

Subject card

Subject name and code	Phototransformation of Natural Water Constituents - lecture, PG_00204966						
Field of study	Oceanography						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2026/2027		
Education level	Master's studies	Subject group			Obligatory subject group in the field of study Optional subject group 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			English		
Semester of study	2	ECTS credits			1.0		
Learning profile	academic	Assessment form			exam		
Conducting unit	Laboratory of Marine Environmental Protection -> Department of Chemical Oceanography and Marine Geology -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Waldemar Grzybowski					
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	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	15	1.0		9.0	25	
Subject objectives	Familiarization with the influence of solar radiation on substances occurring in the aquatic environment and with methods of examining this influence						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[OCEANMU2-W02] knows and understands complex processes and phenomena occurring in the marine environment, with particular emphasis on the coastal zone, as well as complex relationships between living and non-living elements of the aquatic environment	knows the effects of solar radiation on substances found in the aquatic environment			[SW4] test/exam - oral or written		
Subject contents	A. Topics of the lecture A.1 properties of solar radiation A.2 primary photochemical reactions in natural waters A.3 secondary chemical reactions in natural waters, impact secondary reaction products to dissolved substances A.4 mechanisms of creating reactive oxygen species and free radicals						
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	A. Literature required to finally pass the course (pass the exam): A.1. used during classes A.2. studied independently by the student Zofia Sawicka - Photochemical processes in the environment, 2001, Wydawnictwo UJ, Kraków B.					
	Supplementary literature	Additional literature Pierre Boule (ed.), Environmental Photochemistry Part I (Handbook of Environmental Chemistry), 1999, Springer, Berlin Asa Leifer, The kinetics of environmental aquatic photochemistry, 1988, Oxford University Press, Oxford					

	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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