UNIVERSITY OF GOTHENBURG

DEPARTMENT OF BIOLOGICAL AND ENVIRONMENTAL SCIENCES

BIO350 Plant physiology in a dynamic environment, 15 credits

Växtfysiologi i en föränderlig miljö, 15 högskolepoäng

First Cycle

Confirmation

This course syllabus was confirmed by Department of Biological and Environmental Sciences on 2014-06-04 and was last revised on 2024-03-15 to be valid from 2024-03-15, spring semester of 2024.

Field of education: Science 100%
Department: Department of Biological and Environmental Sciences

Position in the educational system

This is a course in biology at basic level. The course can be part of the bachelor programs in biology and molecular biology. The course is also offered as a separate course.

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

Main field of studies	*Specialization*
Molecular Biology	G2F, First cycle, has at least 60 credits in first-cycle course/s as entry requirements
Environmental Science	G2F, First cycle, has at least 60 credits in first-cycle course/s as entry requirements
Marine Sciences	G2F, First cycle, has at least 60 credits in first-cycle course/s as entry requirements
Biology	G2F, First cycle, has at least 60 credits in first-cycle course/s as entry requirements

Entry requirements

Alternative 1: 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, of which at least 45 credits must be approved. In addition, English B is required.

Alternative 2: The following courses must be completed: ES1201, Environmental Sciences: Natural Science, 15 credits, ES1300, Natural Resource Management, 15 credits, ES1305, Pollutants effects and dispersal on Biological Systems, 15 credits, ES1220 Ecology and evolution for environmental scientists, 15 credits and one of the following three courses: BIO900, Cell Biology, 15 credits, BIO906, Molecular Genetics and Evolution, 15 credits, BIO283, Conservation Ecology in Water Environments, 15 credits, or an equivalent basic course in environmental science with a scientific focus. At least 60 of 75 credits must be approved.

Alternative 3: 90 hp of 120 hp in courses on the initiall two years of the Marine Science Bachellor program at GU should be approved.

For all alternatives, applicants must also prove their knowledge of English corresponding to English 6/English B from Swedish upper secondary school. For more information, see English language requirements on Universityadmissions.se.

Learning outcomes

After completion of the course the student is expected to be able to:

Knowledge and understanding

- Demonstrate knowledge of basic physiological concepts in plants, algae and cyanobacteria.
- Demonstrate knowledge of physiological mechanisms used by plants, algae and cyanobacteria as responses to changes in the environment, with respect to tolerance, acclimation, adaptation and metabolic responses.

Skill and abilities

- Compare the physiological mechanisms and responses of plants, algae and cyanobacteria to changes in the environment.
- Discuss scientific literature in the field of plant physiology.
- Orally present research articles and own project to fellow students.

Judgment and approach

- Choose relevant scientific studies and critically evaluate the importance of research during preparation of own project.

Course content

This course is devoted to physiology of plants, cyanobacteria and algae from the cellular to the organismal level. The emphasis is on the environmental influence on basic physiological processes, such as photosynthesis, nutrient uptake and metabolism, reproduction, senescence and programmed cell death. Responses to abiotic stress

(nutrient limitation, salinity, cold, heat, excess light, high CO_2) and related adaptations are included. Practical laboratory work examines how plants, algae and cyanobacteria respond to environmental stress. The course is highly interactive. In addition to lectures and laboratory work, students present selected relevant research articles. Project work / study on a related topic chosen by the students themselves and presentations to fellow students are also included in the course.

Form of teaching

The compulsory elements of the course are group discussions, practicals and project work (as shown by the course schedule).

Language of instruction: Swedish and English
The course is given in Swedish with some parts in English. If necessary, the entire course will be given in English.

Assessment

Examination takes place through active participation in group discussions, individual project work and presentation of results from laboratory work in groups (as shown by the course schedule).

Group discussions: Compulsary participation and oral presentation in a group. 5 hp.

Lab work: Compulsary participation and oral presentation in a group. 5 hp.

Project work: Written and oral presentation of individual project work and oral opposition against another student's project. Takes place during the final 4 weeks of the course. 5 hp.

The assessment of the different parts is based on predetermined critiera, which will be presented during the course.

A student has the right to change examiner after failing twice on the same exam, if possible. A written request must be sent to the Department.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).
The grades of Fail (U), Pass (G) or Pass with Distinction (VG) are awarded based on the following final grade scheme: 0-59% = U; 60-84% = G; 85-100% = VG.

Course evaluation

A written course evaluation will be carried out at the end of the course.