University of Gdańsk

Subject card

Subject name and code	Applied Geoinformatics - lecture, PG_00201165		
Field of study	Marine Hydrography		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2029/2030
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study Optional subject group
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	4	Language of instruction	Polish
Semester of study	7	ECTS credits	1.0
Learning profile	practical	Assessment form	credit
Conducting unit			
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Piotr Bekier	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	0.0	0.0	15

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	15	1.0	9.0	25

Subject objectives

1. Familiarization with the principles of designing and programming functions (used in navigation and marine hydrography) dedicated to GIS systems.
2. Familiarization with software methods for map vectorization and asynchronous serial transmission.
3. Familiarization with input/output operations on files (binary and text), text string processing, spatial data recording formats, and converting spatial data to different formats.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[HML3-W12] knows and understands, at an advanced level, the key processes occurring in the life cycle of devices, facilities, and technical systems	knows at an advanced level the processes involved in the life cycle of technical devices, facilities, and systems	[SW4] test/exam - oral or written
[HML3-K03] is ready to apply economic and legal conditions in the aspect of professional activity related to the field of study	is ready to perform professional roles responsibly, taking into account moral and ethical challenges in an international environment, while respecting cultural sensitivities	[SK2] presentation/project/paper/ report
[HML3-W16] knows and understands engineering standards and norms specific to the field of study, in particular those recommended by IHO and IMO	knows engineering standards and norms appropriate for the field of study, particularly those recommended by IHO and IMO	[SW4] test/exam - oral or written

Subject contents

Lectures: Software methods for acquiring, converting, and analyzing spatial data. Spatial data infrastructure. Cartographic visualization methods. 3D visualization technologies. Spatial data databases and modeling. WebGIS technologies.

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">1. Knowledge of the basics of geodesy and cartography.
2. Knowledge of the basics of computer science.
3. Knowledge of the basics of navigation and hydrography.</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>test</td><td>51.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">1. GRAVES M.: Designing XML Databases. Professional's Handbook. Helion, 2002.
2. HOLZNER S.: XML. Professional's Handbook. Helion, 2001.
3. KRAAK M-J., ORMELING F.: Cartography. Visualization of Spatial Data. PWN, Warsaw 1998.
4. RÓŻYCKI J.: Mathematical Cartography. 1970.
5. SALISZCZEW K. A.: General Cartography. PWN, Warsaw 1998.
6. URBAŃSKI J.: Mathematical Foundations of Map Projections. 1981.
7. WERESZCZYŃSKI J.: Navigational Cartography. 1970.</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">1. IEC Publication 61174. 1998.
2. IHO Special Publiction No. 52. 1996.
3. IHO Special Publication No. 57. 1996.
4. IMO Resolution A 817 (19). 1995.
5. ISO/TC211 Standardy serii 19100. 1998.</td></tr>
<tr><td>eResources addresses</td><td colspan="2"></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">1. What are the sources of spatial data?
2. How to convert data from Shapefile format to GeoJSON?
3. What are the elements of spatial data infrastructure?
4. Convert spatial data from one format to another.
5. Design a simple spatial data infrastructure for a city.
6. Prepare metadata documentation for a dataset.</td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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