

## Subject card

|                                             |                                                                                                                                                                                                                                                 |                                                          |                                                                                                                                                                |                                     |                                                                                                                      |            |     |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------|------------|-----|
| Subject name and code                       | Diversity of cryptogamic plants, PG_00154334                                                                                                                                                                                                    |                                                          |                                                                                                                                                                |                                     |                                                                                                                      |            |     |
| Field of study                              | Natural Resources Conservation                                                                                                                                                                                                                  |                                                          |                                                                                                                                                                |                                     |                                                                                                                      |            |     |
| Date of commencement of studies             | October 2025                                                                                                                                                                                                                                    |                                                          | Academic year of realisation of subject                                                                                                                        |                                     | 2025/2026                                                                                                            |            |     |
| 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                               | 1                                                                                                                                                                                                                                               |                                                          | Language of instruction                                                                                                                                        |                                     | Polish                                                                                                               |            |     |
| Semester of study                           | 1                                                                                                                                                                                                                                               |                                                          | ECTS credits                                                                                                                                                   |                                     | 3.0                                                                                                                  |            |     |
| Learning profile                            | academic                                                                                                                                                                                                                                        |                                                          | Assessment form                                                                                                                                                |                                     | exam                                                                                                                 |            |     |
| Conducting unit                             | Department of Plant Ecology -> Faculty of Biology -> Rector                                                                                                                                                                                     |                                                          |                                                                                                                                                                |                                     |                                                                                                                      |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                                                                                                                                                                              |                                                          | dr hab. Joanna Święta-Musznicka                                                                                                                                |                                     |                                                                                                                      |            |     |
|                                             | Teachers                                                                                                                                                                                                                                        |                                                          | dr hab. Joanna Święta-Musznicka                                                                                                                                |                                     |                                                                                                                      |            |     |
| Lesson types                                | Lesson type                                                                                                                                                                                                                                     | Lecture                                                  | Tutorial                                                                                                                                                       | Laboratory                          | Project                                                                                                              | Seminar    | SUM |
|                                             | Number of study hours                                                                                                                                                                                                                           | 30.0                                                     | 0.0                                                                                                                                                            | 0.0                                 | 0.0                                                                                                                  | 0.0        | 30  |
|                                             | 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                                                                                                                                                                                                                           | 30                                                       |                                                                                                                                                                | 4.0                                 |                                                                                                                      | 41.0       | 75  |
| Subject objectives                          | Learning the diversity and evolution of cryptogamic plants. Understanding the functions of cryptogamic plants in ecosystems and the human economy. To review selected representatives of the different systematic groups of cryptogamic plants. |                                                          |                                                                                                                                                                |                                     |                                                                                                                      |            |     |
| Learning outcomes                           | Course outcome                                                                                                                                                                                                                                  |                                                          | Subject outcome                                                                                                                                                |                                     | Method of verification                                                                                               |            |     |
|                                             | [OZPL3_W09] The graduate possesses an advanced comprehension of the current state of knowledge and the latest trends in protection of natural resources, as well as their relationship to other natural disciplines                             |                                                          | is familiar with the latest systematic approaches and theories of evolution of cryptogamic plants taking into account the results of molecular studies         |                                     | [SW4] test/exam - oral or written<br>[SW1] oral statement/ conversation/discussion                                   |            |     |
|                                             | [OZPL3_U12] The graduate is able to learn independently in a targeted manner                                                                                                                                                                    |                                                          | learns independently in a directed manner                                                                                                                      |                                     | [SU1] oral statement/conversation/ discussion<br>[SU4] test/exam - oral or written                                   |            |     |
|                                             | [OZPL3_K08] The graduate is ready to systematically update his/ her natural knowledge and to apply it in practice                                                                                                                               |                                                          | systematically updates his/her knowledge of nature and knows its practical applications                                                                        |                                     | [SK8] observation of student's independent or team work                                                              |            |     |
|                                             | [OZPL3_W04] The graduate possesses advanced knowledge and understanding of the characteristics, systematics, and evolution of selected groups of organisms, as well as the basic concepts and mechanisms of evolution                           |                                                          | presents the characteristics, systematics and evolution of cryptogamic plants, describes the basic concepts and mechanisms of the evolution of photoautotrophs |                                     | [SW4] test/exam - oral or written<br>[SW1] oral statement/ conversation/discussion                                   |            |     |

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|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Subject contents                                               | Contemporary classification systems of cryptogamic plants. Application of palaeobotanical and molecular methods in reconstructing plant evolution. The origins of life on Earth. The theory of serial endosymbiosis. Phylogenetic relationships and evolutionary trends. Characterisation of the main systematic groups of pro- and eukaryotic aquatic and terrestrial photoautotrophs: morphological and anatomical structure, life cycles, occurrence, ecological requirements, role in the natural environment, bioindication properties. Human use of cryptogamic plants in industry, medicine and forensics. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                               |
| Prerequisites and co-requisites                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                               |
| Assessment methods and criteria                                | Subject passing criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Passing threshold                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Percentage of the final grade |
|                                                                | exam                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 51.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 100.0%                        |
| Recommended reading                                            | Basic literature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>Hoek C. van den, Mann D. G., Jahns H. M. 1995. Algae. An introduction to phycology. Cambridge Univ. Press, Cambridge.</p> <p>Lee R. E. 1999. Phycology. Cambridge Univ. Press, Cambridge.</p> <p>Podbielkowski Z., Rejment-Grochowska I., Skirgiełło A. 1979. Rośliny zarodnikowe. PWN, Warszawa.</p> <p>Szweykowska A., Szweykowski J. 2020. Botanika, T. 1 i 2. PWN, Warszawa.</p> <p>Kadłubowska J. 1976. Zarys algologii. PWN, Warszawa.</p>                                                                                                                                                                                                                                                                                                                                                 |                               |
|                                                                | Supplementary literature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p>Brodie J., Lewis J. 2007. Unravelling the algae, the past, present and future of algal systematics. The Systematics Association Special Vol. Ser. 75, CRC Press Taylor &amp; Francis Group, New York.</p> <p>Mehltreter K., Walker L. R., Sharpe J. M. 2010. Fern Ecology. Cambridge Univ. Press, Cambridge.</p> <p>Ruggiero M.A, Cavalier-Smith T. i in. 2015. A higher level classification of all living organisms. PlosOne 10(4): e0119248.</p> <p>Schofield W. B. 1981. Introduction to bryology. Mac Millan, New York.Vanderpoorten A., Goffinet B. 2010. Introduction to Bryophytes. Cambridge University Press.</p> <p>Willis K.J., McElwain J. C. 2002. The evolution of plants. Oxford Univ. Press. Wójciak H. 2007. Porosty, mszaki, paprotniki. Flora Polski. Multico, Warszawa.</p> |                               |
|                                                                | eResources addresses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                               |
| Example issues/<br>example questions/<br>tasks being completed | history of botanical research; basics of organism classification; organism classification systems; Cavalier-Smith system; endosymbiosis theory; reconstruction of plant evolution; structure, occurrence and use of selected groups of photoautotrophs                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                               |
| Work placement                                                 | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                               |

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