

Subject card

Subject name and code	Global hydroclimate system, PG_00054833						
Field of study	Environmental Protection						
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 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		Polish		
Semester of study	1		ECTS credits		1.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Laboratory of the Biogeochemical Cycle of Elements -> Department of Chemical Oceanography and Marine Geology -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Anita Lewandowska				
	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		2.0		8.0	25
Subject objectives	Familiarizing students with issues mentioned in the lecture program content. Familiarizing them with the need to create activities in connection with the assessment of their impact on the hydroclimatic system on a global scale. Implementation of skills in using scientific reports and hydrometeorological services in the assessment of climate change and surface water hydrology. Acquiring the ability to assess climate change in the temperate and polar zones. Acquiring the ability to recognize factors determining changes in the quality of marine waters and atmosphere on a regional and global scale						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[OŚMU2_W07] Distinguishes between legal and administrative mechanisms and procedures in environmental protection and interprets its international dimension.	Distinguishes legal and administrative mechanisms and procedures relating to climate change and its impact on the natural environment and interprets their international dimension.	[SW4] test/exam - oral or written
	[OŚMU2_W08] Explains the mechanisms of unit processes used in environmental protection and waste management methods.	Explains the mechanisms of anthropogenic effects on the hydrosphere and the basis of international and national conventions governing environmental protection on a global scale	[SW4] test/exam - oral or written
	[OŚMU2_K01] Behaves in a professional manner at all times; bears full responsibility for the actions taken relating to the protection of the environment and respects the principles of professional ethics and principles of intellectual honesty.	Behaves professionally in all situations, takes full responsibility for environmental protection activities undertaken and complies with the principles of professional ethics and intellectual honesty	[SK8] observation of student's independent or team work
	[OŚMU2_W03] Characterises the effects of human interference in the natural environment and explains the mechanisms of reaction of living organisms to its pollution.	Characterizes the effects of human interference in the hydroclimatic system and explains the reaction of living organisms to the consequences of this interference.	[SW4] test/exam - oral or written
	[OŚMU2_W01] Describes complex phenomena and processes occurring in nature, including those related to the spread of anthropogenic pollution.	The student correctly answers questions relating to the material covered during lectures	[SW4] test/exam - oral or written
	[OŚMU2_U01] On the basis of the acquired knowledge, proposes to solve environmental problems.	Based on his knowledge, he proposes solutions to problems in the field environmental protection	[SU8] observation of student's independent or team work
	[OŚMU2_K10] Has a need for continuous professional development.	Has a need for continuous professional development	[SK1] oral statement/conversation/discussion
	[OŚMU2_W06] Analyses the impact of human activities on biodiversity and environmental quality on a local, regional and global scale.	Analyzes the impact of human activities on the hydroclimatic system on a local to global scale	[SW4] test/exam - oral or written
Subject contents	1. Basic concepts in the theory of climate systems on spatial and temporal scales. 2. Water cycle on the Earth. 3. Global atmospheric circulation. 4. Division of the atmosphere taking into account the physical and chemical properties of its layers. 5. The chemical composition of the atmosphere from the beginning of its creation to the present day. 6. The role of aerosols and gases in the hydroclimatic system. 7. Human participation in shaping the hydroclimatic system. 8. Circulation of sea and ocean waters on a global scale and its impact on the formation of the Earth's climate and air at the Earth's surface. 9. Characteristics of the climate of the temperate and polar zones. 10. The role of polar areas in global climate change. 11. Natural and anthropogenic transformations of surface waters. 12. Historical and contemporary climate changes and their impact on water relations on a local, regional and global scale. Anthropogenic effects of impact on the hydrosphere.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written test exam with true/false questions	51.0%	100.0%

Recommended reading	Basic literature	1. Bajkiewicz Grabowska E., Mikulski Z., General hydrology, PWN Warszawa, 2008. 2. Falkowska L., Lewandowska A., Aerosols and gases in the Earth's atmosphere - global changes, Ed. University of Gdańsk, Gdańsk, 2009 3. Martyn D., Climates of the Earth, ed. 3, Warsaw, 2000 4. Sainfeld J.H., Pandis S.N., Atmospheric Chemistry and Physics: From Air Pollution to Climate Change, 3rd Edition. John Wiley & Sons, Inc., New York, Chichester, Weinheim, Brisbane, Singapore, Toronto, 2016, 5. Walczowski W., 2009, Atlantic Water in the Nordic Seas - properties, variability, climatic significance, IO PAN Sopot
	Supplementary literature	1. Publications indicated by the lecturer.
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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