



## UNSW Course Outline

# BIOS1101 Evolutionary and Functional Biology - 2024

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## General Course Information

**Course Code :** BIOS1101

**Year :** 2024

**Term :** Term 2

**Teaching Period :** T2

**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

This course examines the evolutionary history of life on earth from origins of humans and the relationship between environment and adaptation. Students examine the diversity of life across the animal and plant kingdoms, learning about classification, adaptation and basic structure and

form. Animal (particularly human) and plant physiology are covered with an emphasis placed on adaptation in the Australian context. No prior knowledge is required. This is a blended course. The weekly laboratory classes are face-to-face and lectures are online.

## Course Aims

The aims of the course are:

1. To engender an appreciation of the processes and causes of evolution which have led to the spectacular diversity of living organisms on the planet.
2. To study the physiology of major organ systems of animals with an emphasis on vertebrates.
3. To relate structure to growth patterns, development, and reproduction in higher plants.

For those students who intend to continue studying Biology, this course provides the basic information (the assumed knowledge) for higher level courses in the Biological Sciences

# Course Learning Outcomes

| Course Learning Outcomes   |
|--|
| CL01 : Use evidence from the fossil record and the living world to explain evolution, evolutionary processes, and the diversity of life on earth.  |
| CL02 : Identify and classify living organisms into higher order evolutionary groupings.  |
| CL03 : Relate plant and animal anatomy, physiology and reproduction to function, adaptation and environment.   |
| CL04 : Perform fundamental biological laboratory skills including microscopy, biological drawing, dissection, tissue sectioning, tissue staining, and microscope slide preparation to accomplish first-hand scientific investigations. |

| Course Learning Outcomes   | Assessment Item   |
|--|---|
| CL01 : Use evidence from the fossil record and the living world to explain evolution, evolutionary processes, and the diversity of life on earth.  | <ul style="list-style-type: none"><li>• Practical test</li><li>• Practical exercises</li><li>• Final exam</li></ul> |
| CL02 : Identify and classify living organisms into higher order evolutionary groupings.  | <ul style="list-style-type: none"><li>• Practical test</li><li>• Practical exercises</li><li>• Final exam</li></ul> |
| CL03 : Relate plant and animal anatomy, physiology and reproduction to function, adaptation and environment.   | <ul style="list-style-type: none"><li>• Practical test</li><li>• Practical exercises</li><li>• Final exam</li></ul> |
| CL04 : Perform fundamental biological laboratory skills including microscopy, biological drawing, dissection, tissue sectioning, tissue staining, and microscope slide preparation to accomplish first-hand scientific investigations. | <ul style="list-style-type: none"><li>• Practical test</li><li>• Practical exercises</li></ul>                      |

## Learning and Teaching Technologies

Moodle - Learning Management System

## Learning and Teaching in this course

There are four major components to this course:

- 1) Lectures which outline the main elements of evolution and functional biology. Lectures are primarily given by academics from the School of Biological, Earth and Environmental Sciences.
- 2) Practical classes which provide "hands on" experience teaching the basic skills of dissections, phylogeny, classification, physiology, and biological identification. There are 7 set practical

classes.

- 3) Assessments which are designed to enhance skills such biological drawing, understanding of evolution, and understanding of physiology and functional adaptations.
- 4) Assessments which are designed to assess students understanding of the theory content provided in the lectures. This is examined by a final exam.

## Additional Course Information

Each week, there will be three (3) lectures available online for the students via the BIOS1101 T2 Moodle page. One of these three lectures can be attended in-person every week, but it will be recorded and put online with the rest. Students can access this content via the interactive timetable. It is up to the student to make time to watch and listen to the weekly content provided, as well as prepare their own study notes. Staying on top of this content will help students in their understanding of assessment material and will also help students stay engaged with the course. The content from lectures is examined via a final exam in Inspira during the exam time period.

The practical aspect of this course is so important that participation in practical classes is a fundamental requirement for the award of a pass. During each practical class, time is spent working on assignments for the course. If you miss a practical class, you may miss out on valuable information required for the completion of your assignments. Any student who misses more than one practical class and does not provide a medical certificate to cover any such absence may be awarded an unsatisfactory failure (UF) grade for having failed to complete essential elements of their assignments for the subject.

