# COURSE DESCRIPTION CARD

<table>
<tr><td colspan="10">Faculty of Civil Engineering and Environmental Sciences</td></tr>
<tr><td>Field of study</td><td colspan="6"></td><td colspan="2">Degree level and programme type</td><td></td></tr>
<tr><td>Specialization/ diploma path</td><td colspan="6"></td><td colspan="2">Study profile</td><td>Academic profile</td></tr>
<tr><td rowspan="2">Course name</td><td colspan="6" rowspan="2">Botany and plant physiology</td><td colspan="2">Course code</td><td>IS-FCEE-00148W</td></tr>
<tr><td colspan="2">Course type</td><td>Erasmus</td></tr>
<tr><td rowspan="2">Forms and number of hours of tuition</td><td>L</td><td>C</td><td>LC</td><td>P</td><td>SW</td><td>FW</td><td>S</td><td>Semester</td><td>Winter</td></tr>
<tr><td>15</td><td></td><td></td><td></td><td>15</td><td></td><td></td><td>No. of ECTS credits</td><td>4</td></tr>
<tr><td>Entry requirements</td><td colspan="9">Biology, Ecology, Vegetation</td></tr>
<tr><td>Course objectives</td><td colspan="9">Understanding of the dependence between the structure and functions of plants on different levels of their organization, interactions between plants and the environment and knowledge of reaction of plants on factors of environment</td></tr>
<tr><td>Course content</td><td colspan="9">The structure and function of the plant cell, of tissues and plant organs including the anatomy of development of the root, the stem, the flower, the fruit and seeds. Bases of the systematics of plants and their classification. Basic living processes occurring on different levels of the plant organism, from molecular, by the level of organelles, cellular, tissue, organs, the whole plant and plant communities, determining the growth and the development of plants and having significance in the botany. Mechanisms of the regulation of living processes of plants. The water relations, the mineral nutrition, respiration, photosynthesis, assimilate transport, growth and plant growth regulators, development and the influence of external factors on the plant functions. Present achievements of the physiology of plants with the special regard of the influence of stress factors of the environment (such as frost, cold, high temperature, low and high active radiation, drought, heavy metals, soil and atmospherically pollution, salinity, diseases, pests) on plants and bases of the resistance of plants to stressors. Ecophysiological aspects of interactions between organisms of the same species and different plant species.</td></tr>
<tr><td>Teaching methods</td><td colspan="9">Lecture - presentation, the specialization workshop - presentation, discussion</td></tr>
<tr><td>Assessment method</td><td colspan="9">Lecture - Exam; the specialization workshop - a description and discussion of the presentation</td></tr>
<tr><td>Symbol of learning outcome</td><td colspan="7">Learning outcomes</td><td colspan="2">Reference to the learning outcomes for the field of study</td></tr>
<tr><td>LO1</td><td colspan="7">student has knowledge of the structure and functioning of the plant cell, of tissues and plant organs</td><td colspan="2">K_W03, K_W11</td></tr>
<tr><td>LO2</td><td colspan="7">recognizes and understands the relationship between the structure and functions of plants on different levels of their organization and knowledge of reaction of plants on factors of environment</td><td colspan="2">K_W05, K_W18, K_U18, K_U22</td></tr>
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| **LO3** | know how to identify living processes occurring on different levels of the plant organism, determining the growth and the development of plants | K_W16, K_U18, K_U22, K_K02 |
| **LO4** | know how to identify plants and plant communities and their interactions with the environment | K_W11, K_W12, K_U22 |
| **LO5** | know how to choose and use the research methods used in botany and plant physiology | K_U23 |
| **LO6** | know how to work in a team | K_U03, K_K04 |
| **Symbol of learning outcome** | **Methods of assessing the learning outcomes** | **Type of tuition during which the outcome is assessed** |
| **LO1** | tests on lecture content, student's reports, discussion, description of presentation | lecture, presentation consultation |
| **LO2** | evaluating the student's reports and preparation for the classes, tests on lecture content, discussion, description of presentation | lecture, presentation consultation |
| **LO3** | evaluating the student's reports and preparation for the classes, tests on lecture content, discussion, description of presentation | lecture, presentation consultation |
| **LO4** | tests on lecture content, student's reports, discussion, description of presentation | lecture, presentation consultation |
| **LO5** | evaluating the student's reports and preparation for the classes, discussion, description of presentation | presentation |
| **LO6** | discussion, description of presentation | presentation |
| **Student workload (in hours)** | | **No. of hours** |
| **Calculation** | lecture attendance | **15** |
| | participation in classes, in presentation | **15** |
| | participation in student-teacher sessions related to the class/ presentation | **10** |
| | preparation for classes, presentation | **15** |
| | work on presentation, reports, etc | **15** |
| | implementation of presentation tasks | **15** |
| | preparation and participation in exams | **10** |
| | **TOTAL:** | **95** |

| **Quantitative indicators** | **HOURS** | **No. of ECTS credits** |
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| **Student workload – activities that require direct teacher participation** | **50** | **2** |
| **Student workload – practical activities** | **45** | **2** |

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| **Basic references** | 1) Kopcewicz J., Lewak S. (red.): Fizjologia roślin.PWN, Warszawa.2007. 2) Starck Z. (red.): Przewodnik do ćwiczeń z fizjologii roślin. SGGW, Warszawa. 2007. 3) Szweykowska A., Szweykowski J.: Botanika. T. 1 Morfologia. PWN, Warszawa. 2008. 4) Szweykowska A., Szweykowski J.: Botanika. T. 2 Systematyka. PWN, Warszawa. 2006. 5) Hames B.D., Hooper N.M.: Biochemia. Krótkie wykłady. PWN, Warszawa. 2005.6) Lack A.J., Evans D.E.: Biologia roślin. Krótkie wykłady. PWN, Warszawa. 2003. 7) Rutkowski L.: Key for the determination of lowland Poland vascular plants. PWN, Warszawa.2007. 8) Matuszkiewicz W.: Guide to the determination of Polish plant communities. PWN, Warszawa, 2005. |
| **Supplementary references** | 1) Falińska K. Plant population biology and vegetation processes. PAN, Kraków.1998. 2) Falinska K.: Ecology of plants. PWN, Warszawa, 2004. 3) Kozłowska M. (red.): Fizjologia roślin. Od teorii do nauk stosowanych. PWRiL, Poznań. 2007. 4) Lewak S., Kopcewicz J.: Fizjologia roślin - wprowadzenie. PWN, Warszawa. 2009. 5) Szweykowska A. Fizjologia |

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| | roślin. UAM, Poznań. 2002. 6) Matuszkiewicz J.M.: Plant communities of Poland. PWN, Warszawa, 2005. | |
| **Organisational unit conducting the course** | **Department of Agri-Food Engineering and Environmental Management** | **Date of issuing the programme** |
| **Author of the programme** | **Assoc. Prof. Grażyna Łaska, DSc, PhD** | **12-03-2021** |

**L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work, S – seminar**