

BIOS 2006 COMPARATIVE PHYSIOLOGY

Credit Points 10

Legacy Code 300838

Coordinator Sebastian Holmes (<https://directory.westernsydney.edu.au/search/name/Sebastian Holmes/>)

Description Building on the underlying physical and chemical principals/laws that define physiology, this subject 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 fees via the Fees (https://www.westernsydney.edu.au/currentstudents/current_students/fees/) page.

Level Undergraduate Level 2 subject

Pre-requisite(s) BIOS 1012 Cell Biology

Restrictions

Successful completion 60 credit points

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.

Type	Length	Percent	Threshold	Individual/ Group Task	Mandatory
Report	3 X 500 words (15%) 1 X 3,000 words (10%)	25	N	Individual	N
Quiz	1 hour	30	N	Individual	N
Final Exam	2 hours	45	N	Individual	N

Prescribed Texts

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

Teaching Periods

Spring (2025)

Hawkesbury

Hybrid

Subject Contact Sebastian Holmes (<https://directory.westernsydney.edu.au/search/name/Sebastian Holmes/>)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=BIOS2006_25-SPR_HW_3#subjects)

Parramatta - Victoria Rd

Hybrid

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