



## Subject card

|                                             |                                                                                                                                                                                              |                                                          |                                                                                                                                       |                                     |                                                                                              |            |     |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------|------------|-----|
| Subject name and code                       | Geographic Information Systems (GIS), PG_00060663                                                                                                                                            |                                                          |                                                                                                                                       |                                     |                                                                                              |            |     |
| Field of study                              | Transport and Logistics                                                                                                                                                                      |                                                          |                                                                                                                                       |                                     |                                                                                              |            |     |
| Date of commencement of studies             | October 2024                                                                                                                                                                                 |                                                          | Academic year of realisation of subject                                                                                               |                                     | 2026/2027                                                                                    |            |     |
| Education level                             | first-cycle studies                                                                                                                                                                          |                                                          | Subject group                                                                                                                         |                                     | Optional subject group<br>Subject group related to scientific research in the field of study |            |     |
| Mode of study                               | Full-time studies                                                                                                                                                                            |                                                          | Mode of delivery                                                                                                                      |                                     | at the university                                                                            |            |     |
| Year of study                               | 3                                                                                                                                                                                            |                                                          | Language of instruction                                                                                                               |                                     | Polish                                                                                       |            |     |
| Semester of study                           | 5                                                                                                                                                                                            |                                                          | ECTS credits                                                                                                                          |                                     | 5.0                                                                                          |            |     |
| Learning profile                            | general academic profile                                                                                                                                                                     |                                                          | Assessment form                                                                                                                       |                                     | exam                                                                                         |            |     |
| Conducting unit                             | Institute of Naval Architecture -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology                                                     |                                                          |                                                                                                                                       |                                     |                                                                                              |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor                                                                                                                                                                           |                                                          | dr inż. Aleksander Kniat                                                                                                              |                                     |                                                                                              |            |     |
|                                             | Teachers                                                                                                                                                                                     |                                                          | dr inż. Aleksander Kniat                                                                                                              |                                     |                                                                                              |            |     |
| Lesson types                                | Lesson type                                                                                                                                                                                  | Lecture                                                  | Tutorial                                                                                                                              | Laboratory                          | Project                                                                                      | Seminar    | SUM |
|                                             | Number of study hours                                                                                                                                                                        | 30.0                                                     | 30.0                                                                                                                                  | 0.0                                 | 0.0                                                                                          | 0.0        | 60  |
|                                             | 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                                                                                                                                                                        | 60                                                       |                                                                                                                                       | 5.0                                 |                                                                                              | 60.0       | 125 |
| Subject objectives                          | Presentation of geographic information analysis and synthesis methods in a GIS system.                                                                                                       |                                                          |                                                                                                                                       |                                     |                                                                                              |            |     |
| Learning outcomes                           | Course outcome                                                                                                                                                                               |                                                          | Subject outcome                                                                                                                       |                                     | Method of verification                                                                       |            |     |
|                                             | [K6_U03] is able to use computer methods to support the design, development and operation of transport means and systems                                                                     |                                                          | Student is able to perform a spatial analysis using GIS system concerning exploitation of maritime transportation objects or systems. |                                     | [SU4] Assessment of ability to use methods and tools<br>[SU1] Assessment of task fulfilment  |            |     |
|                                             | [K6_W06] has established knowledge of engineering methods and design tools enabling the implementation of projects in the field of construction and operation of transport means and systems |                                                          | Student is able to apply tools and methods of GIS system to design a maritime transportation object or system.                        |                                     | [SW1] Assessment of factual knowledge                                                        |            |     |

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|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Subject contents                                               | Course content – lecture                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                             |                               |
|                                                                | Definition and applications of Geographic Information Systems (GIS).<br>Data in GIS system: spatial data and attributes.<br>Storing and using data, data sources.<br>Vector vs. raster objects.<br>Coordinate's systems.<br>Standard data formats.<br>Vizualization: maps, layers, symbols, labels.<br>Data classification.<br>Data analysis and synthesis, processing data from different sources. |                                                                                                                                                                                             |                               |
|                                                                | Course content – exercises                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                             |                               |
|                                                                | Importing data into a layer                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                             |                               |
|                                                                | Changing data presentation method in a layer of a cartogram                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                             |                               |
|                                                                | Performing data classification in a layer in different ways (nominal, ordinal, interval classification)                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                             |                               |
|                                                                | Filtering data in a layer                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                             |                               |
|                                                                | Performing analysis according to complex criteria                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                             |                               |
|                                                                |                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                             |                               |
|                                                                |                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                             |                               |
| Prerequisites and co-requisites                                | Basic knowledge about operating system and file system usage.                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                             |                               |
| Assessment methods and criteria                                | Subject passing criteria                                                                                                                                                                                                                                                                                                                                                                            | Passing threshold                                                                                                                                                                           | Percentage of the final grade |
|                                                                | project                                                                                                                                                                                                                                                                                                                                                                                             | 60.0%                                                                                                                                                                                       | 100.0%                        |
| Recommended reading                                            | Basic literature                                                                                                                                                                                                                                                                                                                                                                                    | Davis D. GIS dla każdego 2009<br>Gaździcki J. Systemy Informacji przestrzennej 1990                                                                                                         |                               |
|                                                                | Supplementary literature                                                                                                                                                                                                                                                                                                                                                                            | Litwin L., Myrda G., Systemy Informacji Geograficznej. Zarządzanie danymi przestrzennymi w GIS, SIP, SIT, LIS. 2005                                                                         |                               |
|                                                                | eResources addresses                                                                                                                                                                                                                                                                                                                                                                                | Supplementary<br><a href="https://qgis.org">https://qgis.org</a> - Home page of QGIS - GIS system<br><a href="https://gis-support.pl/">https://gis-support.pl/</a> - Web page with GIS data |                               |
| Example issues/<br>example questions/<br>tasks being completed | 1. spatial analysis to select objects that satisfy chosen criteria<br><br>2. cartogram presenting statistic data                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                             |                               |
| Practical activites within the subject                         | Not applicable                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                             |                               |

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