LF216-15 Biological Oceanography

26/27

Department
Life Sciences
Level
Undergraduate Level 2
Module leader
Richard Puxty
Credit value
15
Module duration
5 weeks
Assessment
Multiple
Study location
University of Warwick main campus, Coventry

Description

Introductory description

The overall aims of the module are to introduce the students to the major marine habitats, the ecologically significant groups of organisms, and the biological processes in the oceans that play a crucial role in regulating the global fluxes of major elements

Module aims

The module also aims to introduce students to the contemporary techniques for the study of biodiversity and ocean productivity and how they are contributing to significant advances in our knowledge of biological ocean processes. Finally, the module aims to examine how anthropogenic influences are influencing the marine environment and, thereby, the climate.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

The ocean and coastal environment
Remote sensing
Major phytoplankton groups

Microbial Loop
Photosynthetic picoplankton
Molecular approaches
Biogeochemical cycles I (C,S,P)
Biogeochemical cycles II (N,Fe) -N2 fixation
Marine microbial interactions
Marine Biodiversity
From shallow to deep sea environments with hydrothermal vents
Coral reefs and MPAs
Marine Biotechnology
Anthropogenic effects on the oceans

Learning outcomes

By the end of the module, students should be able to:

- Understand the physicochemical nature of the oceans in relation to the physiology of the major groups of oceanic organisms contributing to biogeochemical cycling
- Understand the techniques used for identifying novel major groups of microorganisms
- Analyse and explain the major oceanic food chains and concepts such as “the microbial loop.”
- Critically evaluate the ocean as the main driver of global biogeochemical cycles
- Explore the types of interactions that occur and evolutionary theories that have developed from studying these habitats
- Compare the key features of classical and specialized marine habitats, and the nature of marine biodiversity.
- Critically evaluate the use of marine protected areas as a mechanism for managing biological resources.
- Utilise scientific computing to critically evaluate large, complex datasets, specifically remote sensing.
- Critically evaluate the effect of anthropogenic forces on marine biodiversity and ecosystem function
- Apply principles of biotechnology to sustainable exploitation of marine resources

Indicative reading list

Reading lists can be found in Talis

Subject specific skills

-Analysis of netcdf remote sensing using scientific computing
-Statistical analysis of time-series data
-Ecological metrics

Transferable skills

- Self directed learning adult learning critical appraisal of source material
- Handling and analysis of large datasets through scientific computing

---

Study

Study time

Type	Required
Lectures	15 sessions of 1 hour (10%)
Supervised practical classes	10 sessions of 1 hour (7%)
Private study	93 hours 30 minutes (62%)
Assessment	31 hours 30 minutes (21%)
Total	150 hours

Private study description

-Self-directed learning and revision for the end-of-year examination
-Online tutorials in scientific computing
-Preparation of materials for in-module assessment

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group D2

	Weighting	Study time	Eligible for self-certification
In-class assignment	30%	30 hours	Yes (extension)
Analysis of primary data dervied from NASA satellites. Data will be analysed using scientific computing. The assessment is a series of short answer questions requiring data analysis, small pieces of scientific coding and figure/map production. A longer essay type question (500 words) that is a complete analysis of a time series dataset.			
Closed-book computer-based end-of-year examination	70%	1 hour 30 minutes	No

	Weighting	Study time	Eligible for self-certification
In-person locally-timetabled closed-book computer-based end-of-year examination			

Assessment group R2

	Weighting	Study time	Eligible for self-certification
Closed-book computer-based examination	100%		No
In-person locally-timetabled closed-book computer-based examination			

Feedback on assessment

For the in-module assessment, students will be given their marks for each question, followed by an example answer sheet showing where marks were gained and lost. Generic written feedback will also be given to the class.

Cohort-level feedback for Y2 examinations.

Past exam papers for LF216

Availability

Courses

This module is Optional for:

- UBSA-3 Undergraduate Biological Sciences
  - Year 2 of C100 Biological Sciences
  - Year 2 of C100 Biological Sciences
  - Year 2 of C102 Biological Sciences with Cell Biology
  - Year 2 of C103 Biological Sciences with Environmental Resources
  - Year 2 of C104 Biological Sciences with Microbiology
  - Year 2 of C105 Biological Sciences with Molecular Genetics
  - Year 2 of C107 Biological Sciences with Virology
- Year 2 of ULFA-C1A1 Undergraduate Biological Sciences (MBio)
- Year 2 of ULFA-C113 Undergraduate Biological Sciences (with Placement Year)
- Year 2 of ULFA-C1A5 Undergraduate Biological Sciences with Industrial Placement (MBio)