UNIVERSITÄT BIELEFELD

Module Guide 20-EEC-5 Effects of environmental change on plant chemistry

Fakultät für Biologie

Version dated Dec 4, 2025

This module guide reflects the current state and is subject to change. Up-to-date information and the latest version of this document can be found online via the page

https://ekvv.uni-bielefeld.de/sinfo/publ/modul/211936703

The current and valid provisions in the module guide are binding and further specify the subject-related regulations (German "FsB") published in the Official Announcements of Bielefeld University.

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20-EEC-5 Effects of environmental change on plant chemistry

Faculty

Fakultät für Biologie

Person responsible for module

Frau Prof. Dr. Caroline Müller

Regular cycle (beginning)

Every summer semester

Credit points

10 Credit points

Competencies

Non-official translation of the module descriptions. Only the German version is legally binding.

Students possess a profound knowledge of effects of environmental challenges on plant development and metabolism. They possess expertise in performing experiments to examine such effects on plant fitness-related traits and plant chemistry and understand the underlying mechanisms. They know the principles of chemical analytical techniques including high performance liquid chromatography. Further, they know the role of plant chemistry in plant invasions, in the establishment of plant symbioses and in the evolution of plant-herbivore interactions. They sovereignly collect, handle, evaluate and present complex scientific data sets.

Content of teaching

Plant metabolism is decisive for plant fitness and influenced by various environmental challenges. Due to climate change, various abiotic factors are currently drastically changing, including increases in ultraviolet (UV) B radiation, drought events and fertilisation. These factors cause changes in plant metabolism by modulating resource allocation and inducing signaling cascades leading to enhanced plant protection. Symbiotic microorganisms may contribute to plant nutrition, affecting thus resource allocation and plant metabolism. In this course, responses of plant metabolism to UV light, drought and varying nutrient availability are investigated in the absence or presence of symbiotic microorganisms. Metabolite profiling of primary and specialised metabolites is applied and enzyme activities are measured. Furthermore, effects of plant invasions on plant chemicals and environmental interactions are discussed. A one-day excursion to a topic-related company offers insights into potential future job options.

Recommended previous knowledge

none

Necessary requirements

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Explanation regarding the elements of the module

Module structure: 1 bPr, 1 uPr [1]

Courses

Title	Type	Regular cycle	Workload [5]	LP[2]
Environmental change and plant chemistry	lecture with exercises	SoSe	90 h (45 + 45)	3 [Pr]
Environmental change and plant chemistry	internship / laboratory internship	SoSe	210 h (75 + 135)	7 [Pr]

Examinations

Allocated examiner	Type	Weighting	Workload	LP[2]
Teaching staff of the course **Environmental change and plant chemistry (lecture with exercises)** *Written exam (90 minutes) or oral exam or electronic oral exam at a distance (20 minutes).*	Klausur o. mündliche e-Prüfung o. mündliche Prüfung	1	-	-
Teaching staff of the course **Environmental change and plant chemistry (internship / laboratory internship)** *The Portfolio comprises: independent preparation of the experiments, doing the experiments independently, presenting the results in a talk of 10 to 20 minutes, and writing a documentation of 10-20 pages.*	Portfolio	without grades	-	-

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Legend

1	The module structure displays the required number of study requirements and examinations.
2	LP is the short form for credit points.
3	The figures in this column are the specialist semesters in which it is recommended to start the module. Depending on the individual study schedule, entirely different courses of study are possible and advisable.
4	Explanations on mandatory option: "Obligation" means: This module is mandatory for the course of the studies; "Optional obligation" means: This module belongs to a number of modules available for selection under certain circumstances. This is more precisely regulated by the "Subject-related regulations" (see navigation).
5	Workload (contact time + self-study)
SoSe	Summer semester
WiSe	Winter semester
SL	study requirement
Pr	Examination
bPr	Number of examinations with grades
uPr	Number of examinations without grades