

Biogeochemistry - 42 hours

Summary

An investigation into:
the various biogeochemical cycles (C,N,P,S, and metals),
the environments in which these processes occur (e.g., hydrosphere, atmosphere, specifically coastal areas, oceans, estuaries and sediments),
the microorganisms and the role of oceanic life on these processes,
their variability,
the chemical reactions that take place during these cycles,
the various methodologies (tools and technical aspects) used to investigate and quantify these processes,
the impact of global change.

This course aims to support students' understanding of these systems through lecture, literature, and experimental work.

Course Format and Features:

Lecture, literature and experimental work

Students are challenged to critically think about biogeochemical!

This course employs a combination of lecture-based teaching, student presentations of literature study (homework assignments), and discussion on results from oceanographic studies.

During the "lecture" days, traditional lectures are combined with examples of research investigations studies in an interactive way.

During paper presentations, students choose biogeochemical related research papers and present the paper to the rest of the class.

Course Content and Aims:

This course is intended as an introductory course to biogeochemistry. The goals of the course include:

- (i) learning the basic chemical cycles that occur in the Earth systems and the environments in which these reactions occur,
- (ii) examining the types of organisms involved in these processes,
- (iii) understanding the biological variability affecting these cycles,
- (iv) presenting the typical procedures and methods used to measure these processes,
- (v) presenting the different approaches for biogeochemistry studies,
- (v) examining the literature concerning biogeochemistry.

Arguments to be treated:

Marine carbon cycle

Marine nitrogen cycle

Marine phosphorus cycle and interactions with iron and manganese

Marine silica cycle

Role of sediments in the oceanic biogeochemical cycles

Long-term chemical observations of the ocean
Global change
Methods and Tools