



Subject card

Subject name and code	Spatial Econometrics, PG_00037227						
Field of study	Economic Analytics						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2022/2023		
Education level	second-cycle 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	Part-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Katedra Statystyki i Ekonometrii -> Faculty of Management and Economics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Michał Pietrzak				
	Teachers		dr Aneta Sobiechowska-Ziegert				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	8.0	0.0	16.0	0.0	0.0	24
	E-learning hours included: 0.0						
<p>Ekonometria Przestrzenna 2023 NSTAC - Moodle ID: 28387 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=28387</p>							
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	24		8.0		68.0	100
Subject objectives	The acquisition of knowledge and skills in the analysis by using spatial data, in particular in the field of collection, processing, analysis and visualization of the results, using statistical and econometric tools.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_U07] can use the acquired knowledge of economic sciences and quantitative methods to identify, formulate and propose solutions to specific economic problems and assess their effectiveness		The student identifies the determinants of selected economic phenomena, collects relevant data for their analyzes, interpretation and visualization.		[SU4] Assessment of ability to use methods and tools		
	[K7_W07] has an in-depth knowledge on methods of social and economic phenomena description, including market information acquisition techniques and methods of analysis and modelling of economic processes		Student lists the spatial data collection techniques and advanced tools for their analysis in space.		[SW1] Assessment of factual knowledge		
	[K7_U01] can correctly identify, describe and interpret phenomena, their economic circumstances and relations between them at micro and macroeconomic scale.		The student performs a spatial analysis of selected economic phenomena.		[SU3] Assessment of ability to use knowledge gained from the subject		
	[K7_W11] has a broadened knowledge of socio-economic phenomena and processes, understanding their determinants and consequences		Student identifies interactions occurring in the space between the socio-economic variables.		[SW1] Assessment of factual knowledge		
	[K7_K01] understands the need for continuous learning and, in particular, for advanced and modern tools for data analysis		Student proposes appropriate methods of spatial analysis, adapted to the nature of the analyzed economic phenomena.		[SK3] Assessment of ability to organize work		

Subject contents	<ol style="list-style-type: none"> 1. Introduction to spatial data analysis. 2. Classification and visualization of spatial data. 3. Basics of clustering and classification of spatial research. 4. Concentration and specialization in economic spatial analyzes (location factors, Lorenz Curve, Gini Index, Index of regional specialization). 5. Measurement and statistical tests of exploratory spatial data analysis (spatial heterogeneity and autocorrelation). 6. Weight matrices and testing of global and local spatial autocorrelation. 7. One-equation and one-dimensional spatial regression models - types of spatial interactions in an econometric model. 8. Construction of spatial models with different types of interactions, estimation and verification, spatial model selection procedure. 9. Spatial panel models - construction. 10. The selection procedure of spatial panel model. 		
Prerequisites and co-requisites	Statistics, Econometrics		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lab content colloquium	55.0%	50.0%
	Exam	55.0%	50.0%
Recommended reading	Basic literature	LeSage, J. P.; Pace, R. K. (2009). Introduction to spatial econometrics. Boca Raton, FL: CRC Press.	
	Supplementary literature	Baltagi B.H., Econometric Analysis of Panel Data, 5 th ed, Wiley, Chichester 2014	
	eResources addresses	Uzupełniające https://enauczanie.pg.edu.pl/moodle/course/view.php?id=28387 - Spatial Econometrics 2023 NSTAC	
Example issues/ example questions/ tasks being completed	<p>1) Based on data from the CSO perform spatial analysis of location and concentration of the number of employees by sectors and provinces in 2013.</p> <p>2) Based on EU19.zip (.dbf, .shp, .shx) and database included in grupa1.xls (sheet Europa_mapa) estimate a log-linear model for the following relationship:</p> $EX_{1995} = f(DD_{1995}, FD_{1995}, ULC_{1995}, LPRO_{1995}, OPEN_{1995})$ <p>In order to evaluate spatial interaction use queen contiguity matrix.</p>		
Work placement	Not applicable		