

# BIOS 2006 COMPARATIVE PHYSIOLOGY

**Credit Points** 10

**Legacy Code** 300838

**Coordinator** Sebastian Holmes ([https://directory.westernsydney.edu.au/search/name/Sebastian Holmes/](https://directory.westernsydney.edu.au/search/name/Sebastian%20Holmes/))

**Description** Building on the underlying physical and chemical principals/laws that define physiology, this unit from both a systems (e.g. Respiratory) and environmental (e.g. Marine) perspective, seeks to compare the functional physiology of organisms at all levels of organisation. Particular attention will be paid to respiration, temperature tolerance & regulation, living in water, sensory and neurophysiology. Students will have the opportunity to carry out a defined research project.

**School** Science

**Discipline** Zoology

**Student Contribution Band** HECS Band 2 10cp

Check your HECS Band contribution amount via the Fees ([https://www.westernsydney.edu.au/currentstudents/current\\_students/fees/](https://www.westernsydney.edu.au/currentstudents/current_students/fees/)) page.

**Level** Undergraduate Level 2 subject

**Pre-requisite(s)** BIOS 1025 OR  
BIOS 2014 OR  
AGRI 1003 OR  
BIOS 1012 OR  
BIOS 1001

**Equivalent Subjects** BIOS 2038 - Animal Physiology

**Restrictions** Successful completion 60 credit points at Level 1 and 20 credit points at Level 2.

**Assumed Knowledge**

Basic biology, chemistry and maths.

## Learning Outcomes

On successful completion of this subject, students should be able to:

1. Describe and compare between the different respiratory, excretory and circulatory systems utilised by organisms and discuss how physiological adaptations allow organisms to inhabit extreme environments (eg. deserts & freezing habitats).
2. Explain the mass scaling laws with a particular focus on metabolism.
3. Describe the physiological adaptations that organisms exhibit living in water with reference to osmoregulation, buoyancy and diving.
4. Explain the similarities and differences with phyla in terms of their neurophysiology and sensory organs.
5. Explain how different organisms achieve locomotion (movement) and obtain their nutritional requirements (feeding).
6. Conduct both independent and group investigations safely and ethically in the field and laboratory, using sampling methodology correctly to obtain valid data.
7. Use spreadsheets and statistical tools in analytical programs to enter, analyse and graph data, as to draw appropriate conclusions from data.

8. Communicate findings correctly in oral or in written form using an appropriate style, as well as accessing the scientific literature to place the findings in context.

## Subject Content

1. The integrative (multidisciplinary) nature of physiology and its determination by basic physical and chemical principals/laws;
2. The diversity of respiratory (including respiratory pigments) and circulatory systems;
3. Nutrition and the different modes of feeding that exist;
4. Scaling laws and metabolism;
5. The physiological adaptation of organisms to extreme environments (deserts & freezing habitats) including the role of torpor;
6. Comparison of nitrogenous excretion across the phyla (ammonia, urea & uric acid);
7. Movement: types of skeleton, muscle and motility;
8. The adaptation of animals to living in water (buoyancy, osmoregulation & diving);
9. Neurophysiology & the diversity of sensory organs and structures exhibited by animals.

## Special Requirements

Legislative pre-requisites

Students who opt to enrol in this subject are strongly recommended to obtain a Tetanus vaccination/booster. Students who cannot evidence vaccination may be precluded from activities on the Farm, and/or internships with third parties.

## Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Item	Length	Percent	Threshold	Individual/Group Task
Practical Report: 3x Mini Practical 1 X 3,000 Reports/ Lab Book Question and Answers. Full Major Practical Report (Practical Report Written as a Journal Paper)	3 X 500 words (15%)	25	N	Individual
Test: Mini-Test (Multiple Choice and Short Answers)	1 hour	30	N	Individual
Final Examination	2 hours	45	N	Individual

Prescribed Texts

- Hill, RW, Wyse, GA & Anderson, M 2012, Animal physiology, 3rd edn, Sinauer Associates, Sunderland, Mass.

Teaching Periods

## Spring

### Hawkesbury

#### Day

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View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=BIOS2006\\_22-SPR\\_HW\\_D#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=BIOS2006_22-SPR_HW_D#subjects))

### Parramatta - Victoria Rd

#### Day

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