

**Subject card**

<b>Subject name and code</b>	Fundamentals of hydrography - lecture, PG_00131464						
<b>Field of study</b>	Marine Hydrography						
<b>Date of commencement of studies</b>	October 2024	<b>Academic year of realisation of subject</b>			2025/2026		
<b>Education level</b>	Bachelor's studies	<b>Subject group</b>			Obligatory subject group in the field of study Subject group related to practical vocational preparation		
<b>Mode of study</b>	full-time studies	<b>Mode of delivery</b>			at the university		
<b>Year of study</b>	2	<b>Language of instruction</b>			English English		
<b>Semester of study</b>	3	<b>ECTS credits</b>			1.0		
<b>Learning profile</b>	practical	<b>Assessment form</b>			credit		
<b>Conducting unit</b>							
<b>Name and surname of lecturer (lecturers)</b>	<b>Subject supervisor</b>		dr inż. Artur Grządziel				
	<b>Teachers</b>		dr inż. Artur Grządziel				
<b>Lesson types</b>	<b>Lesson type</b>	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	<b>Number of study hours</b>	15.0	0.0	0.0	0.0	0.0	15
	E-learning hours included: 0.0						
<b>Learning activity and number of study hours</b>	<b>Learning activity</b>	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	<b>Number of study hours</b>	15		1.0		10.0	26
<b>Subject objectives</b>	Presentation of the role and importance of marine hydrography for human activities at sea, the organization and tasks of the national marine hydrographic service, the principles and organization of conducting hydrographic works and legal aspects of hydrographic activities.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[HML3-U01] plan and conduct experiments, including computer simulations, interpret the results obtained and draw conclusions	is able to: -Use national and foreign literature and references, evaluate, critically analyze and synthesize information	[SU4] test/exam - oral or written
	[HML3-W16] engineering standards and norms specific to the field of study, in particular those recommended by IHO and IMO	knows: - Engineering standards recommended by IHO and IMO	[SW4] test/exam - oral or written
	[HML3-W15] labour law and other legal bases related to the profession of hydrographer, in particular health and safety regulations and ergonomic principles	knows: - Legal aspects related to the profession of a hydrographer	[SW4] test/exam - oral or written
	[HML3-W14] basic legal regulations regarding the sustainable development of the marine environment and nature protection	knows: - Basic legal norms and standards regarding hydrographic activities and sustainable development of the marine environment	[SW4] test/exam - oral or written
	[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	knows: - Problems of hydrographic measurements at sea and inland waters	[SW4] test/exam - oral or written
	[HML3-U06] make a preliminary economic assessment of the proposed solutions and engineering activities undertaken	is able to: - Use hydrographic terminology in Polish and English	[SU4] test/exam - oral or written
	[HML3-U04] use analytical, simulation and experimental methods to identify, formulate and solve engineering tasks	is able to: - Select appropriate survey systems for various hydrographic works.	[SU4] test/exam - oral or written
	[HML3-U02] select and apply basic research techniques and tools in the field of aquatic environment research, as well as plan and carry out measurements, develop the obtained results and interpret them correctly	is able to: - Select and apply basic survey techniques in marine hydrography.	[SU4] test/exam - oral or written

Subject contents	<p>Marine hydrography - its role and importance for human activity at sea Introduction to hydrography.</p> <p>The concept of marine hydrography. Basic definitions. IHO. The importance of hydrographic measurements for human activities at sea.</p> <p>Organization and tasks of the hydrographic service in Poland Organization of the hydrographic service. Tasks of the hydrographic service. State Maritime Hydrographic Service. BHMW. Hydrographic Service of the Navy and Maritime Offices.</p> <p>National and international requirements and standards Professional qualifications of a hydrographer. Marine hydrographer of categories A and B. Training of hydrographers in Poland.</p> <p>Minimum requirements for hydrographic surveys. Standard S 44, edition 6.0.0. Standards S-5A, S-5B. Publication C-13.</p> <p>Hydrographic works - types and general requirements. The concept of hydrographic works. Maritime administration.</p> <p>Types of hydrographic works. General requirements. Bathymetric measurements. Sonar measurements. Geophysical measurements. Oceanographic measurements. Geodetic measurements. Criteria for the division of hydrographic works. Polish sea areas. Areas of survey work. Stages of performing hydrographic works General principles of conducting survey measurements.</p> <p>Division into stages of hydrographic work. Surveys planning. Technical design and Technical task. Work planning in the central and executive units. Survey equipment and survey units.</p> <p>Marine construction, hydrotechnical and hydrographic measurements Naval construction basic definitions. Deepening of the bottom, shallowing. Bottom reinforcements. Bathymetric plans and bottom cleanliness certificate. Bottom examination report.</p> <p>Navigation devices and systems used in hydrography. Basic devices and measurement systems used in marine hydrography.</p> <p>Principles of using hydrographic measuring devices.</p> <p>The role and importance of navigational and hydrographic protection of human activities at sea. Basic concepts in the field of hydrographic activities.</p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	colloquium	51.0%	100.0%

Recommended reading	Basic literature	<p>Defense Standardization Manual. Marine Hydrography. Organization and rules of conducting research (PDNO-06-A072)</p> <p>Defense Standardization Manual Marine Hydrography. Rules for collecting data and presenting results (PDNO-06-A073)</p> <p>Hydrographic Review, No. 1-8, BHMW, 2005-2013</p> <p>IHO C-13 - Manual on Hydrography</p> <p>Regulation of the Minister of National Defense of September 17, 2018 on qualification requirements for performing hydrographic surveys (Journal of Laws of 2018, item 1947)</p> <p>Grządziel A., Wąż M.: Multibeam echosounder system in bathymetric surveys of planned shipping routes. Logistics, No. 6, 2014.</p> <p>Grządziel A., Wąż M.: Discovery and development of multibeam echosounder technology. Polish Hyperbaric Research, No. 1(62), 2018.</p> <p>Kosiński W.: Geodesy. SGGW Publishing House, Warsaw 2005.</p>
	Supplementary literature	<p>De Jong C.D. et al: Hydrography. VSSD, Delft, 2006.</p> <p>Lurton X.: An Introduction to Underwater Acoustics. Principles and Applications. Springer, Praxis, London 2002.</p> <p>Stepnowski A.: Acoustic monitoring systems of the marine environment. Gdańsk Scientific Society, Gdańsk 2001.</p> <p>IHO S-5A Standards of Competency for Category A Hydrographic Surveyors</p> <p>IHO S-44 IHO Standards for Hydrographic Surveys</p> <p>IHO S-100 IHO Universal Hydrographic Data Model</p> <p>Werner P.: Introduction to geographic information systems. Jark Publishing House, Warsaw 2004.</p>
	eResources addresses	
Example issues/ example questions/ tasks being completed	<p>Explain the concept of marine hydrography and give its basic meaning.</p> <p>Organization and tasks of the hydrographic service in Poland.</p> <p>Basic standards for hydrographic measurements.</p> <p>Division of hydrographic works.</p> <p>Basic devices and measurement systems used in marine hydrography.</p>	

Work placement	Not applicable
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