SYLLABUS

Name: ***Plant reactions to changing environmental conditions (25-BI-S2-W-PRCEC-AN)***
Name in Polish: **Reakcje roślin na zmieniające się warunki środowiska**
Name in English: ***Plant reactions to changing environmental conditions***

Information on course:

Course offered by department: Faculty of Biological Sciences
Course for department: Faculty of Biological Sciences

Default type of course examination report:

Grading

Language:

English

Short description:

Prerequisites regarding knowledge, skills, and social competences for the course/module:
Basic knowledge of biochemistry and plant physiology

Student's own work:
- formative tests: 10h
- preparation for the formative tests: 15h
- preparation of presentation: 10h
- participation in the discussion forum for the seminar: 10h
- reading literature: 15h
- preparation for the final test: 20h

Description:

Educational aims:
Understanding the reaction of plants to changing environmental conditions.

Course content:
Lectures:
- plant water management.
- photosynthesis - light and dark reactions, regulation of photosynthesis by environmental factors.
- light as a signal - plant photoreceptors and their functions.
- stress in the plant world (biotic and abiotic stresses).
- water deficit and salt stress in plants.
- plant reaction to sub- and supra-optimal temperatures.
- plant adaptation mechanisms to heavy metals.
- oxidative stress as a secondary reaction of plants to unfavorable environmental factors.
- plant responses to the attack of pathogens and herbivores.
- phytohormones as regulators of plant growth and protectors against stress factors.

Seminars:
- discussion on plant adaptation mechanisms induced in response to changing environmental conditions.

Bibliography:

Mandatory and recommended reading list:
Biochemistry and Molecular Biology of Plants, Buchanan B.B. et al. 2015 (2nd edition)
Plant Physiology and Development, Taiz L., Zeiger E., Moller I., Murphy A., Sinauer Oxford, 2018 (6th edition);
Selected scientific publications.

Learning outcomes:

Intended learning outcomes
Student:

K_W01
notices the relationship and interprets the interrelation between changing environmental conditions (including adverse water, light and temperature; increased salinity; presence of heavy metals; attack by other organisms) and modifications of metabolic pathways, leading to the activation of adaptive mechanisms;

K_W02
describes the mechanism of water uptake and translocation in plants. Student describes the light and dark reactions of photosynthesis in C3, C4 and CAM plants. Student describes the mechanism of action of phytohormones and explains their role in plant growth under changing environmental conditions;

K_U02
reads with understanding the scientific literature in the field of biochemistry, molecular biology and physiology in English;,

K_U08
prepares presentation based on various source materials

K_K01
is creative and permanently updates biological knowledge, understands the need for lifelong learning.

Assessment methods and assessment criteria:

Assessment methods for the intended learning outcomes:
- Lectures:
- final written test,
- continuous control of progress in lectures - formative tests, lecture discussion forum.
- Seminars:

- preparation of presentation (individual),
- discussion forum.

Credit requirements for individual components of the course/module:
- Lectures:
- final written test.
- Seminars:
- presentation (individual),
- evaluation of student's activity on the seminar discussion forum.

Course credits in various terms:

<without a specific program>

Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	4	2023/24-L	