University of Gdańsk

Subject card

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| Subject name and code | Plant ecophysiology, PG_00198126 | | |
| Field of study | Natural Resources Conservation | | |
| Date of commencement of studies | October 2026 | Academic year of realisation of subject | 2028/2029 |
| Education level | Bachelor's studies | Subject group | Obligatory subject group in the field of study<br>Subject group related to scientific research in the field of study |
| Mode of study | full-time studies | Mode of delivery | at the university |
| Year of study | 3 | Language of instruction | Polish |
| Semester of study | 5 | ECTS credits | 1.0 |
| Learning profile | academic | Assessment form | credit |
| Conducting unit | Department of Experimental Biology and Plant Biotechnology -> Faculty of Biology -> Rector | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr hab. Anna Aksmann | |
| | Teachers | | |

**Lesson types**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 15.0 | 0.0 | 0.0 | 0.0 | 0.0 | 15 |

E-learning hours included: 0.0

**Learning activity and number of study hours**

| Learning activity | Participation in didactic classes included in study plan | Participation in consultation hours | Self-study | SUM |
|---|---|---|---|---|
| Number of study hours | 15 | 3.0 | 7.0 | 25 |

**Subject objectives**

Presenting to students the basic physiological processes of plants and their dependence on environmental factors affecting plant organisms. To familiarize students with the current state of knowledge and the latest trends in plant ecophysiology and their relationship with other natural disciplines. Preparing students to conduct basic research in the field of plant physiology and ecophysiology.

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [OZPL3_W03] The graduate understands the physiological processes and their relationship to the organism's adaptation to changing environmental conditions | The graduate knows and understands at an advanced level the course of basic plant physiological processes and their relationship with the adaptation of the plant organism to changing environmental conditions. | [SW4] test/exam - oral or written |
| [OZPL3_U07] The graduate is able to draw correct conclusions on the basis of analysis and synthesis of data from various sources | The graduate is able to draw correct conclusions based on the analysis and synthesis of data from various sources. | [SU1] oral statement/conversation/ discussion |
| [OZPL3_K01] The graduate is ready to recognise the limitations in his/her own knowledge and understands the need for continuous learning and development | The graduate is ready to recognize the limitations of his or her own knowledge and understands the need for constant learning and development. | [SK1] oral statement/conversation/ discussion |

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| Subject contents | Photosynthesis - general characteristics of the photosynthetic apparatus, "light" and "dark" phase of photosynthesis. C3 and C4 plants. The influence of environmental factors (light, temperature, availability of water and minerals, environmental pollution) on the course of the photosynthesis process.Mitochondrial respiration - general characteristics of the mitochondrion, course of respiratory processes. The influence of environmental factors (temperature, availability of oxygen, water and minerals, stress factors) on respiratory processes. Ecophysiological role of alternative oxidase.Long-distance transport in a plant organism.Water relations in the plant. Water management of cells and tissues. Plant response to drought stress, salt stress and low temperatures.Mineral economy and its relationship with soil factors.Biotic and abiotic factors influencing the growth and development of plants. |
| Prerequisites and co-requisites | |

**Assessment methods and criteria**

| Subject passing criteria | Passing threshold | Percentage of the final grade |
|---|---|---|
| written or oral exam | 51.0% | 100.0% |

**Recommended reading**

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| Basic literature | Szmidt-Jaworska A., Kopcewicz J. (red.). 2020. Fizjologia roślin. Wyd. PWN, Warszawa. |
| Supplementary literature | Larcher, W. 2003. Physiological plant ecology: ecophysiology and stress physiology of functional groups. Springer.<br><br>Lambers H., Chapin III F. S., Pons T. L. 2008. Plant Physiological Ecology. 2nd ed. Springer.<br><br>Taiz L., Zeiger E., et al. 2015. Plant physiology and development. Sinauer Associates, Inc.<br><br>Eckstein, A. (2016). Ruchy chloroplastów indukowane światłem niebieskim. Postępy Biologii Komórki, 43(4). |
| eResources addresses | |

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| Example issues/ example questions/ tasks being completed | |
| Work placement | Not applicable |

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