

Subject card

Subject name and code	Physics for oceanographers - laboratory exercises, PG_00103327						
Field of study	Oceanography						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Subject group related to scientific research 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		2.0		
Learning profile	academic		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 Aleksandra Cupiał				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	18.0	0.0	0.0	18
	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	18		12.0		20.0	50
Subject objectives	Developing necessary skills for science observations and their analysis as well as interpretation.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	OCEANL3-U03		Ability to processing of laboratory measurements results in a synthetic way and development of correct conclusions.		[SU2] presentation/project/paper/report		
	[OCEANL3-K05] is willing to take responsibility for the safety of his/ her own and others' work, is aware of the risks and threats resulting from the work performed		Readiness to take responsibility for its own and other students safety during work at the physical laboratory, awareness of the risks.		[SK8] observation of student's independent or team work		
	OCEANL3-U04		Ability to search for information in polish and english specialistic literature as well as websites in the field of physics.		[SU2] presentation/project/paper/report		
	OCEANL3-W07		Knowledge and understanding of occupational health and safety rules in the laboratory.		[SW2] presentation/project/paper/report		
	OCEANL3-W02		Understanding and correct describing elementary physical phenomena occurring in nature, including sea environment, as well as laws that govern such phenomena.		[SW2] presentation/project/paper/report		
	OCEANL3-W01		Knowledge and understanding of terminology used in physics at an advanced level.		[SW2] presentation/project/paper/report		
Subject contents	Measurements errors (uncertainties) and their propagation. Experiments relates to three branches of physics: mechanics, heat and macroscopic properties of matter. Rules of conduct in the laboratory.						

Prerequisites and co-requisites	Differential and integral calculus as well as vector algebra at elementary level		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	reports	51.0%	100.0%
Recommended reading	Basic literature	Samuel J. Ling, William Moebs , Jeff Sanny, 2018, University physics, OpenStax Polska	
	Supplementary literature	1. Jearl Walker, 2011. Problems in elementary physics. Wydawnictwo: Naukowe PWN. 2. Paul G. Hewitt, 2010. Conceptual physics Wydawnictwo Naukowe PWN. 3. David Halliday, Robert Resnick, Jearl Walker, 2007. Fundamentals of physics - part 1 Mechanics. Wydawnictwo Naukowe PWN. 4. David Halliday, Robert Resnick, Jearl Walker, 2007 - Fundamentals of physics - part 2. Mechanics, oscillations and waves, thermodynamics. Wydawnictwo Naukowe PWN. 5. David Halliday, Robert Resnick, Jearl Walker, 2007. Fundamentals of physics - part 3 Electricity and magnetism. Wydawnictwo Naukowe PWN. 6. David Halliday, Robert Resnick, Jearl Walker, 2007. Fundamentals of physics - part 4 Electromagnetic waves, optics and relativity theory. Wydawnictwo Naukowe PWN. 7. David Halliday, Robert Resnick, Jearl Walker, 2007. Fundamentals of physics - part 5 Modern physics. Wydawnictwo Naukowe PWN. 8. M.Born, E.Wolf, 1988. Principles of Optics. Pergamon Press, London. 9. H. Szydlowski, 1973, Physical laboratory, PWN	
	eResources addresses		
Example issues/ example questions/ tasks being completed	How can the acceleration of gravity be determined with the use of pendulum?		
Work placement	Not applicable		

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