University of Gdańsk

Subject card

Subject name and code	Introduction to Marine Acoustics - laboratory classes , PG_00201110						
Field of study	Marine Hydrography						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2027/2028		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Subject group related to practical vocational preparation		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		1.0		
Learning profile	practical		Assessment form		credit		
Conducting unit	Laboratory of Physical Oceanography -> Department of Physical Oceanography and Climate Research -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Jakub Idczak				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	10.0	0.0	0.0	10
	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	10		3.0		12.0	25
Subject objectives	Introducing students to basic software used in hydrographic research (planning research, preparing research projects, and processing research results).						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[HML3-W01] knows and understands, at an advanced level, selected facts, phenomena and processes, as well as methods and theories concerning them, explaining the complex relationships between them, constituting basic general knowledge in the field of scientific disciplines forming the theoretical foundations specific to the field of study	knows and understands, at an advanced level, the phenomena related to the propagation of acoustic waves in the sea, as well as their generation and reception, and the laws governing these processes	[SW2] presentation/project/paper/ report [SW5] implementation of a problem task
[HML3-W03] knows and understands, at an advanced level, directions of development and the latest discoveries in the field of scientific disciplines forming the theoretical basis appropriate to the field of study	knows and understands, at an advanced level, the most important research issues in the field of marine acoustics and their connections to other fields of oceanography and hydrography	[SW2] presentation/project/paper/ report [SW5] implementation of a problem task
[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 and understands, at an advanced level, innovative remote hydroacoustic techniques used in interdisciplinary research and marine environmental monitoring	[SW2] presentation/project/paper/ report [SW5] implementation of a problem task
[HML3-U07] is able to effectively use information and communication techniques, including utility programs to solve professional problems	is able to use specialized software to analyze hydroacoustic data	[SU2] presentation/project/paper/ report [SU5] implementation of a problem task [SU8] observation of student's independent or team work
[HML3-U08] is able to independently use the professional literature available in traditional and electronic form, make an assessment, critical analysis and synthesis as well as the correct interpretation of the information obtained	is able to independently use professional literature on marine acoustics available in both print and electronic formats, and to evaluate, critically analyze, synthesize, and correctly interpret the information obtained	[SU2] presentation/project/paper/ report [SU5] implementation of a problem task [SU8] observation of student's independent or team work
[HML3-U14] is able to use the applicable terminology in presenting and discussing problems related to the field of study	is able to correctly use the relevant terminology when presenting and discussing issues related to marine acoustics	[SU2] presentation/project/paper/ report [SU5] implementation of a problem task [SU8] observation of student's independent or team work
[HML3-U16] is able to prepare in Polish and foreign language a study of a problem in the field of study with documented conclusions, supported by a report and a multimedia presentation	is able to prepare a report on the analysis of hydroacoustic data (a written report, multimedia presentation, or other document in Polish)	[SU2] presentation/project/paper/ report [SU5] implementation of a problem task [SU8] observation of student's independent or team work
[HML3-U19] is able to plan and implement independent learning and improvement of his/her professional competences	is able to plan and carry out self-directed learning and improve their professional skills	[SU2] presentation/project/paper/ report [SU5] implementation of a problem task [SU8] observation of student's independent or team work
[HML3-K02] is ready to correctly determine the priorities in professional work for the implementation of a task specified by himself/ herself or others	is ready to complete tasks on time, whether working individually or as part of a team	[SK2] presentation/project/paper/ report [SK5] implementation of a problem task [SK8] observation of student's independent or team work

Subject contents

1. Project work with the Qinsy software.

2. Introduction to other software for data processing and analysis (including: Sonar Wiz, Qimera, AutoClean).

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
report	51.0%	100.0%

<table>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1. Podręcznik Normalizacji Obronnej, PDNO-06-A072 (2009) Hydrografia morska. Organizacja i zasady prowadzenia badań. Ministerstwo Obrony Narodowej

2. Podręcznik Normalizacji Obronnej, PDNO-06-A073 (2009) Hydrografia morska. Zasady gromadzenia danych i przedstawianie wyników. Ministerstwo Obrony Narodowej</td></tr>
<tr><td>Supplementary literature</td><td>Lekkerkerk, H. J., Van der Velden, R., Roders, J., Haycock, T., De Vries, R., Jansen, P., Beemster ,C. (2006) Handbook of Offshore Surveying. Clarkson Research Services, London</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">To plan the bathymetric survey using a both: multibeam and singlebeam echosounders in the area described by the following geographical coordinates:

1) 53° 54.65' N, 14° 20.65' E

2) 53° 56.30' N, 14° 20.19' E

3) 53° 56.77' N, 14° 23.65' E

4) 53° 54.92' N, 14° 23.63' E

Estimate the survey time assuming:

1. 100% seafloor coverage in the open sea area (>5m depth) with a multibeam echosounder - beam angle of 120°;
2. profiles perpendicular to the shoreline spaced 50m apart in the nearshore zone (<5m depth);
3. survey speed of 4 knots;
4. time needed for a turn on the survey line: 5 minutes;
5. SVP measurements every 6 hours of work (SVP measurement time = 15 minutes).

Complete the task using Qinsy software.</td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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