

Subject card

Subject name and code	Introduction to marine acoustics, PG_00131480						
Field of study	Marine Hydrography						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2026/2027		
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		5.0		10.0	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-U19] plan and implement independent learning and improvement of his/her professional competences	To plan and carry out self-directed learning and enhance one's professional competencies.	[SU2] presentation/project/paper/report [SU5] implementation of a problem task [SU8] observation of student's independent or team work
	[HML3-U07] effectively use information and communication techniques, including utility programs to solve professional problems	To utilize specialized software for the analysis of hydroacoustic data.	[SU2] presentation/project/paper/report [SU5] implementation of a problem task [SU8] observation of student's independent or team work
	[HML3-W04] 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	Innovative remote hydroacoustic techniques used in interdisciplinary research and marine environmental monitoring.	[SW2] presentation/project/paper/report [SW5] implementation of a problem task
	[HML3-W03] directions of development and the latest discoveries in the field of scientific disciplines forming the theoretical basis appropriate to the field of study	The most important research problems in the field of marine acoustics and their connections to other disciplines of oceanography and hydrography.	[SW2] presentation/project/paper/report [SW5] implementation of a problem task
	[HML3-U14] use the applicable terminology in presenting and discussing problems related to the field of study	To correctly use the applicable 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-W01] 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	Fundamental phenomena related to the propagation of acoustic waves in the sea, their generation and reception, and the laws governing these processes.	[SW2] presentation/project/paper/report [SW5] implementation of a problem task
	[HML3-U16] 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	During laboratory exercises, prepare a report on the performed hydroacoustic data analysis (written report, multimedia presentation, or other format in Polish).	[SU2] presentation/project/paper/report [SU5] implementation of a problem task [SU8] observation of student's independent or team work
	[HML3-U08] 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	Independently use professional literature in the field of marine acoustics, available in both traditional and electronic formats, to evaluate, critically analyze, synthesize, and correctly interpret the obtained information.	[SU2] presentation/project/paper/report [SU5] implementation of a problem task [SU8] observation of student's independent or team work
	[HML3-K02] correctly determine the priorities in professional work for the implementation of a task specified by himself/ herself or others	Timely completion of tasks during individual and team work.	[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%

Recommended reading	Basic literature	1. Podręcznik Normalizacji Obronnej, PDNO-06-A072 (2009) <i>Hydrografia morska. Organizacja i zasady prowadzenia badań.</i> Ministerstwo Obrony Narodowej 2. Podręcznik Normalizacji Obronnej, PDNO-06-A073 (2009) <i>Hydrografia morska. Zasady gromadzenia danych i przedstawianie wyników.</i> Ministerstwo Obrony Narodowej
	Supplementary literature	Lekkerkerk, H. J., Van der Velden, R., Roders, J., Haycock, T., De Vries, R., Jansen, P., Beemster, C. (2006) <i>Handbook of Offshore Surveying.</i> Clarkson Research Services, London
	eResources addresses	
Example issues/ example questions/ tasks being completed	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: 100% seafloor coverage in the open sea area (>5m depth) with a multibeam echosounder - beam angle of 120°; - profiles perpendicular to the shoreline spaced 50m apart in the nearshore zone (<5m depth); - survey speed of 4 knots; - time needed for a turn on the survey line: 5 minutes; - SVP measurements every 6 hours of work (SVP measurement time = 15 minutes). Complete the task using Qinsy software.	
Work placement	Not applicable	

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