



## Course syllabus

Faculty of Health and Life Sciences

Department of Biology and Environmental Science

4BI501 Marin ekologi, avancerad kurs, 15 högskolepoäng

Marine Ecology, Advanced Level, 15 credits

### **Main field of study**

Biology

### **Subject Group**

Biology

### **Level of classification**

Second Level

### **Progression**

A1N

### **Date of Ratification**

Approved by Faculty of Health and Life Sciences 2014-12-15

The course syllabus is valid from autumn semester 2015

### **Prerequisites**

Bachelor degree including Chemistry 15 credits and Biology 90 credits.

## Objectives

Upon completion, the students shall be able to:

- demonstrate knowledge and understanding of key ecological processes in the different regions of the world's ocean
- identify and formulate relevant questions and problems in the field of marine ecology, search and collect information from different databases, compile, analyze and critically assess the conclusions of published studies relevant to the field
- collect, analyze and compile field and laboratory data
- demonstrate in-depth knowledge of techniques relevant to the field, use and evaluate analytical methods (nutrients, pH, carbon dioxide, temperature, salinity, microscopy, water sampling, qualitative analysis of bacteria, phytoplankton, macroalgae and fish)
- identify and quantitatively describe the occurrence of key species/groups of bacteria, phytoplankton, zooplankton, macroalgae and fish
- describe, analyze and evaluate abiotic and biotic conditions in different oceanic regions
- lead seminars, contribute to group discussions/exercises, and critique of the work of others
- formulate hypotheses, design methods, plan and conduct experiments, as well as critically analyze data sets based on the current state of knowledge
- present scientific findings using appropriate media (verbal and written in the form of poster presentation) thus exhibiting experimental skills, evaluate the scientific evidence and draw correct conclusions from the findings, demonstrate the application of the scientific method
- communicate research in the field including marine ecological principles and problems

to specialists and non-specialists

## Content

### MODULE 1 Theory 6 credits

Processes: habitat and environment, productivity and food webs, biodiversity, evolution in open sea and adaptations to extreme environments such as deep sea, polar regions. Human impact on the sea (fishing, aquaculture, pollution, climate change, shipping).

### MODULE 2: Laboratory, field trips, seminars 5 credits

Descriptive statistics and hypothesis testing (general linear models, incl. ANOVA, ANCOVA and multiple regression).

### MODULE 3 Independent project 4 hp

Problem formulation, planning and implementation of field sampling and/or experiments. Search and summary of scientific literature using databases. Oral and written presentation.

The course provides knowledge and skills that are a good foundation for further studies and a professional career.

## Type of Instruction

The course is given in English. It consists of tutorials and seminars, independent projects, literature reviews, study visits, field excursions and practicals. Participation in practicals, excursions, seminars and presentation of individual term paper are mandatory. Access to internet and email is required to take the course.

## Examination

The course is assessed with the grades A, B, C, D, E, Fx or F.

The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail.

The examination is normally based on oral presentations, final written presentation, written reports and active participation in seminars and the presentation of joint projects. In group projects the responsibility for the contents of the presentation should be divided between the students and it should be clear how each student has contributed to the different parts of the presentation.

The examination is based on an overall assessment of the individual parts of the course as well as the oral and written presentations. The criteria for a passing grade are listed in Objectives (see above).

## Course Evaluation

A written course evaluation is conducted at the end of the course. The result is compiled in a course report which is archived by the department's administration. The result of the evaluation and any changes made are communicated to the head of department and presented to the students the next time the course is run.

## Other

Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

## Required Reading and Additional Study Material

### Mandatory literature

Kaiser et al. 2011. Marine Ecology, processes, systems and impacts. 2nd ed. Oxford University Press. ISBN 978-0-19-922702-0

Tutorials and scientific articles are handed out during the course.