



DEPARTMENT OF BIOLOGICAL AND ENVIRONMENTAL SCIENCES

BIO531 Plant biotechnology - land and sea, 15 credits

Växtbioteknik - land och hav, 15 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Department of Biological and Environmental Sciences on 2023-08-23 to be valid from 2023-08-23, autumn semester of 2023.

Field of education: Science 100%

Department: Department of Biological and Environmental Sciences

Position in the educational system

The course is a second cycle course in biology and molecular biology.

The course can be part of the following programmes: 1) Molecular Biology, Master's Programme (N2MBI), 2) Bachelor's Programme in Biology (N1BIO), 3) Bachelor's Programme in Molecular Biology (N1MB1) and 4) 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

Students must have successfully completed basic courses in biology comprising 60 credits in the subject areas of cell biology, molecular genetics, evolution, botanical and zoological physiology, ecology and biodiversity and systematics, or equivalent. English proficiency is required to the level of English 6/English Course B from Swedish Upper Secondary School, or be certified by an internationally recognized test, for example TOEFL, IELTS.

Learning outcomes

After completing the course the students should:

- have a deeper knowledge of various cellular, biochemical, genetic and molecular processes within land plants and marine primary producers;
- understand the basic concepts and techniques important for understanding these processes, as well as the scientific principles that underlie and drive the rapid development of plant biotechnology;
- in particular, have a better understanding of the development and use of genetically modified plants in modern agriculture, both present and future, and the potential for such modifications within the marine environment.

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

Some of the principle subjects taught will include:

- Cellular, biochemical, genetic and molecular processes within land plants and marine primary producers;
- The importance of plant biotechnology in combating global challenges such as food security within the context of ongoing climate change, decline in agricultural productivity and deteriorating native habitats;
- Principles of plant genetic modifications – plant breeding and transformation technologies, plant tissue culture and gene editing tools such as Crispr/Cas9;
- Plant biotechnology in agriculture and other commercial applications, and its potential for addressing humanitarian crises and other societal issues;
- A comprehensive discussion on the “GMO controversy” related to plants;
- The importance of different marine primary producers, such as macro- and microalgae, cyanobacteria, diatoms and dinoflagellates;
- Comparative genomics and genetic modifications of marine primary producers;
- Biotechnological applications of marine primary producers

Form of teaching

The course consists of lectures and laboratory work and a larger project assignment that is carried out in group.

Language of instruction: English

Assessment

The final grade will be based on a written exam (50%) and project work (50%). To pass the course, students must also attend all laboratories and submit an acceptable report for each when required.

A student who has failed the exam twice has the right to change examiner, unless weighty argument can be adduced. The application shall be sent to the board of the department and has to be in writing.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U). For pass (G) it is required that the student pass (60% of total points) the written exam and project work, with no other options provided such as home assignments. The student must also perform all laboratory work and hand in acceptable lab reports as required. Pass with distinction (VG) additionally requires VG on the exam (85% or higher of total points).

Course evaluation

A written course evaluation will be arranged at the end of the course and the results will be made available for the students and used for further development of the course.

Additional information

This course will replace BIO530 and can not be included in the same degree or be included in two different degrees where one of the degrees builds upon the other. The courses BIO330 and BIO532 also covers parts of the same content as BIO531 and can thus not be included in the same degree.