble together a range of definitions and lists of abstract concepts.

As the writing coaches all say “Show, don’t tell”.

We suggest you use some of the excellent on-line tools like <https://readability-score.com> to assess your readability and the statistics that affect it.

To the right I provide the readability.com analysis of this section of the course description as an illustration.

Your essay will ideally be at or just below Grade 12 (Average Grade Level), with a reading ease of 50 or higher. Your average sentence length should not exceed 20, and syllables per word should be around 1.4-1.7. Meeting these recommendations will not guarantee your article is well-written, but if you are not meeting these recommendations it may be because your sentences are too convoluted, you are using jargon, or too many weak verbs like “is”, “are”, “was”, “has” and “have”. So use it as a guide to help improve your writing.

Well-written essays take time to plan, write, and edit. Spend the time necessary to turn in a well-written piece: *we expect a lot from you*. And make use of the time during workshops to ask advice on topic choice, planning and building an argument.

Plagiarism

You are required to submit your own, original work for this assignment, and to understand and comply with the University’s plagiarism policy (<https://www.gs.unsw.edu.au/policy/documents/plagiarismpolicy.pdf>). Because you will be relying on published news stories and the work of journalists, you need to take special care to ensure that you acknowledge their contributions appropriately. Failing to acknowledge the ideas and work of others, and colluding with other students, past and present, on this assignment will be taken seriously and may result in severe penalties. Your work will be run through various plagiarism detection tools and may be submitted to such tools for archiving.

Lying and deception, including self-deception are actually fascinating evolutionary phenomena, and we will discuss these issues from an evolutionary point of view in class. You get a chance to implement your learning by not plagiarising or fooling yourselves.

Submitting your Essay

You are required to submit your essay before 11.59pm on Monday 9 August. The link and instructions for submission, including plagiarism checks, will be posted on the course Moodle site by 16 July.

No paper copies or emailed copies of your assignment will be accepted.

You have the entire semester to work on this assignment, and there is no reason to be late in your submission except in circumstances that would be worthy of special consideration. The School of Biological, Earth and Environmental Sciences mandates a loss of 10% of the assignment maximum value per day or part thereof that an assignment is late, and a mark of zero if an assignment is more than 7 calendar days late. These penalties will be applied.

5.2 Special consideration

If you miss one of the Tests, have to leave a Test due to illness, or are late in submitting your essay, then you will need to apply for special consideration. UNSW offers special consideration when illness, misadventure, or other circumstances prevent you from meeting a course requirement, preclude attending an assessable activity, prevent timely submission of assessable work, or impair your performance in an assessment.

If any of these pertain to you then please read the university's guidelines on Special Consideration, available at <https://student.unsw.edu.au/special-consideration> and then, if applicable, submit your application through myUNSW as explained in the "How to Apply" section on that website.

Note that formal application for Special must be made "as soon as practicable after the problem occurs and within 3 working days of the assessment to which it refers".

Special consideration will not be granted through any other pathway.

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>.

8. Administrative matters

All communications from lecturers regarding the course will be provided through the BIOS2500 Moodle website. You are expected to login to the site regularly and to ensure you are receiving any notifications that might be sent by the Moodle site.

If you have queries or would like to contact the convenor or one of the other lecturers, then please do so via email in the first instance.

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>

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

