BIOX3510
Vertebrate Biology and Behaviour
Session 1, In person-scheduled-infrequent, North Ryde 2024
School of Natural Sciences

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General Information

Unit convenor and teaching staff
Culum Brown
culum.brown@mq.edu.au

Credit points
10

Prerequisites
130cp at 1000 level or above including BIOX2210 or BIOX2310

Corequisites

Co-badged status
Biol3510

Unit description
Evolution is a dynamic process that has occurred over many millions of years (deep evolution) and continues to this day (contemporary evolution) shaping all aspects of vertebrate biology. This unit considers the major events in vertebrate evolution: invertebrate chordate to vertebrate; jawless to jawed; water to land; ectothermy to endothermy; and land to air. The newly emerging synthesis of evolutionary and developmental biology is having considerable impact on current vertebrate evolutionary theory, as are molecular techniques for constructing phylogenies. These topics are discussed in relation to deep and contemporary evolution of vertebrate groups. Lecture topics also discuss the main traits associated with each group of vertebrates including anatomy, physiology, brains and behaviour. The practical work reinforces the lectures by focussing on the comparative anatomy, morphology and behaviour of representative vertebrate groups.

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: Apply taxonomic nomenclature to vertebrate groups
ULO2: Relate anatomical and behavioural traits to the diversity of key vertebrate species
ULO3: Associate the major steps in vertebrate evolution to behaviour, body form and physiological function
ULO4: Evaluate different methods for determining evolutionary relationships
ULO5: Classify vertebrate behaviour to functional roles and interactions at community levels
ULO6: Communicate scientific information relevant to vertebrate biology in oral and in written format

Assessment Tasks

<table>
<thead>
<tr>
<th>Name</th>
<th>Weighting</th>
<th>Hurdle</th>
<th>Due</th>
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</thead>
<tbody>
<tr>
<td>Weekly activities</td>
<td>10%</td>
<td>No</td>
<td>Weekly</td>
</tr>
<tr>
<td>Science Communication</td>
<td>10%</td>
<td>No</td>
<td>24/03/2024</td>
</tr>
<tr>
<td>Prac Report</td>
<td>20%</td>
<td>No</td>
<td>26/05/2024</td>
</tr>
<tr>
<td>Prac Notes</td>
<td>20%</td>
<td>No</td>
<td>02/06/2024</td>
</tr>
<tr>
<td>Exam</td>
<td>40%</td>
<td>No</td>
<td>To be announced</td>
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Weekly activities
Assessment Type: Quiz/Test
Indicative Time on Task: 6 hours
Due: Weekly
Weighting: 10%

You will demonstrate your understanding of important concepts and current themes in Vertebrate evolution.

On successful completion you will be able to:
- Apply taxonomic nomenclature to vertebrate groups
- Relate anatomical and behavioural traits to the diversity of key vertebrate species
- Associate the major steps in vertebrate evolution to behaviour, body form and physiological function
- Evaluate different methods for determining evolutionary relationships
- Classify vertebrate behaviour to functional roles and interactions at community levels

Science Communication
Assessment Type: Media presentation
Australia is a country of extremes and many of our animals are superbly adapted to cope. Working in small groups, students will pick an Australian native animal to study and highlight the key adaptations that have enabled that animal to live in the harsh Australian environment. The group will put together a science communication project to present their findings to the class.

On successful completion you will be able to:

- Apply taxonomic nomenclature to vertebrate groups
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- Associate the major steps in vertebrate evolution to behaviour, body form and physiological function
- Classify vertebrate behaviour to functional roles and interactions at community levels
- Communicate scientific information relevant to vertebrate biology in oral and in written format

**Prac Report**

Assessment Type: Report
Indicative Time on Task: 30 hours
Due: 26/05/2024
Weighting: 20%

The practical report requires your utmost attention during both the ‘rat dissection’ and ‘wildlife dissection’ practicals. As a class, we will be examining the relationship between an organism’s internal morphology and its ecology. The work will culminate in you producing a scientific paper that places these findings in an evolutionary context. Finer details on the details of the practical exercises and the report to be submitted will be provided on iLearn.

On successful completion you will be able to:

- Apply taxonomic nomenclature to vertebrate groups
- Relate anatomical and behavioural traits to the diversity of key vertebrate species
- Associate the major steps in vertebrate evolution to behaviour, body form and physiological function
- Evaluate different methods for determining evolutionary relationships
As a good scientist it is paramount that you learn to keep an accurate record of your experiments and activities. This usually takes the form of a lab book. Throughout this course you will be exposed to a series of lab exercises which involves examination of a LOT of different material. These lab notes should not only consolidate your understanding of each prac but also provide a good resource for review. (I still have my lab notes from my Vertebrate Evolution course from 1993!) It is expected that you will create a word document in which you will paste pictures, diagrams and notes that you take during the practical sessions. The lab “book” will be submitted via iLearn for review after prac 5 and prac 10, but will be reviewed during each prac session.

On successful completion you will be able to:

- Apply taxonomic nomenclature to vertebrate groups
- Relate anatomical and behavioural traits to the diversity of key vertebrate species
- Associate the major steps in vertebrate evolution to behaviour, body form and physiological function
- Evaluate different methods for determining evolutionary relationships
- Classify vertebrate behaviour to functional roles and interactions at community levels

The final exam will cover both lecture and practical material

On successful completion you will be able to:
Apply taxonomic nomenclature to vertebrate groups
Relate anatomical and behavioural traits to the diversity of key vertebrate species
Associate the major steps in vertebrate evolution to behaviour, body form and physiological function
Evaluate different methods for determining evolutionary relationships
Classify vertebrate behaviour to functional roles and interactions at community levels

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

We recommend that students read the text book (Pough et al Vertebate Life) for this unit in association with the lectures. In addition, completing the weekly quizzes each week will ensure that you stay up to date with the lecture content.

All lectures will be recorded and available on iLearn but students must come in to complete the practicals.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policies.mq.edu.au). 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
- Assessment Procedure
- Complaints Resolution Procedure for Students and Members of the Public
- Special Consideration Policy

Students seeking more policy resources can visit Student Policies (https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.
To find other policies relating to Teaching and Learning, visit [Policy Central](https://policies.mq.edu.au) and use the search tool.

**Student Code of Conduct**

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: [https://students.mq.edu.au/admin/other-resources/student-conduct](https://students.mq.edu.au/admin/other-resources/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](http://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

**Academic Integrity**

At Macquarie, we believe academic integrity – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free online writing and maths support, academic skills development and wellbeing consultations.

**Student Support**

Macquarie University provides a range of support services for students. For details, visit [http://students.mq.edu.au/support/](http://students.mq.edu.au/support/)

**The Writing Centre**

The Writing Centre provides resources to develop your English language proficiency, academic writing, and communication skills.

- Workshops
- Chat with a WriteWISE peer writing leader
- Access StudyWISE
- Upload an assignment to Studiosity
- Complete the 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**

Macquarie University offers a range of Student Support Services including:
Student Enquiries
Got a question? Ask us via AskMQ, or contact Service Connect.

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.

Unit information based on version 2024.01R of the Handbook.