University of Gdańsk

Subject card

Subject name and code	Physics - laboratory classes , PG_00200514		
Field of study	Marine Hydrography		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	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 Jordan Badur	
	Teachers		

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	15.0	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	2.0	8.0	25

Subject objectives
1. Familiarization with basic processes and phenomena in Physics, their laws and research methods, using measurement techniques 2. Transfer of knowledge and development of skills necessary for effective learning in subsequent courses on marine physics and hydrography in terms of measurement techniques necessary for setting up and performing experiments in Physics and Hydrography

Learning outcomes

Course outcome	Subject outcome	Method of verification
[HML3-U19] is able to plan and implement independent learning and improvement of his/her professional competences	is able to plan independent learning	[SU1] oral statement/conversation/ discussion [SU5] implementation of a problem task
[HML3-U18] is able to work individually and in team, manage the work of the team, in particular comply with health and safety regulations and ergonomics	is able to work in teams when performing measurements, is aware of their responsibility for the tasks performed	[SU5] implementation of a problem task [SU6] demonstration of practical skills
[HML3-U14] is able to use the applicable terminology in presenting and discussing problems related to the field of study	is able to use the terminology and methods of physics fluently in the context of a given experiment	[SU1] oral statement/conversation/ discussion
[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 obtain information about the phenomenon underlying the experiment	[SU1] oral statement/conversation/ discussion [SU5] implementation of a problem task
[HML3-U01] is able to plan and conduct experiments, including computer simulations, interpret the results obtained and draw conclusions	is able to plan and conduct experiments, utilizing basic statistical methods to analyze and interpret the collected data	[SU5] implementation of a problem task [SU6] demonstration of practical skills
[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	[SK5] implementation of a problem task
[HML3-K01] is ready to correctly identify and resolve professional dilemmas, especially in the aspects of security and entrusted property	is ready to ensure the safety of people and equipment when conducting laboratory work	[SK8] observation of student's independent or team work
[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 at an advanced level the methods of conducting physical measurements and the tools used for this purpose	[SW1] oral statement/ conversation/discussion [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 at an advanced level the latest paradigms of physical measurement theory	[SW5] implementation of a problem task
[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 that form the physical basis of the measurement being performed	[SW1] oral statement/ conversation/discussion [SW5] implementation of a problem task

Subject contents

The theory of laboratory measurement, measurement uncertainty and statistical data analysis. Students will conduct experiments on selected topics from mechanics, heat and the macroscopic properties of materials.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
graded preparation for class	51.0%	40.0%
graded laboratory report	51.0%	60.0%

Recommended reading	Basic literature	Samuel J. Ling, Moebs W., Sanny J., University Physics (in Polish), OpenStax Polska, 2018 Halliday D., Resnick R., Walker J.: Fundamentals of Physics - vol.1. Mechanics (in Polish). Wydawnictwo Naukowe PWN, 2007 Halliday D., Resnick R., Walker J.: Fundamentals of Physics - vol.2. Mechanics, oscillations and waves, thermodynamics (in Polish), Wydawnictwo Naukowe PWN, 2007 Halliday D., Resnick R., Walker J.: Fundamentals of Physics - vol. 3. Electricity and magnetism (in Polish). Wydawnictwo Naukowe PWN, 2007 Halliday D., Resnick R., Walker J.: Fundamentals of Physics - vol.4 Electromagnetical waves, optics and relativity theory (in Polish). Wydawnictwo Naukowe PWN, 2007.
	Supplementary literature	Massel S. R.: Hydrodynamical processes in marine ecosystems (in Polish). Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk 2010.Orear J.: Physics (in Polish). Vol.1-2. WNT, Warszawa 2008
	eResources addresses	
Example issues/ example questions/ tasks being completed	Determination of friction coefficient and the analysis of measurement uncertainty	
Work placement	Not applicable	

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