

## Subject card

|                                             |                                                                                                                                                                                                                                                                                                                                       |                                                          |                                                                                                                                                                                                                                                                 |                                     |                                              |            |     |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------|------------|-----|
| Subject name and code                       | Phytoindycation of aquatic reservoirs, PG_00179640                                                                                                                                                                                                                                                                                    |                                                          |                                                                                                                                                                                                                                                                 |                                     |                                              |            |     |
| Field of study                              | Environmental Protection                                                                                                                                                                                                                                                                                                              |                                                          |                                                                                                                                                                                                                                                                 |                                     |                                              |            |     |
| Date of commencement of studies             | October 2026                                                                                                                                                                                                                                                                                                                          |                                                          | Academic year of realisation of subject                                                                                                                                                                                                                         |                                     | 2026/2027                                    |            |     |
| Education level                             | Master's studies                                                                                                                                                                                                                                                                                                                      |                                                          | Subject group                                                                                                                                                                                                                                                   |                                     | Optional subject group                       |            |     |
| Mode of study                               | full-time studies                                                                                                                                                                                                                                                                                                                     |                                                          | Mode of delivery                                                                                                                                                                                                                                                |                                     | at the university                            |            |     |
| Year of study                               | 1                                                                                                                                                                                                                                                                                                                                     |                                                          | Language of instruction                                                                                                                                                                                                                                         |                                     | Polish                                       |            |     |
| Semester of study                           | 2                                                                                                                                                                                                                                                                                                                                     |                                                          | ECTS credits                                                                                                                                                                                                                                                    |                                     | 3.0                                          |            |     |
| Learning profile                            | academic                                                                                                                                                                                                                                                                                                                              |                                                          | Assessment form                                                                                                                                                                                                                                                 |                                     | credit                                       |            |     |
| Conducting unit                             | Laboratory of Freshwater Ecology -> Department of Plant Ecology -> Faculty of Biology -> Rector                                                                                                                                                                                                                                       |                                                          |                                                                                                                                                                                                                                                                 |                                     |                                              |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                                                                                                                                                                                                                                                                    |                                                          | dr Eugeniusz Pronin                                                                                                                                                                                                                                             |                                     |                                              |            |     |
|                                             | Teachers                                                                                                                                                                                                                                                                                                                              |                                                          |                                                                                                                                                                                                                                                                 |                                     |                                              |            |     |
| Lesson types                                | Lesson type                                                                                                                                                                                                                                                                                                                           | Lecture                                                  | Tutorial                                                                                                                                                                                                                                                        | Laboratory                          | Project                                      | Seminar    | SUM |
|                                             | Number of study hours                                                                                                                                                                                                                                                                                                                 | 0.0                                                      | 0.0                                                                                                                                                                                                                                                             | 45.0                                | 0.0                                          | 0.0        | 45  |
|                                             | 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                                                                                                                                                                                                                                                                                                                 | 45                                                       |                                                                                                                                                                                                                                                                 | 4.0                                 |                                              | 26.0       | 75  |
| Subject objectives                          | 1. Understanding natural phenomena and processes occurring in inland waters.<br>2. Learning the principles of describing aquatic ecosystems and assessing their threats.<br>3. Ability to recognize species and communities of aquatic plants.<br>4. Ability to apply research methods in hydroecology.                               |                                                          |                                                                                                                                                                                                                                                                 |                                     |                                              |            |     |
| Learning outcomes                           | Course outcome                                                                                                                                                                                                                                                                                                                        |                                                          | Subject outcome                                                                                                                                                                                                                                                 |                                     | Method of verification                       |            |     |
|                                             | [OŚMU2_U06] Defines her/his interests and develops them within the chosen specialisation and themes of her/his master's thesis while implementing the process of self-education and planning of own future career.                                                                                                                    |                                                          | - assesses one's own skills and sets the direction of one's own professional development by choosing a specialization                                                                                                                                           |                                     | [SU6] demonstration of practical skills      |            |     |
|                                             | [OŚMU2_W04] Chooses methods, techniques and research tools used in environmental protection.                                                                                                                                                                                                                                          |                                                          | - selects methods, techniques, and tools enabling the rational use, shaping, and restoration of aquatic ecosystems and the vegetation occurring in them<br>- knows the latest trends in research in the ecology of inland waters and describes their importance |                                     | [SW2] presentation/project/paper/report      |            |     |
|                                             | [OŚMU2_K10] Has a need for continuous professional development.                                                                                                                                                                                                                                                                       |                                                          | - defines their knowledge and understands the need for further education to pursue their interests                                                                                                                                                              |                                     | [SK1] oral statement/conversation/discussion |            |     |
| Subject contents                            | Methods for assessing environmental conditions in water reservoirs.<br><br>Recognition of species and communities of aquatic plants.<br><br>Ecological requirements of macrophytes.<br><br>The importance of aquatic plants in the functioning of the river and lake ecosystem.<br><br>Bioindicative role of species and communities. |                                                          |                                                                                                                                                                                                                                                                 |                                     |                                              |            |     |

|                                                                |                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                               |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Prerequisites and co-requisites                                | Knowledge of the principles of functioning of aquatic ecosystems and the causes of their differentiation in time and space. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                               |
| Assessment methods and criteria                                | Subject passing criteria                                                                                                    | Passing threshold                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Percentage of the final grade |
|                                                                | An individual report from field work activities                                                                             | 51.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 50.0%                         |
|                                                                | Identification of aquatic plants                                                                                            | 51.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 50.0%                         |
| Recommended reading                                            | Basic literature                                                                                                            | A. Literature required for the final pass of the course:<br>A.1. used during classes:<br>Podbielkowski Z. Tomaszewicz H. 1996. Zarys hydrobotaniki. PWN, Warszawa (in Polish).<br><br>Lampert W., Sommer U. 1996. Ekologia wód śródlądowych. Wydawnictwo Naukowe PWN. Warszawa (in Polish).<br><br>Szmeja J. 2006. Przewodnik do badań roślinności wodnej. Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk (in Polish).<br><br>A.2. studied independently by the student<br><br>Szmeja J. 2006. Przewodnik do badań roślinności wodnej. Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk (in Polish)                                                                                                                                                                                          |                               |
|                                                                | Supplementary literature                                                                                                    | B. Supplementary literature<br><br>Kajak Z. 1998. Hydrobiologia limnologia. Ekosystemy wód śródlądowych. Wydawnictwo Naukowe PWN Warszawa (in Polish).<br><br>Tobolski K., 2000. Przewodnik do oznaczania torfów i osadów jeziornych. Wydawnictwo Naukowe PWN, Warszawa.(in Polish).<br><br>Rutkowski L., 2004. Klucz do oznaczania roślin naczyniowych Polski niżowej. PWN, Warszawa.Matuszkiewicz W., 2001. Przewodnik do oznaczania zbiorowisk roślinnych Polski. PWN, Warszawa (in Polish).<br><br>Kłosowski S., Kłosowski G., 2001. Rośliny wodne i bagienne. Flora Polski. MULTICO Oficyna Wydawnicza, Warszawa (in Polish).<br><br>Hermanowicz W., Dożańska W., Dojlido J., Koziorowski B., 1999. Fizyko chemiczne badanie wody i ścieków. Wyd. Arkady, Warszawa (in Polish). |                               |
|                                                                | eResources addresses                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                               |
| Example issues/<br>example questions/<br>tasks being completed |                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                               |
| Work placement                                                 | Not applicable                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                               |

Document generated electronically. Does not require a seal or signature.