

# Syllabus

for course at advanced level

**Marine microbial ecology: from genomes to biomes**  
**Marin mikrobiell ekologi: från genom till biom**

**15.0 Higher Education  
Credits**  
**15.0 ECTS credits**

<b>Course code:</b>	BL7057
<b>Valid from:</b>	Spring 2020
<b>Date of approval:</b>	2024-10-11
<b>Department</b>	Department of Biology Education
<b>Main field:</b>	Biology
<b>Specialisation:</b>	A1N - Second cycle, has only first-cycle course/s as entry requirements

## Decision

This course syllabus was approved by the Board of Science at Stockholm University on 09/03/2020.

## Prerequisites and special admittance requirements

For admission to the course, knowledge is required equivalent to a Bachelor's degree in Biology, including a minimum of 7,5 credits in ecology. English 6 or equivalent.

## Course structure

Examination code	Name	Higher Education Credits
DEL1	Theory	3.8
DEL2	Lab exercises	3.7
DEL3	Project work	7.5

## Course content

This course addresses aquatic microbial diversity and role of microbes in the environment. Environments include aquatic, benthic (sediments), and microbiomes. Microbial populations include representatives from the three domains of life: Archaea, Bacteria, Eukarya. The diverse nature of microbial populations will be studied and includes the morphology, genetic, and metabolic diversity. Additionally, a review of both classical and modern methods utilized in studying aquatic microbial ecology will be presented in case study examples and laboratory exercises. An emphasis on understanding the limitations, caveats, and necessary controls for methods will be emphasized.

The course consists of the following modules:

1. Teori (Theory), 3,75 credits
2. Laborationer (laboratory exercises), 3,75 credits
3. Projektarbete (project work), 7,5 credits

## Learning outcomes

After completing the course, the student is expected to be able to:

- distinguish between the three domains of life: Archaea, Bacteria, and Eukarya (module 1)
- identify how microbial processes mediate major biogeochemical cycles (C, N, P, Fe, S) in various habitats (sediments, water column, deep biosphere) as well as in various microbiomes e.g. guts of marine animals (module 1, 2 and 3).
- identify the major drivers of marine microbial diversity (module 2 and 3)
- apply classical methods and/or new modern molecular based approaches for solving basic microbial ecology

research questions (module 2 and 3).

### **Education**

Teaching consists of lectures, seminars, exercises, project work and laboratory work.  
The course is offered in English.

### **Forms of examination**

a. The course is examined in the following manner:

Assessment of module 1 takes place through written exams. Assessment of module 2 takes place through laboratory reports. Assessment of module 3 takes place through activity in seminars as well as written and oral presentations.

The examiner can decide on adapted or alternative examination formats for students with disabilities.

The examination will be conducted in English.

b. A passing final grade requires participation in lectures, seminars, exercises, project work and laboratory work. If special reasons exist, following consultation with the teacher involved, the examiner may grant the student exemption from the obligation to participate in certain compulsory instruction.

c. Grading: The course's final grade is set according to a seven-point criterion-referenced scale:

A = Excellent

B = Very Good

C = Good

D = Satisfactory

E = Adequate

Fx = Failed, some additional work is required

F = Failed, much additional work is required

Grades of module 1, 2 and 3 will be set according to a seven-point criterion-referenced scale.

The final grade of the course is determined by weighing the grades from all course modules, where each grade is weighed in relation to the scope of the course modules. A passing final grade requires passing grades on all included parts.

d. The course's grading criteria are handed out at the start of the course.

e. Students who receive a failing grade on a regular examination are allowed to retake the examination as long as the course is still provided. The number of examination opportunities is not limited. Other mandatory course elements are equated with examinations. A student who has received a passing grade on an examination may not retake the examination to attain a higher grade. A student who has failed the same examination twice is entitled to have another examiner appointed, unless there are special reasons to the contrary. Such requests should be made to the department board. The course includes at least three examination opportunities for each course module per academic year the course is offered. For the academic years that the course is not offered, at least one examination opportunity is offered.

f. Students awarded the grade Fx are given the opportunity to improve their grade to E. The examiner decides on the supplementary assignments to be performed and the pass mark criteria. The supplementary assignments will take place before the next examination opportunity.

### **Interim**

Students may request that the examination be conducted in accordance with this course plan even after it has ceased to be valid. However, this may not take place more than three times over a two-year period after the course was discontinued. Requests must be made to the departmental board. The provision also applies in the case of revisions of the course syllabus and revisions of the required reading.

### **Misc**

The course is part of the Master's Programme in Marine Biology, but may also be taken as a separate course.

### **Required reading**

The required reading is decided by the department board and published on the course page in the course catalogue at least 2 months before the start of the course.