

**Subject card**

<b>Subject name and code</b>	Introduction to Marine Optics - lecture, PG_00205344						
<b>Field of study</b>	Oceanography						
<b>Date of commencement of studies</b>	October 2026	<b>Academic year of realisation of subject</b>			2028/2029		
<b>Education level</b>	Bachelor's studies	<b>Subject group</b>			Obligatory subject group in the field of study Optional subject group Subject group related to scientific research in the field of study		
<b>Mode of study</b>	full-time studies	<b>Mode of delivery</b>			at the university		
<b>Year of study</b>	3	<b>Language of instruction</b>			Polish		
<b>Semester of study</b>	5	<b>ECTS credits</b>			2.0		
<b>Learning profile</b>	academic	<b>Assessment form</b>			exam		
<b>Conducting unit</b>	Laboratory of Physical Oceanography -> Department of Physical Oceanography and Climate Research -> Faculty of Oceanography and Geography -> Rector						
<b>Name and surname of lecturer (lecturers)</b>	Subject supervisor		dr hab. Mirosław Darecki				
	Teachers						
<b>Lesson types</b>	<b>Lesson type</b>	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	<b>Number of study hours</b>	25.0	0.0	0.0	0.0	0.0	25
	E-learning hours included: 0.0						
<b>Learning activity and number of study hours</b>	<b>Learning activity</b>	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	<b>Number of study hours</b>	25		2.0		23.0	50
<b>Subject objectives</b>	Description of the interaction between light and optically active constituents of seawater and light energy transport in the sea.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[OCEANL3-U01] is able to use the current scientific terminology in the field of oceanography in various forms of expression	Ability to use correctly science terminology in different forms of expression in the field of marine optics	[SU4] test/exam - oral or written
	[OCEANL3-W01] has an advanced knowledge and understanding of the terminology used in oceanography and related exact and natural sciences (in Polish and a selected foreign language)	Knowledge and understanding of the basic concepts and terms used in the field of marine optics and related science (in Polish and English)	[SW4] test/exam - oral or written
	[OCEANL3-W04] has an advanced understanding of issues and research problems in oceanography, and recognizes their connection with other scientific disciplines	Knowledge and understanding of matters and problems in the field of marine optics as well as their relationships with other scientific disciplines.	[SW4] test/exam - oral or written
	[OCEANL3-W05] has an advanced knowledge of techniques, research methods, and tools (mathematical, statistical, and computational) used by oceanographers to describe and interpret processes and phenomena occurring in the marine environment	Knowledge about research methods and approaches (mathematical, statistical and IT tools) used in marine optics in order to describe and interpret phenomena and processes occurring in the sea	[SW4] test/exam - oral or written
[OCEANL3-K03] is ready to exercise caution and criticism in accepting information from scientific literature, the Internet and other media relating to natural sciences	Readiness to be cautious and critical with respect to the information from the field of marine optics given in science literature, websites and other media	[SK4] test/exam - oral or written	
Subject contents	Basic quantities in radiometry. Sun radiation and its characteristic. Transfer of light through the water surface. Inherent optical properties of seawater optically active constituents. Transport of light energy in the sea. Elements of underwater visibility. Optical research in oceanography.		
Prerequisites and co-requisites	Differential and integral calculus at elementary level		
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., 2003. Marine physics. PWN, 540 str.	
	Supplementary literature	www.oceanopticsbook.info	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Formulation of the radiative transfer equation in the sea.		
Work placement	Not applicable		

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