## Assessments

### Assessment Structure

| Assessment Item   | Weight | Relevant Dates |
|---|--------|----------------|
| Practical test<br>Assessment Format: Individual                                       | 15%    |                |
| Practical exercises<br>Assessment Format: Individual<br>Short Extension: Yes (3 days) | 35%    |                |
| Final exam<br>Assessment Format: Individual   | 50%    |                |

# Assessment Details

## Practical test

### Assessment Overview

You will be tested on your understanding of plant and animal form and function, and how variability in form and function is associated with adaptation across environments.

The test is in-person in the last scheduled practical of the term, and will be on material observed and techniques used in the practicals throughout the term. The test will be set up as a series of stations in the laboratory where each station will have a specimen and a question on that specimen. You will receive your test marks one week after the test.

### Course Learning Outcomes

- CL01 : Use evidence from the fossil record and the living world to explain evolution, evolutionary processes, and the diversity of life on earth.
- CL02 : Identify and classify living organisms into higher order evolutionary groupings.
- CL03 : Relate plant and animal anatomy, physiology and reproduction to function, adaptation and environment.
- CL04 : Perform fundamental biological laboratory skills including microscopy, biological drawing, dissection, tissue sectioning, tissue staining, and microscope slide preparation to accomplish first-hand scientific investigations.

### Detailed Assessment Description

For the practical exam, you will have practical specimens set out at various stations around the room. You will be required to answer questions related to the specimens at each station. A practical exam is a bit like musical chairs, when the bell rings- you move to the next station. The exam will take place during class in week 10. There will be 20 questions which covers practical lab content.

## Practical exercises

### Assessment Overview

You will be required to partake in practical tasks where you will be assessed on your ability to identify structures, and answer questions relating to form, function, and adaptation. There is also an introductory exercise covering scientific theory, the theory of evolution and natural selection.

There are three practical exercises:

Exercise 1 is a tutorial and quiz covering scientific theory, the theory of evolution and natural selection. This exercise is worth 5% and is completed online in week 3. Correct answers are

released at the completion of this task.

Exercise 2 is a dissection worksheet. You will be required to produce a biological drawing of a dissected rat and toad, identify organs and structures and answer questions related to form and function. This exercise is worth 15% and completed in class in week 5.

Exercise 3 is a Darwinian plant demon worksheet.

You will be required to use your understanding of form, function, adaptation, and plant plasticity to create a theoretical Darwinian plant demon. This exercise is worth 15% and submitted online in week 8.

For exercises 2 and 3, feedback is delivered in the form of written comments, marking rubrics and one on one time with markers.

### **Course Learning Outcomes**

- CL01 : Use evidence from the fossil record and the living world to explain evolution, evolutionary processes, and the diversity of life on earth.
- CL02 : Identify and classify living organisms into higher order evolutionary groupings.
- CL03 : Relate plant and animal anatomy, physiology and reproduction to function, adaptation and environment.
- CL04 : Perform fundamental biological laboratory skills including microscopy, biological drawing, dissection, tissue sectioning, tissue staining, and microscope slide preparation to accomplish first-hand scientific investigations.

## **Final exam**

### **Assessment Overview**

This exam will test your understanding of the concepts and theory covered in the lecture components of the course. The exam takes place during the official university examination period and consists of 50 multiple choice questions.

Feedback is available through inquiry with the course convenor.

### **Course Learning Outcomes**

- CL01 : Use evidence from the fossil record and the living world to explain evolution, evolutionary processes, and the diversity of life on earth.
- CL02 : Identify and classify living organisms into higher order evolutionary groupings.
- CL03 : Relate plant and animal anatomy, physiology and reproduction to function, adaptation and environment.

