University of Gdańsk

Subject card

Subject name and code	Dynamical Meteorology - laboratory, PG_00206217		
Field of study	Oceanography		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2027/2028
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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	3.0
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	prof. dr hab. Mirosław Miętus	
	Teachers		

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	0.0	0.0	30
	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	30	2.0	43.0	75

Subject objectives	Expanding the knowledge presented in the lecture and acquiring practical skills in the quantitative and qualitative interpretation of the topics covered in the lecture of the same title.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[OCEANMU2-U04] is ready to develop in an analytical and synthetic way research and analysis results and based on them creating conclusions	Is able to develop research and analysis results in an analytical and synthetic manner and draw correct conclusions based on them	[SU2] presentation/project/paper/ report
[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 and understands in-depth the specialist terminology used in atmospheric sciences; knows and understands in-depth the complex interrelationships between processes occurring in the sea and the atmosphere	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report
[OCEANMU2-W04] has an in-depth understanding of the latest research trends in oceanography, as well as the possibilities for practical application of related achievements; evaluates their usefulness and limitations in solving scientific research problems, and critically analyzes and assesses their applicability	Is able to develop research and analysis results in an analytical and synthetic manner and draw correct conclusions based on them	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report
[OCEANMU2-U02] is able to fluently and accurately use scientific terminology when presenting and discussing oceanographic issues, and to propose and justify innovative solutions	Is able to use scientific terminology fluently and appropriately in presenting and discussing problems in the field of meteorology	[SU2] presentation/project/paper/ report
[OCEANMU2-U06] is able to use specialized computer software as well as advanced mathematical and statistical methods to analyze data and describe processes and phenomena occurring in the marine and coastal environment; evaluates their reliability and usefulness and performs critical analysis	Is able to use specialist computer software as well as mathematical and statistical methods in data analysis and description of phenomena and processes occurring in the atmosphere	[SU2] presentation/project/paper/ report
[OCEANMU2-K04] is ready to critically evaluate his/her knowledge and received content in the field of natural sciences in in particular in the field of the studied specialty, a in problematic situations, supports oneself with knowledge experts	Is ready to critically evaluate the knowledge he/she has and the content he/she receives in the field of atmospheric sciences	[SK1] oral statement/conversation/ discussion [SK8] observation of student's independent or team work

Subject contents

B.1. Analysis of the structure of the atmospheric boundary layer and cloud cover over the ocean (vertical profiles of temperature, humidity, wind speed; vertical stability; cloud cover and precipitation).
B.2. Atmosphere over coastal upwelling zones analysis of data from the southern Baltic Sea (temporal and spatial variability of atmospheric features in the upwelling zone; the influence of upwelling on sea-atmosphere interactions).
B.3. PCA analysis of spatial data and its use for data analysis in meteorology.
B.4.Analysis of correlation and coherence of selected processes in the sea and atmosphere.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
obtaining a positive grade in the tests	51.0%	100.0%

Recommended reading

Basic literature	Herman, A., 2006, Podstawy meteorologii. Uniwersytet Gdański. Holton J.R., Hakim G.J., 2013. An Introductioon to Dynamics Meteorology, 5th ed. Academic Press. Lindzen R.S. 1990. Dynamics in Atmospheric Physics. Cambridge Univ. Press
Supplementary literature	Satoh M., 2014. Atmospheric Circulation Dynamics and General Circulation Models. Springer and Praxis Publishing.
eResources addresses	

Example issues/ example questions/ tasks being completed	Calculate the vertical temperature gradient across atmospheric layers. Estimate the potential temperature. Calculate components of the geostrophic wind vector.
Work placement	Not applicable

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