

BIOS 3019 MARINE AND AQUATIC ECOLOGY

Credit Points 10

Legacy Code 300978

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Description Temperate freshwater, estuarine and marine aquatic ecosystems play vital roles in providing food, water, recreation and other ecosystem services to human society and habitats for important species that make up global biodiversity. Yet aquatic habitats are the most threatened ecosystems on earth, under threat from global climate change and urbanisation. Through inquiry and problem solving this subject will equip students with the necessary techniques in experimental design and analysis needed to investigate aquatic ecosystems and knowledge of the main animal and plants in aquatic and marine ecosystems. The logic and philosophy of science, scientific studies and experimental analyses will be used to understand temperate aquatic ecosystems throughout this subject. On completion students will have the background knowledge and skills communicate to a range of audiences, so that they can contribute beneficially to management and/or conservation of waterways and oceans and the biodiversity within.

School Science

Discipline Marine Science

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 3 subject

Equivalent Subjects BIOS 3009 - Aquatic Ecology BIOS 3010 - Aquatic Ecology

Restrictions Successful completion of 80 credit points at Level 1 and 40 credit points at Level 2.

Assumed Knowledge

Concepts of classification, evolution, taxonomy, cellular processes plant and animal structure and function, normal distribution, representative sampling, probability and uncertainty.

Learning Outcomes

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

1. Describe the main characteristics of aquatic habitats including estuarine, freshwater and marine and use taxonomic keys and other methods to identify organisms where appropriate to species level in freshwater, estuarine and marine habitats.
2. Describe, use and evaluate methods of experimental design and analysis of statistical data in studies in freshwater, estuarine and marine aquatic habitats.
3. Describe the main models which explain factors affecting macrofaunal and floral assemblages in estuarine and marine aquatic habitats.
4. Use and critically evaluate scientific studies to support or reject hypotheses developed and tested within freshwater, estuarine and marine aquatic habitats.

5. Construct experimental designs developed to assess human impacts on aquatic systems and explain these using a philosophical and historical basis of thinking.
6. Demonstrate scientific thinking and communication through the preparation of scientific reports which describe student investigations of aquatic habitats. This involves planning and implementing of experimental designs, selection of appropriate tools to collect representative samples, analyse data and synthesis ideas from the literature to support the main conclusions reached in the investigation.
7. Demonstrate and discuss your appreciation that 70% of our world is covered by aquatic environments and that humans have a responsibility to conserve the biodiversity within for future generations.

Subject Content

1. Characteristics of aquatic habitats ? physical, chemical and biological factors affecting distribution of organisms in estuarine, marine and freshwater aquatic habitats
2. Biotic and abiotic interactions in populations ? competition, predation, herbivory, beneficial associations
3. Experimental tests and analysis of abiotic and biotic interactions
4. Theoretical underpinnings of processes structuring estuarine and marine habitats including larval supply, settlement, post settlement mortality and recruitment into adult populations
5. Natural disturbance and regeneration in benthic communities
6. Connectivity between habitats and the ?gunknown?h process of larval supply in an open system
7. Pressures facing biodiversity of estuarine and marine habitats including ocean acidification

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
1 page practical/tutorial summary	300 words	30	Y	Individual
Report (consultant or paper)	1,500 words	25	Y	Individual
Final exam	2 hours	45	Y	Individual

Prescribed Texts

- Scoresby Shepherd and Graham Edgar, editors (2013). Ecology of Australian Temperate Reefs: The Unique South. CSIRO Publishing, Collingwood, VIC. 488 pgs. ISBN: 97 81486300099.
- Andrew Boulton, Margaret Brock, Belinda Robson, Darren Ryder, Jane Chambers, Jenny Davis (2014). Australian Freshwater Ecology Processes and Management. Wiley-Blackwell, 386 pgs. ISBN: 978-1-118-56823-1.