



DEPARTMENT OF MARINE SCIENCES

BIO458 Primary Producers of the Sea, 15 credits

Havets primärproducenter, 15 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Faculty of Science on 2010-10-26 and was last revised on 2017-12-07 by Department of Marine Sciences to be valid from 2018-01-15, spring semester of 2018.

Field of education: Science 100%

Department: Department of Marine Sciences

Position in the educational system

The course is offered as a separate course.

The course can be part of the following programmes: 1) Molecular Biology, Master's Programme (N2MBI), 2) Marine Science, Master's Programme (N2MAV) and 3) Biology, Master's Programme (N2BIO)

Main field of studies

Biology

Specialization

A1N, Second cycle, has only first-cycle course/s as entry requirements

Entry requirements

University studies of a minimum of 75 credits in Biology with at least one in depth course of 15 credits in a relevant area.

Applicants must prove their knowledge of English: English 6/English B from Swedish Upper Secondary School or the equivalent level of an internationally recognized test, for example TOEFL, IELTS.

Learning outcomes

The course focuses on marine benthic and pelagic primary producers, their diversity, role in carbon and nutrient cycling, as well as factors controlling their distribution and function in a local and global perspective. The role of anthropogenic impacts, such as climate change, eutrophication and introduced species, as well as the sustainability of primary producer communities, will be emphasized.

After completing the course the students will be able to:

Knowledge and understanding

- Understand the role of marine primary producers in various marine ecosystems
- Understand which factors control their distribution and function on different temporal and spatial scales
- Understand how their diversity is reflected in evolutionary differences related to form, genetics, life strategies, ecophysiology and biochemistry
- Apply modern techniques for studying ecophysiological, biogeochemical and evolutionary processes
- Apply models to calculate growth and nutrient uptake rates to describe and understand competition between primary producers
- Understand and discuss the outcome of anthropogenic impacts on marine primary producers on a local and global scale and if these impacts can be mitigated in the future
- Understand the importance of an accurate experimental design for making relevant interpretations of the outcome of experiments

Competence and skills

- Ability to carry out experiments in the laboratory to test hypotheses associated to primary production in the sea.
- Ability to critically collect, examine, and discuss scientific literature in order to identify and summarize patterns of ecophysiology, complex interactions, biogeochemical processes associated to primary production in the sea

Judgement and approach

- Apply and critically examine scientific literature in order to identify and summarize patterns and structures of often complex interactions
- Manage to independently and critically analyze and synthesize knowledge on a specific topic found in scientific literature and present this in the form of a written report and an oral presentation

The course is sustainability-related, which means that at least one of the learning outcomes clearly shows that the course content meets at least one of the University of Gothenburg's confirmed sustainability criteria.

Course content

The course covers the eco-physiology and ecology of phytoplankton, benthic microalgae, macroalgae, and sea grasses including evolution of phytoplankton, phytoplankton-zooplankton interactions, phytoplankton-bacteria interactions, the biological carbon pump, and global climate change.

Form of teaching

Lectures, Seminars, Laboratory exercises, Literature review of own topic.

Language of instruction: English

Assessment

Participation in literature seminars and laboratory experiments are compulsory. Examination is based on a written as well as orally presented individual literature project each of which will be graded (Fail, Pass, Pass with Distinction)

If a student, who has failed the same examined component twice, wishes to change examiner before the next examination, a written application shall be sent to the department responsible for the course and shall be granted unless there are special reasons to the contrary (Chapter 6, Section 22 of Higher Education Ordinance).

In cases where a course has been discontinued or has undergone major changes, the student shall normally be guaranteed at least three examination occasions (including the ordinary examination) during a period of at least one year from the last time the course was given.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U). Concerning application of the ECTS scale for grade please see Vice-Chancellor's decision 28/05/2007, No. G 8 197/07 as well as 28/02/2011, No. O 2009/05545.

Course evaluation

A written and oral evaluation of the course will be carried out at the end of the course. The results of the evaluation will be communicated to the students and will function as a guide for the development of the course.

Additional information

This course will replace BIN160. BIO458 and BIN160 cannot be included in the same degree or be included in two different degrees where one of the degrees builds upon the other.

The course includes 3 days at a field station (Tjärnö) with overnight stays. The cost of transportation to and from Tjärnö and the meals will not be waived.