# General Assessment Information

## Grading Basis

Standard

## Course Schedule

| Teaching Week/Module       | Activity Type | Content   |
|----------------------------|---------------|---|
| Week 1 : 27 May - 2 June   | Laboratory    | Evolution and Natural Selection   |
|                            | Lecture       | L1. What is evolutionary and functional biology<br>L2. Origins and early evolution of life<br>L3. Specialised cells 1 |
| Week 2 : 3 June - 9 June   | Lecture       | L4. Specialised cells 2<br>L5. Feeding and digestion in animals<br>L6. Evolution and evidence for it                  |
|                            | Laboratory    | Animal Diversity, Unity and Classification  |
| Week 3 : 10 June - 16 June | Lecture       | L7. The evolution of humans<br>L8. Humans conserving evolution  |
|                            | Assessment    | Lab Assessment 1: Scientific theory/ natural selection quiz 5%  |
| Week 4 : 17 June - 23 June | Lecture       | L9. Adaptation and behaviour<br>L10. Digestion and nutrition<br>L11. Circulation and gas exchange                     |
|                            | Laboratory    | Morphology and Anatomy of Anura (Toad) and Histology  |
| Week 5 : 24 June - 30 June | Lecture       | L12. Animal Reproduction<br>L13. Animal Nervous Systems<br>L14. Animal hormones                                       |
|                            | Laboratory    | Morphology and Anatomy of Mammal(Rat) and Histology   |
|                            | Assessment    | Lab Assessment 2: Biological Drawing 15%<br>Takes place in your lab class   |
| Week 7 : 8 July - 14 July  | Lecture       | L15. Plants life on land<br>L16. Reproduction 1<br>L17. Reproduction 2  |
|                            | Laboratory    | Plant Diversity and form (from water to land)   |
| Week 8 : 15 July - 21 July | Lecture       | L18. Plant form and internal architecture<br>L19. Plasticity<br>L20. Plant responses to enemies                       |
|                            | Laboratory    | Reproduction in Angiosperms   |
| Week 9 : 22 July - 28 July | Lecture       | L21. Transport 1<br>L22. Transport 2  |
|                            | Laboratory    | Plant plasticity  |
|                            | Assessment    | Lab Assessment 3: Design A Plant Demon 15%  |

## Attendance Requirements

The practical aspect of this course has mandatory attendance. During each practical class, time is spent working on assignments for the course. If you miss a practical class, you may miss out on valuable information required for the completion of your assignments. Any student who misses more than one practical class and does not provide a medical certificate to cover any such absence may be awarded an unsatisfactory failure (UF) grade for having failed to complete essential elements of their assignments for the subject.

# General Schedule Information

There are weekly hybrid (online & in-person) lectures in forms. Additionally, there are weekly in-person practicals. Please see moodle for a detailed course schedule.

## Course Resources

### Prescribed Resources

Course manual

BIOS 1101 Evolutionary & Functional Biology. Available on the Moodle course page.

### Textbooks

There are no textbooks for this course.

### Recommended Resources

Reece, J. B., Meyers, N., Urry, L. A., Cain, M. L., Wasserman, S. A., & Minorsky, P. V. (2015). *Campbell Biology Australian and New Zealand Edition* (Vol. 10). Pearson Higher Education AU.

You will have access to particular scientific papers suggested by individual lecturers.

A biological dictionary can be very useful. The campus book shop usually has several different dictionaries. Highly recommended is "Henderson's Dictionary of Biology 14th edition (2008)

Pearson:

Benjamin Cummings".

Other useful materials, including additional readings, recommended internet sites, and societies, will

be provided via the Moodle page

## Course Evaluation and Development

### Practical Exercises

You will be required to partake in practical tasks where you will be assessed on your ability to identify structures, and answer questions relating to form, function, and adaptation. There is also an introductory exercise covering scientific theory, the theory of evolution and natural selection.

There are three practical exercises:

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selection. This exercise is worth 5% and is completed online in week 3. Correct answers are released at the completion of this task.

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### Practical test

You will be tested on your understanding of plant and animal form and function, and how variability in form and function is associated with adaptation across environments.

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### Final Exam

This exam will test your understanding of the concepts and theory covered in the lecture components of the course. The exam takes place during the official university examination period and consists of 50 multiple choice questions.

Feedback is available through inquiry with the course convenor.

## Staff Details

| Position | Name               | Email | Location | Phone | Availability | Equitable Learning Services Contact | Primary Contact |
|----------|--------------------|-------|----------|-------|--------------|-------------------------------------|-----------------|
|          | Anastasia Shavrova |       |          |       |              | No                                  | Yes             |
|          | Stephen Bonser     |       |          |       |              | No                                  | No              |

# 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 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. 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](#)