

Subject card

Subject name and code	Geoinformation in environmental monitoring (Lecture), PG_00201202						
Field of study	Physical geography and geoinformation						
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	2		ECTS credits			3.0	
Learning profile	academic		Assessment form			credit	
Conducting unit	Climate Research Laboratory -> Department of Physical Oceanography and Climate Research -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Roman Cieśliński				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	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		4.0		41.0	75
Subject objectives	<ul style="list-style-type: none"> To introduce students with the organization and principles of environmental monitoring, factors causing pollution of individual environmental components, assessment of their condition and adopted quality standards. Discussion of the main methods and principles of organizing the network of meteorological, air quality, hydrological and natural measurements and observations. Discussion of the possibilities of using spatial analysis methods (in particular GIS) in environmental monitoring, as well as current practices in this area. 						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[GFGMU2_U04] is able to analyse and interpret the causes and course of physical-geographical processes and phenomena, selects and applies advanced research methods and tools, including statistical and geoinformatics methods, and critically interprets the results obtained, drawing conclusions and formulating their own position on that basis, justified in debate.	student is able to analyze and interpret the state, causes and effects of natural and anthropogenic processes occurring in the environment, is able to use advanced geographical information systems and synthesize the issues discussed	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report [SU4] test/exam - oral or written
	[GFGMU2_U03] is able to use academic literature in the fields of physical geography and geoinformation in Polish and English, selecting it appropriately for the research objective	the student is able to search and use texts, legal acts and websites in Polish and English	[SU4] test/exam - oral or written
	[GFGMU2_K03] is ready to accepting responsibility for group work assuming various roles in it, participating in preparation of scientific projects, taking responsibility for the equipment and safety rules, active developing of professional competences and knowledge in Earth and environmental sciences and geoinformation, including interdisciplinarity, as well as developing the principles of professional ethics, respecting copyright rules	student is able to cooperate in a group in the organization and implementation of tasks related to environmental monitoring, is aware of the responsibility for measuring equipment and software, is aware of the need to update his knowledge and professional competences in compliance with ethical principles	[SK1] oral statement/conversation/discussion [SK8] observation of student's independent or team work
	[GFGMU2_K01] is ready to critically assess the knowledge obtained in the field of Earth and environmental sciences, particularly physical geography and geoinformation, its completion and verification through further critical analysis of scientific literature	Student is able to verify the state of his knowledge about environmental elements, the principles of environmental monitoring and geoinformation, he is able to supplement and update his knowledge using literature, software and legal acts.	[SK1] oral statement/conversation/discussion [SK4] test/exam - oral or written
	[GFGMU2_U02] is able to precisely and appropriately use terminology in the field of physical geography and geoinformation in oral statements and written works	student knows the concepts and definitions relevant to monitoring research, legal acts relating to the environment and its monitoring, is able to use these concepts at an advanced level	[SU1] oral statement/conversation/discussion [SU4] test/exam - oral or written
	[GFGMU2_W03] knows and understands in a deepened extent issues in the theory of geographic information systems, basics of organization and operation of spatial information infrastructures and possibilities of using geoinformatics tools in physical geography	the student knows and uses geographic information systems in environmental monitoring at an advanced level, student is able to identify the tools used in various environmental monitoring programs	[SW4] test/exam - oral or written [SW2] presentation/project/paper/report

Subject contents	<p>legal basis of environmental monitoring (lecture)</p> <p>State Environmental Monitoring (PMŚ) goals, structure, subsystems.</p> <p>PMŚ programs, implementing institutions (lecture)</p> <p>principles of creating a monitoring network (lecture)</p> <p>use of monitoring research results (lecture, work using websites) T</p> <p>tools for integrating and processing data about the natural environment (lecture, work using websites)</p> <p>DPSIR model (lecture, independent and group work) L</p> <p>landslide monitoring (SOPO) goals and importance (lecture)</p> <p>Selected international organizations and systems of environmental monitoring (lecture)</p> <p>Integrated Monitoring of the Natural Environment (ZMŚP). (lecture)</p> <p>The INSPIRE Directive (Infrastructure for Spatial Information in Europe), (lecture, work using websites)</p> <p>European Environment Agency (EEA) (lecture, work using websites)</p> <p>GEOPORTALS, EKOPORTAL providing information about the environment. (lecture, work using websites)</p> <p>DPSIR model (lecture, independent and group work)</p> <p>Online data processing (lecture, work using websites)</p> <p>Possibilities / obstacles to the effective use of GIS tools in environmental monitoring (lecture, work using websites)</p>								
Prerequisites and co-requisites									
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="456 1447 786 1480">Subject passing criteria</th> <th data-bbox="799 1447 1139 1480">Passing threshold</th> <th data-bbox="1152 1447 1469 1480">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="456 1487 786 1541">written test with questions and tasks)</td> <td data-bbox="799 1487 1139 1541">100.0%</td> <td data-bbox="1152 1487 1469 1541">100.0%</td> </tr> </tbody> </table>	Subject passing criteria	Passing threshold	Percentage of the final grade	written test with questions and tasks)	100.0%	100.0%		
Subject passing criteria	Passing threshold	Percentage of the final grade							
written test with questions and tasks)	100.0%	100.0%							
Recommended reading	Basic literature	<p>European environment Status and forecasts. EEA, Copenhagen</p> <p>Strategic Program for State Environmental Monitoring, GIOŚ Warsaw.</p> <p>Report on the state of the environment in Poland, GIOŚ, Warsaw.</p> <p>Reports on the state of the environment in the Pomeranian Voivodeship, GIOŚ, Gdańsk.</p>							

	Supplementary literature	<p>Hydrographic Map of Poland at a scale of 1:50,000, Technical Guidelines, 2005, Chief Surveyor of the Country, Gokart, Rzeszów.</p> <p>Sozological map of Poland at a scale of 1:50,000, Technical Guidelines, 2005, Chief Surveyor of the Country, Gokart, Rzeszów.</p> <p>Geoenvironmental map of Poland at a scale of 1:50,000, PGI, Warsaw.</p> <p>DIRECTIVE 2000/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2000 establishing a framework for Community action in the field of water policy.</p> <p>Regulation of the Minister of the Environment of November 15, 2011 on the forms and methods of monitoring surface and groundwater bodies, DZ. U. 2011, No. 258, item 1550.</p> <p>Act of July 20, 1991 on the Environmental Protection Inspection, Journal of Laws 1991 no. 77 item 335.</p> <p>Regulation of the Ministry of the World of August 24, 2012 on the levels of certain substances in the air</p> <p>System for monitoring and protecting the country, 1999, IMWM, Warsaw. The health status of forests in Poland, 2017,</p> <p>Forest Research Institute and State Forests, Warsaw.</p>
	eResources addresses	
Example issues/ example questions/ tasks being completed	List selected satellite imaging systems used in environmental monitoring	<p>Which EU Directives play the main role in nature monitoring?</p> <p>Expand the SOPO abbreviation</p> <p>List the features of environmental monitoring studies</p>
Work placement	Not applicable	

Document generated electronically. Does not require a seal or signature.