University of Gdańsk

Subject card

Subject name and code	Physics for oceanographers - auditory exercises, PG_00103326		
Field of study	Oceanography		
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 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	1.0
Learning profile	academic	Assessment form	
Conducting unit	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	20.0	0.0	0.0	0.0	20

E-learning hours included: 0.0

Additional information:

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	20	2.0	8.0	30

Subject objectives

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.

2. Acquiring calculating proficiency in solving basic physical problems.

3. Creating the basis for the effective use of subsequent courses on marine physics and other areas of oceanography.

Learning outcomes

Course outcome	Subject outcome	Method of verification
OCEANL3-W02	K_W02 - Understands and correctly describes the basic physical phenomena occurring in nature, including the marine environment, and the laws governing them	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW5] implementation of a problem task
OCEANL3-U05	K_U05 - Is able to use mathematical methods in solving physical problems (including those related to phenomena occurring in the sea) and analysis of the obtained results	[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written [SU5] implementation of a problem task [SU8] observation of student's independent or team work
OCEANL3-W01	K_W01 - Knows and understands the terminology used in physics at an advanced level	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW5] implementation of a problem task

Subject contents

Auditory exercises will include solving exercises illustrating selected topics from the lecture:

C.1. Motion of a material point: Characteristics of motion. Uniform linear motion. Non-uniform linear motion. Motion on a plane. Relativity of motion.

C.2. Dynamics: Force. I - III Newton's laws of motion. Types of forces in nature. Momentum. The principle of conservation of momentum. Work. Conservative and non-conservative forces. Mechanical energy. Principle of conservation of mechanical energy. Collisions.

C.3. Mechanical oscillations: Parameters describing harmonic oscillations. Equation of vibrations of a harmonic oscillator. Energy in oscillating motion.

C.4. Basics of wave motion.

Prerequisites and co-requisites

Knowledge of the basics of higher mathematics.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Activity (extra points, max. +10%)	51.0%	10.0%
Final test	51.0%	70.0%
Short entry tests	51.0%	20.0%

Recommended reading

Basic literature	1. Samuel J. Ling, William Moebs , Jeff Sanny, 2018, Fizyka dla szkół wyższych, OpenStax Polska (in Polish)
Supplementary literature	1. Jearl Walker, 2011. Podstawy fizyki. Zbiór zadań. Wydawnictwo: Naukowe PWN. (in Polish) 2. Paul G. Hewitt, 2010. Fizyka wokół nas Wydawnictwo Naukowe PWN. (in Polish) 3. David Halliday, Robert Resnick, Jearl Walker, 2007. Podstawy fizyki - tom 1. Mechanika. Wydawnictwo Naukowe PWN. (in Polish) 4. David Halliday, Robert Resnick, Jearl Walker, 2007. Podstawy fizyki - tom 2. Mechanika, drgania i fale, termodynamika. Wydawnictwo Naukowe PWN. (in Polish)
eResources addresses	Adresy na platformie eNauczanie: ATC-WOiG-OCEAN-L3DZ-(2024/2025) Fizyka dla oceanografów - Moodle ID: 12778 https://mdl.ug.edu.pl/course/view.php?id=12778

Example issues/ example questions/ tasks being completed

Work placement

Not applicable

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