University of Gdańsk

Subject card

Subject name and code	Advanced GIS in Socio-Economic Geography B, PG_00204884						
Field of study	Socio-economic geography with elements of GIS						
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 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		5.0		
Learning profile	academic		Assessment form		credit		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		mgr Martyna Sydorów				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	45.0	0.0	0.0	45
	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	45		8.0		72.0	125
Subject objectives	Acquisition of the ability to carry out advanced spatial socio-economic analyses using a programme from the GIS environment Acquisition of the ability to carry out statistical analyses using a programme from the GIS environment Correct presentation of spatial data on thematic maps						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[GSEMU2_K01] is ready to critically assess knowledge and received content in the field of socio-economic geography and Geographic Information Systems	verifies and critically evaluates the issues analysed and presented resulting from the use of GIS tools	[SK4] test/exam - oral or written [SK5] implementation of a problem task
[GSEMU2_U04] adapts existing research tools and methods to solve complex and unusual problems occurring in the anthropogenic environment	adapts research methods and tools from the GIS environment to perform spatial analyses of real estate and commercial and service establishments and other types of facilities	[SU6] demonstration of practical skills
[GSEMU2_W04] recognises in-depth methods and tools (quantitative, qualitative, cartographic) of research in socio-economic geography	knows and understands in depth methods of cartographic presentation of spatial data	[SW2] presentation/project/paper/ report
[GSEMU2_U03] selects and applies appropriate social research methods (including statistical and cartographic ones) and research tools with particular emphasis on information technologies and GIS software	selects and applies appropriate GIS software methods and tools to present population, economic and communication issues	[SU6] demonstration of practical skills
[GSEMU2_U02] properly selects sources and information derived from them, with particular regard to sources of spatial information; evaluatesthem critically and interpret them creatively	correctly selects spatial data sources, imports data from the CSO and GUGiK into the GIS environment and critically evaluates them	[SU6] demonstration of practical skills

Subject contents

B.1 Multi-criteria analyses relating to the search for the best locations for retail and service outlets and other types of premises.

B.2 Connecting databases to a programme from the GIS environment.

B.3 Create cartograms and cartodiagrams of population and economic issues. Publish the results of analyses on the web, using Web-GIS tools.

B.4 Spatial analyses relating to real estate (including tools for searching for plots of land, assessing their suitability for development, and determining development density).

B. 5 Different methods of analysing and visualising accessibility.

B.6 Selected methods for automating spatial data processing and analysis.

B.7 Internet-based spatial data sources and methods for their extraction.

B.8 Basics of geostatistics.

B.9 Basics of remote sensing.

B.10 Advanced raster analyses relating to building visibility and solar studies.

Prerequisites and co-requisites

proficiency in Geographic Information System software (ArcGIS Pro, QGIS), knowledge of the basics of cartographic presentation of data, ability to carry out simple statistical analyses, knowledge of English at an intermediate level

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Theory test	51.0%	30.0%
	Working in a group	51.0%	20.0%
	An assessment involving the production of cartographic studies on a given topic	51.0%	30.0%
	Carrying out advanced GIS analyses with presentation of results on a poster/web page	51.0%	20.0%
Recommended reading	Basic literature	Literatura wymagana do ostatecznego zaliczenia zajęć (zdania egzaminu):Iwaniak A., Olszewski R., Gotlib D., 2008. GIS. Obszary zastosowań. Wydawnictwo Naukowe PWN, WarszawaKidner D., Higgs G., White S. (red.), 2003. Socio-Economic Applications of Geographic Information Science. Taylor&Francis Group, London-NewYork.Pieniążek M., Zych M., 2017. Mapy statystyczne. Opracowanie i prezentacja danych. Główny Urząd Statystyczny, Warszawa	
	Supplementary literature	Kunz M. (red.), 2007. Systemy Informacji Geograficznej w praktyce. Studium zastosowań. Wydawnictwo Uniwersytetu Mikołaja Kopernika, Toruń.Bolstad P., 2016. GIS Fundamentals: A First Text on Geographic Information Systems. Fifth Edition, New YorkLongley P.A, Goodchild M.F., Rhind D.W. 2008. GIS. Teoria i praktyka. Wydawnictwo Naukowe PWN. Warszawa.Peterson, G. (2009) GIS Cartography: A Guide to Effective Map Design, CRC Press. Boca Raton.Masik G., 2017, Zróżnicowanie poziomu życia w województwie pomorskim [w:] J. Hrynkiewicz, A. Potrykowska (red.), Sytuacja demograficznawojewództwa pomorskiego jako wyzwanie dla polityki społecznej i gospodarczej, Rządowa Rada Ludnościowa, Warszawa, t. 14, s. 218-239.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Analysis of public transport accessibility using GTFS data. Searching for the location of a café in a selected district of Gdańsk. Analysis of selected remote sensing indices (e.g. NDBI, NDVI, NDWI). Analysis of the visibility of a new multi-family housing estate.		
Work placement	Not applicable		

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