

**Subject card**

<b>Subject name and code</b>	Geodesy and Cartography - lecture, PG_00201414						
<b>Field of study</b>	Water Management and Protection of Water Resources						
<b>Date of commencement of studies</b>	October 2026	<b>Academic year of realisation of subject</b>				2026/2027	
<b>Education level</b>	Bachelor's studies	<b>Subject group</b>				Obligatory subject group in the field of study	
<b>Mode of study</b>	full-time studies	<b>Mode of delivery</b>				at the university	
<b>Year of study</b>	1	<b>Language of instruction</b>				Polish	
<b>Semester of study</b>	2	<b>ECTS credits</b>				1.0	
<b>Learning profile</b>	practical	<b>Assessment form</b>				exam	
<b>Conducting unit</b>	Geographic Information System (GIS) Laboratory -> Faculty of Oceanography and Geography -> Rector						
<b>Name and surname of lecturer (lecturers)</b>	<b>Subject supervisor</b>		dr Maciej Markowski				
	<b>Teachers</b>						
<b>Lesson types</b>	<b>Lesson type</b>	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	<b>Number of study hours</b>	15.0	0.0	0.0	0.0	0.0	15
	E-learning hours included: 0.0						
<b>Learning activity and number of study hours</b>	<b>Learning activity</b>	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	<b>Number of study hours</b>	15		1.0		9.0	25
<b>Subject objectives</b>	Acquisition of theoretical and practical knowledge in the field of geodesy and cartography. Learning basic techniques for performing geodetic measurements using appropriate guidelines in geodesy. Gaining knowledge in using topographic maps and the main map of the country. Familiarization with data sources from map services.						
<b>Learning outcomes</b>	<b>Course outcome</b>		<b>Subject outcome</b>			<b>Method of verification</b>	
	[GWOZWL3-K05] The student has the ability take responsibility for the safety of their own work and that of others, dealing with emergencies, exercising caution in the laboratory and in the field, responsibility for entrusted equipment and apparatus.		Student is ready to fulfill social obligations and co-organize activities for the benefit of the community. Contents: A.1-A.9.			[SK4] test/exam - oral or written	
	[GWOZWL3-W04] The student is familiar with advanced research techniques, methods and tools currently used in water management and the protection of water resources, in both the natural and social sciences, including advanced statistical and IT tools enabling the description, modelling and interpretation of data concerning phenomena and processes occurring in the aquatic environment, as well as tools for describing relationships within socio-ecological systems.		Student knows and understands the theories, methods, and techniques for data acquisition used in geodesy and cartography, which allow for describing and examining the complex relationships present in water management and water resource protection, both in the natural and social sciences. This knowledge enables the use of basic statistical and information technology tools in processing and interpreting data related to phenomena and processes occurring in the aquatic environment, explaining the relationships within socio-ecological systems. Contents: A.1-A.9.			[SW4] test/exam - oral or written	

Subject contents	<p>A.1 Geodesy and cartography - definitions, tasks, and classifications. Understanding the concepts of map and topography.</p> <p>A.2 Shape and size of the Earth. Reference surfaces. Theory of cartographic projections.</p> <p>A.3 Basic coordinate systems on the plane and in space used in geodesy and cartography. Right-handed flat rectangular coordinate system, flat polar, geographic, geodetic, and orthocartesian geocentric systems.</p> <p>A.4 Field measurements. Units of measurement. Situational and elevation measurements.</p> <p>A.5 National spatial reference systems used in Poland. Geodetic reference systems, flat rectangular coordinate systems, and elevation systems. Sheet division of maps in the PL-1992 and PL-2000 coordinate systems.</p> <p>A.6 Elements of a geographical map. Mathematical framework, auxiliary markings, supplementary data.</p> <p>A.7 Topographic maps.</p> <p>A.8 Main map of the country.</p> <p>A.9 Selected map services in Poland.</p>											
Prerequisites and co-requisites												
Assessment methods and criteria	<table border="1" data-bbox="448 956 1487 1025"> <thead> <tr> <th data-bbox="448 956 794 987">Subject passing criteria</th> <th data-bbox="794 956 1141 987">Passing threshold</th> <th data-bbox="1141 956 1487 987">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 987 794 1025">exam</td> <td data-bbox="794 987 1141 1025">51.0%</td> <td data-bbox="1141 987 1487 1025">100.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	exam	51.0%	100.0%			
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Example issues/ example questions/ tasks being completed												
Work placement	Not applicable											

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