

Subject card

Subject name and code	Physics, PG_00092773						
Field of study	Marine Hydrography						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2024/2025		
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			2.0		
Learning profile	practical	Assessment form					
Conducting unit	Pracownia Oceanografii Fizycznej -> Katedra Oceanografii Fizycznej i Badań Klimatu -> Faculty of Oceanography and Geography -> Rektor						
Name and surname of lecturer (lecturers)	Subject supervisor	dr Wojciech Brodziński					
	Teachers	dr Wojciech Brodziński					
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	30.0	0.0	0.0	0.0	30
	E-learning hours included: 0.0						
Additional information: If necessary, up to 6 hours of classes can be conducted remotely.							
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	30	2.0	25.0	57		
Subject objectives	<p>1. Providing knowledge and developing skills in the use of higher mathematics to describe physical phenomena and the physical interpretation of the obtained mathematical solutions.</p> <p>2. Acquiring calculating proficiency in solving basic physical problems.</p> <p>3. Creating the basis for the effective use of subsequent courses on marine physics and marine hydrography.</p>						
Learning outcomes	Course outcome	Subject outcome		Method of verification			
	[HML3-U04] use analytical, simulation and experimental methods to identify, formulate and solve engineering tasks	K_U04 - Is able to use physical and mathematical methods to formulate and solve engineering tasks.		[SU1] oral statement/conversation/discussion [SU4] test/exam - oral or written [SU5] implementation of a problem task			
	[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	K_W01 - Knows the physical basis of phenomena and processes occurring in the marine environment and the methods used in oceanographic and hydrographic research		[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion [SW5] implementation of a problem task			

Subject contents	<p>Auditory exercises will include solving exercises illustrating selected topics from the lecture:</p> <ol style="list-style-type: none"> 1. Motion of a material point: Characteristics of motion. Various types of motion (uniform linear motion; non-uniform linear motion; motion on a plane; circular motion). Relativity of motion. 2. Dynamics: Force. I III Newton's laws of motion. Types of forces in nature. Momentum. The principle of conservation of momentum. Work. Conservative forces i unconservative. Mechanical energy. The principle of conservation of energy. 3. Mechanical oscillations: Parameters describing harmonic oscillations. Equation of vibrations of a harmonic oscillator. Energy in oscillating motion. Free, damped and forced oscillations. Resonance phenomena. 4. Basics of wave motion. Description of a plane wave, parameters characterizing the wave. 														
Prerequisites and co-requisites	Knowledge of the basics of higher mathematics.														
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="456 640 794 667">Subject passing criteria</th> <th data-bbox="799 640 1137 667">Passing threshold</th> <th data-bbox="1142 640 1481 667">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="456 674 794 701">Activity (extra points, max. +10%)</td> <td data-bbox="799 674 1137 701">0.0%</td> <td data-bbox="1142 674 1481 701">0.0%</td> </tr> <tr> <td data-bbox="456 707 794 734">Final test</td> <td data-bbox="799 707 1137 734">0.0%</td> <td data-bbox="1142 707 1481 734">70.0%</td> </tr> <tr> <td data-bbox="456 741 794 768">Short entry tests</td> <td data-bbox="799 741 1137 768">0.0%</td> <td data-bbox="1142 741 1481 768">30.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Activity (extra points, max. +10%)	0.0%	0.0%	Final test	0.0%	70.0%	Short entry tests	0.0%	30.0%
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Short entry tests	0.0%	30.0%													
Recommended reading	Basic literature	<ol style="list-style-type: none"> 1. Samuel J. Ling, William Moebs , Jeff Sanny, 2018, Fizyka dla szkół wyższych, OpenStax Polska 2. David Halliday, Robert Resnick, Jearl Walker, 2007. Podstawy fizyki - tom 1. Mechanika. Wydawnictwo Naukowe PWN. 3. David Halliday, Robert Resnick, Jearl Walker, 2007. Podstawy fizyki - tom 2. Mechanika, drgania i fale, termodynamika. Wydawnictwo Naukowe PWN. 													
	Supplementary literature	<ol style="list-style-type: none"> 1. Orear J.: Fizyka. Tom 1 i 2. WNT, 2008. 2. Jearl Walker, 2011. Podstawy fizyki. Zbiór zadań. Wydawnictwo: Naukowe PWN. 													
	eResources addresses	Adresy na platformie eNauczenie: ATC-WOiG-HYDR-INZ35DZ-(2024/2025) Fizyka - Moodle ID: 12815 https://mdl.ug.edu.pl/course/view.php?id=12815													
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> 1. A ball was dropped from a height of $h = 20$ m. What is its speed at the earth's surface? 2. Based on the equation of harmonic motion $x(t)$, determine the speed and acceleration in this motion for a given instant of time t. 3. A car with a mass of 1500 tons initially moving at a speed of 50 km/h begins to brake and stops after travelling a distance of 30 m. Calculate the braking force. 														
Work placement	Not applicable														

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