



Subject card

Subject name and code	Geographical information Systems, PG_00047998						
Field of study	Environmental Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2023/2024		
Education level	first-cycle studies	Subject group			Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Part-time studies	Mode of delivery			at the university		
Year of study	4	Language of instruction			Polish		
Semester of study	7	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Geodesy -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Adam Inglot				
	Teachers		dr inż. Adam Inglot				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	10.0	0.0	0.0	0.0	25
	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	25		5.0		70.0	100
Subject objectives	Understanding the origins, evolution and development forecasts for GIS and GIS functions in decision-making, as well as the importance of standardization and sharing of data in the GIS.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U05] can apply in engineering practice the basic geodetic instruments and instruments, make measurement sketches and read information from the map and surveying documents		Students will be able to read information from topographic maps and the results of GIS analysis.		[SU4] Assessment of ability to use methods and tools		
	[K6_W17] has basic knowledge of geodesy in the range of applied measurement equipment and techniques, geodetic information systems and documentation necessary in the preparation process, investment implementation		The student understands the impact of the curvature of the Earth's surface for mapping of spatial phenomena.		[SW3] Assessment of knowledge contained in written work and projects		
	[K6_W16] knows the rules of descriptive geometry and technical drawing regarding the recording and reading of architectural drawings, construction and surveying drawings, as well as their preparation with the use of CAD		Students can use the data exchange standards, understand and apply the concept of representation topology mapping.		[SW3] Assessment of knowledge contained in written work and projects		

Subject contents	<p>The lecture covers the topics : genesis, evolution and forecast of the development of GIS as a definition and conceptual scope against the background of other information systems. GIS technologies in the decision-making process. Modeling, the concept of model. Data models: hierarchical, network, relational, object-oriented, object-relational. In the context of SIP. Data exchange (problem description, descriptive data exchange, spatial data exchange popular languages, formats and standards: XML, SGML, GML, DXF and their derivatives) in the context of SIP. Information on the relational data model extended by the structured query language SQL, along with its practical use, query optimization and construction of dedicated data structures. Basic problems and errors occurring during the process of vector model data acquisition. Exercises include: familiarization of students with GIS software, performance of basic spatial analysis and database queries. Execution of an assignment with analysis of zones permissible for the construction of wind farms and analysis of the possibility of obtaining solar energy.</p>											
Prerequisites and co-requisites												
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="454 622 788 651">Subject passing criteria</th> <th data-bbox="799 622 1139 651">Passing threshold</th> <th data-bbox="1150 622 1481 651">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="454 658 788 687">oral answer</td> <td data-bbox="799 658 1139 687">50.0%</td> <td data-bbox="1150 658 1481 687">50.0%</td> </tr> <tr> <td data-bbox="454 694 788 723">report</td> <td data-bbox="799 694 1139 723">50.0%</td> <td data-bbox="1150 694 1481 723">50.0%</td> </tr> </tbody> </table>	Subject passing criteria	Passing threshold	Percentage of the final grade	oral answer	50.0%	50.0%	report	50.0%	50.0%		
Subject passing criteria	Passing threshold	Percentage of the final grade										
oral answer	50.0%	50.0%										
report	50.0%	50.0%										
Recommended reading	Basic literature	<ol style="list-style-type: none"> 1. David E. Davis Gis dla każdego 2. Jerzy Gaździcki Systemy Informacji przestrzennej 3. P. Longley, M. Goodchild, D. Maguire, D. Rhind GIS Teoria i praktyka 4. Laska, M., Systemy informacji przestrzennej 5. Litwin, L., Myrda, G., Systemy Informacji Geograficznej. Zarządzanie danymi przestrzennymi w GIS, SIP, SIT, LIS. 6. Urbański, J. Zrozumieć GIS. Analiza informacji przestrzennej 7. J. Pomykała, J. Pomykała Systemy informacyjne 8. M. Kraak, F. Ormeling Kartografia wizualizacja danych przestrzennych 9. A. Magnuszewski GIS w geografii fizycznej 10. Gotlib D., Iwaniak A., Olszewski R.: GIS. Obszary zastosowań. Wyd. Naukowe PWN. Warszawa. 2007 11. Felczenloben D. Geoinformacja. Wprowadzenie do systemów organizacji danych i wiedzy. Gall 2020 										
	Supplementary literature	1. Paul DuBois MySQL										
	eResources addresses	Adresy na platformie eNauczanie:										

Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none">1. Replace the components and functions of GIS2. Introduce the impact of the curvature of the Earth on engineering calculations.3. Describe principles of topology collection4. Characterize the importance of data exchange standards for engineering work5. Replace and present examples of cartographic representation and coordinate systems in force in Poland and in Europe generally.
Work placement	Not applicable