

## Subject card

|                                             |                                                                                                                                                                                                                                        |                                                          |                                                                                                                          |                                     |                                         |            |     |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------|------------|-----|
| Subject name and code                       | Impact of aquaculture on the environment - seminar, PG_00075896                                                                                                                                                                        |                                                          |                                                                                                                          |                                     |                                         |            |     |
| Field of study                              | Aquaculture – Business And Technology                                                                                                                                                                                                  |                                                          |                                                                                                                          |                                     |                                         |            |     |
| Date of commencement of studies             | October 2025                                                                                                                                                                                                                           |                                                          | Academic year of realisation of subject                                                                                  |                                     | 2027/2028                               |            |     |
| Education level                             | Bachelor's studies                                                                                                                                                                                                                     |                                                          | Subject group                                                                                                            |                                     |                                         |            |     |
| Mode of study                               | full-time studies                                                                                                                                                                                                                      |                                                          | Mode of delivery                                                                                                         |                                     | at the university                       |            |     |
| Year of study                               | 3                                                                                                                                                                                                                                      |                                                          | Language of instruction                                                                                                  |                                     | Polish                                  |            |     |
| Semester of study                           | 6                                                                                                                                                                                                                                      |                                                          | ECTS credits                                                                                                             |                                     | 3.0                                     |            |     |
| Learning profile                            | practical                                                                                                                                                                                                                              |                                                          | Assessment form                                                                                                          |                                     | credit                                  |            |     |
| Conducting unit                             | Laboratory of Biodiversity and Benthic Functioning -> Department of Marine Ecology -> Faculty of Oceanography and Geography -> Rector                                                                                                  |                                                          |                                                                                                                          |                                     |                                         |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                                                                                                                                                                     |                                                          | dr hab. Urszula Janas                                                                                                    |                                     |                                         |            |     |
|                                             | Teachers                                                                                                                                                                                                                               |                                                          |                                                                                                                          |                                     |                                         |            |     |
| Lesson types                                | Lesson type                                                                                                                                                                                                                            | Lecture                                                  | Tutorial                                                                                                                 | Laboratory                          | Project                                 | Seminar    | SUM |
|                                             | Number of study hours                                                                                                                                                                                                                  | 45.0                                                     | 0.0                                                                                                                      | 0.0                                 | 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                                                       |                                                                                                                          | 10.0                                |                                         | 20.0       | 75  |
| Subject objectives                          | The purpose of the course is to familiarize the student with the topic of the impact of aquaculture on the environment. During the course, the student will gain knowledge of the need to develop aquaculture in a sustainable manner. |                                                          |                                                                                                                          |                                     |                                         |            |     |
| Learning outcomes                           | Course outcome                                                                                                                                                                                                                         |                                                          | Subject outcome                                                                                                          |                                     | Method of verification                  |            |     |
|                                             | [AKWAL3-K06] is ready to think and act in an entrepreneurial manner in terms of actions taken, including social initiatives, cooperation for environmental sustainability and sustainable development                                  |                                                          | He or she is willing to think and act to preserve the ecological balance and sustainable development of aquaculture      |                                     | [SK2] presentation/project/paper/report |            |     |
|                                             | [AKWAL3-U07] can come to the right conclusions on the basis of available data                                                                                                                                                          |                                                          | He or she is able to make correct conclusions on the basis of available data on the environmental impacts of aquaculture |                                     | [SU2] presentation/project/paper/report |            |     |
|                                             | [AKWAL3-U12] can interact and work in a group, and assume different roles                                                                                                                                                              |                                                          | He or she can interact and work in a group, taking on different roles while working on projects and case studies         |                                     | [SU2] presentation/project/paper/report |            |     |
|                                             | [AKWAL3-W12] knows and understands the role of aquaculture in the modern economy and its impact on the natural environment                                                                                                             |                                                          | He or she knows and understands the impact of aquaculture on the natural environment                                     |                                     | [SW3] text preparation/written work     |            |     |

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|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Subject contents                                               | Sustainable development of aquacultures Threats to the natural environment and ecological balance, among others, eutrophication, oxygen deficiency, alien species, pharmaceuticals and other compounds used in aquaculture, diseases transmitted to natural populations, loss of land for other activities; Benefits of aquaculture development, among others, production of food and other products necessary for humans; Assessment of the impact of aquaculture on the aquatic environment; Biomonitoring of the environment in the vicinity of aquaculture; Environmental impact assessments of aquaculture projects, forecasting the impact of future aquaculture projects on the environment, using the DPSiR and Life Cycle Assessment (LCA) model and Nature Based Solutions, among others. |                                                                                                                                                                                                                                                                                                                                                                                                |                               |
| Prerequisites and co-requisites                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                |                               |
| Assessment methods and criteria                                | Subject passing criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Passing threshold                                                                                                                                                                                                                                                                                                                                                                              | Percentage of the final grade |
|                                                                | written work                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 51.0%                                                                                                                                                                                                                                                                                                                                                                                          | 30.0%                         |
|                                                                | presentation 1 /project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 51.0%                                                                                                                                                                                                                                                                                                                                                                                          | 35.0%                         |
|                                                                | presentation 2 /project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 51.0%                                                                                                                                                                                                                                                                                                                                                                                          | 35.0%                         |
| Recommended reading                                            | Basic literature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Gray J., Elliott M., 2010, Ecology of Marine sediments from science to management, Oxford University Press<br><br>James S. D. 2009, Aquaculture production and biodiversity conservation, BioScience 59 (1): 2738. Schultz-Zehden A,<br><br>Matczak M. (eds.), 2012, Compendium An Assessment of Innovative and Sustainable Uses of Baltic Marine Resources, Instytut Morski, Gdańsk, 262 str. |                               |
|                                                                | Supplementary literature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Zimna J., Przedrzymirska J., Matczak M., Zaucha J., 2013, Mapa Drogowa rozwoju polskich obszarów nadmorskich opartego na czerpaniu pożytków z innowacyjnych form wykorzystania zasobów Bałtyku, Instytut Morski, Gdańsk, 68 str                                                                                                                                                                |                               |
|                                                                | eResources addresses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                |                               |
|                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                |                               |
| Example issues/<br>example questions/<br>tasks being completed |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                |                               |
| Work placement                                                 | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                |                               |

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