

Subject card

Subject name and code	Marine physics - auditory exercises, PG_00159307						
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		4.0		
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 Maciej Matciak				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	45.0	0.0	0.0	0.0	45
	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	45		15.0		50.0	110
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-W02		Knowledge and understanding of processes and phenomena occurring in marine environment		[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion		
	OCEANL3-U05		Ability to apply mathematical methods in data analysis		[SU1] oral statement/conversation/discussion [SU4] test/exam - oral or written [SU8] observation of student's independent or team work		
	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)		[SW1] oral statement/conversation/discussion [SW3] text preparation/written work [SW5] implementation of a problem task		
	OCEANL3-U01		Ability to use correctly science terminology in different forms of expression in the field of marine physics		[SU1] oral statement/conversation/discussion [SU4] test/exam - oral or written [SU8] observation of student's independent or team work		
	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 [SW1] oral statement/conversation/discussion		

Subject contents	Solar radiation as a primary source of energy on the earth, its distribution and consequences, role of radiation in energy exchange between the sea and atmosphere (based on black body radiation laws). Molecular structure and physical properties of the seawater. Elements of thermodynamics - seawater equation of state, specific heat, adiabatic process. Equilibrium and simple models of sea currents. Diffusion and advection of mass, heat and momentum in the sea. Acoustic waves in the sea. Downward irradiance transport in aquatic environment.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	short written tests	51.0%	25.0%
	activity	51.0%	25.0%
	written tests	51.0%	50.0%
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 ecosystems. Wyd. Uniwersytetu Gdańskiego.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Prove that Coriolis acceleration is perpendicular to the horizontal water current		
Work placement	Not applicable		

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