

Subject card

Subject name and code	Phototransformation of natural water constituents - lecture, PG_00117782						
Field of study	Oceanography						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
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		3.0		10.0	28
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		[SW1] oral statement/ conversation/discussion		
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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