University of Gdańsk

Subject card

Subject name and code	Marine physics - lecture, PG_00159308		
Field of study	Oceanography		
Date of commencement of studies	October 2025	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	2	Language of instruction	Polish
Semester of study	4	ECTS credits	3.0
Learning profile	academic	Assessment form	exam
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 Maciej Matciak	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	0.0	0.0	30

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	30	20.0	25.0	75

Subject objectives

Acquire knowledge and understanding of basic laws governing physical processes occurring in the sea

Learning outcomes

Course outcome	Subject outcome	Method of verification
OCEANL3-W01	Knowledge and understanding of the basic concepts and terms used in the field of marine physics and related science (in Polish and English)	[SW4] test/exam - oral or written
OCEANL3-W02	Knowledge and understanding of the processes and phenomena occurring in the sea.	[SW4] test/exam - oral or written
OCEANL3-U01	Ability to use correctly science terminology in different forms of expression in the field of marine physics	[SU4] test/exam - oral or written
OCEANL3-W05	Knowledge about research methods and approaches (mathematical, statistical and IT tools) used in oceanography in order to describe and interpret physical phenomena in the sea	[SW4] test/exam - oral or written

Subject contents

Black body radiation laws.Solar energy flux at the Earth and its distribution, greenhouse effct. Molecular structure and physical properties of seawater. Forces acting on water in the ocean. Elements of seawater thermodynamics. Equilibrium and water movement - examples of different type of sea currents, wave and convection. Molecular and turbulent exchange of mass, heat and momentum. Acoustic waves in the sea.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
exam	51.0%	100.0%

Recommended reading	Basic literature	Dera J.: Marine Physics. Wyd. PWN, Warszawa, 1983, 2003. Druet, Kowalik, 1970, Marine dynamics, Wyd. Morskie Gdańsk
	Supplementary literature	Massel S.R., 2010. Hydrodynamical processes in marine ecosytems. Wyd. Uniwersytetu Gdańskiego.
	eResources addresses	
Example issues/ example questions/ tasks being completed	Analysis of different expressions.for seawater equation of state.	
Work placement	Not applicable	

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