

## Subject card

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                          |                                                                                                                                                                                        |                                     |                                                                                                             |            |     |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------|------------|-----|
| Subject name and code                       | Hydrographic Data Management - lecture, PG_00201140                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                          |                                                                                                                                                                                        |                                     |                                                                                                             |            |     |
| Field of study                              | Marine Hydrography                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                          |                                                                                                                                                                                        |                                     |                                                                                                             |            |     |
| Date of commencement of studies             | October 2027                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                          | Academic year of realisation of subject                                                                                                                                                |                                     | 2029/2030                                                                                                   |            |     |
| Education level                             | Bachelor's studies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                          | Subject group                                                                                                                                                                          |                                     | Obligatory subject group in the field of study<br>Subject group related to practical vocational preparation |            |     |
| Mode of study                               | full-time studies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                          | Mode of delivery                                                                                                                                                                       |                                     | at the university                                                                                           |            |     |
| Year of study                               | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                          | Language of instruction                                                                                                                                                                |                                     | Polish                                                                                                      |            |     |
| Semester of study                           | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                          | ECTS credits                                                                                                                                                                           |                                     | 1.0                                                                                                         |            |     |
| Learning profile                            | practical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                          | Assessment form                                                                                                                                                                        |                                     | credit                                                                                                      |            |     |
| Conducting unit                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                          |                                                                                                                                                                                        |                                     |                                                                                                             |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                          | dr inż. Dominik Iwen                                                                                                                                                                   |                                     |                                                                                                             |            |     |
|                                             | Teachers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                          |                                                                                                                                                                                        |                                     |                                                                                                             |            |     |
| Lesson types                                | Lesson type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Lecture                                                  | Tutorial                                                                                                                                                                               | Laboratory                          | Project                                                                                                     | Seminar    | SUM |
|                                             | Number of study hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 20.0                                                     | 0.0                                                                                                                                                                                    | 0.0                                 | 0.0                                                                                                         | 0.0        | 20  |
|                                             | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 20                                                       |                                                                                                                                                                                        | 1.0                                 |                                                                                                             | 4.0        | 25  |
| Subject objectives                          | Providing knowledge in the field of hydrographic data management.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                          |                                                                                                                                                                                        |                                     |                                                                                                             |            |     |
| Learning outcomes                           | Course outcome                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                          | Subject outcome                                                                                                                                                                        |                                     | Method of verification                                                                                      |            |     |
|                                             | [HML3-W16] knows and understands engineering standards and norms specific to the field of study, in particular those recommended by IHO and IMO                                                                                                                                                                                                                                                                                                                                                                                                                |                                                          | knows methods for ongoing monitoring of measurement procedures                                                                                                                         |                                     | [SW4] test/exam - oral or written                                                                           |            |     |
|                                             | [HML3-W04] knows and understands, at an advanced level, the issue of measurements related to the exploration of sea basins and inland waters and tools allowing to describe, interpret and present the results of measurements                                                                                                                                                                                                                                                                                                                                 |                                                          | knows:<br>- methods for the preliminary processing of measurement results;<br>- methods for creating digital seabed models;<br>- the data acquisition process in a hydrographic system |                                     | [SW4] test/exam - oral or written                                                                           |            |     |
| Subject contents                            | Lectures: Introduction to the subject. Hydrographic data acquisition including real-time quality control. Types and formats of collected data in the context of their subsequent analysis and storage in databases. Bathymetric data processing. Accuracy of bathymetric survey. Digital seabed model creation and visualization. Hydrographic databases. Hydrographic data in marine spatial information systems. Data visualization, visualization of bottom models. Documentation in hydrographic measurements, description of the data processing process. |                                                          |                                                                                                                                                                                        |                                     |                                                                                                             |            |     |
| Prerequisites and co-requisites             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                          |                                                                                                                                                                                        |                                     |                                                                                                             |            |     |
| Assessment methods and criteria             | Subject passing criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                          | Passing threshold                                                                                                                                                                      |                                     | Percentage of the final grade                                                                               |            |     |
|                                             | colloquium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                          | 51.0%                                                                                                                                                                                  |                                     | 100.0%                                                                                                      |            |     |

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|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended reading                                            | Basic literature                                                                                                                                                                                                                        | <ol style="list-style-type: none"> <li>1. LONGLEY P. A. et al.: GIS. Theory and practice. PWN Scientific Publishing House, 2008.</li> <li>2. PDNO-06-A072 Marine hydrography. Organization and principles of conducting research.</li> <li>3. PDNO-06-A073 Marine hydrography Principles of data collection and presentation of results.</li> </ol>                                                                                                                                                                                                                                                                                                                                                         |
|                                                                | Supplementary literature                                                                                                                                                                                                                | <ol style="list-style-type: none"> <li>1. *IHO, 2022. IHO Standards for Hydrographic Surveys. Special Publication No. 44. S-44. International Hydrographic Organization, Monaco.</li> <li>2. IHO 2005 Manual of Hydrography, C-13 International Hydrographic Organization, Monaco.</li> <li>3. LINZ Land Information New Zealand, 2020. Contract specifications for Hydrographic Surveys V2.0, 28 June.</li> <li>4. USDOC U.S. Department of Commerce, NOAA National Oceanic and Atmospheric Administration, NOS National Ocean Service, 2018. Hydrographic surveys specifications and deliverables. April. USACE US Army Corp of Engineering, 2013. Hydrographic Surveying. EM 1110-2-1003, USA</li> </ol> |
|                                                                | eResources addresses                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Example issues/<br>example questions/<br>tasks being completed | <ol style="list-style-type: none"> <li>1. List and briefly describe reporting materials related to hydrographic measurements.</li> <li>2. Characterize the reference systems and projections used in the Republic of Poland.</li> </ol> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Work placement                                                 | Not applicable                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

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