



Subject card

Subject name and code	SPATIAL ECONOMETRICS, PG_00067639						
Field of study	Economic Analytics						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
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	Full-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	Department Of Statistics And Econometrics -> Faculty Of Management And Economics -> Wydziały Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor						
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	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		5.0		50.0	100
Subject objectives	Analyzes socio-economic phenomena using spatial data, creating innovative solutions to complex problems as a team						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_U01] creates innovative solutions for complex and unstructured processes, considering unpredictable environmental conditions through the synthesis of information from various sources.		creates innovative solutions to complex and unstructured problems by adapting the methods used to the nature of the analyzed economic phenomena by synthesizing information from many sources		[SU4] Assessment of ability to use methods and tools		
	[K7_U05] collaborates with others in team projects, effectively fulfilling both leadership and team member roles to achieve established goals.		performs analytical work demonstrating the ability to work in a team		[SU3] Assessment of ability to use knowledge gained from the subject		
	[K7_W02] understands the significance and interrelationships of key components describing economic processes, drawing on in-depth knowledge aligned with major developmental trends in scientific disciplines related to the field of economic analytics.		identifies interactions in space between variables describing socio-economic phenomena, using knowledge consistent with the main trends in the development of econometric research		[SW1] Assessment of factual knowledge		

Subject contents	I. Spatial Data AnalysisII. Inference and Spatial DataIII. Spatial Statistics; Spatial Econometrics: First MotivationsIV. Spatial and Temporal AutocorrelationV. Mutual Influences of Cross-Sectional Observations; Networks of Cross-Sectional RelationshipsVI. Autocorrelation Tests and Model SpecificationVII. Spatial Autoregressive Models: Conditional (CAR) and Simultaneous (SAR)VIII. Estimating Spatial Models: Methods (GMM, ML, Bayesian)IX. Eigenvectors and Eigenvalues of Networks of Cross-Sectional RelationshipsX. Non-Orthogonality of Regression and Autoregressive CoefficientsXI. Prediction and Spatial ModelsXII. Spatial Panel ModelsXIII. LMM, GLMM, GAM Models, Discrete Spatial Econometric ModelsXIV. Multilevel Spatial Models		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		0.0%	0.0%
	Oral exam	55.0%	30.0%
	Project	55.0%	70.0%
Recommended reading	Basic literature	Arbia, G. (2024). <i>A primer for spatial econometrics: With applications in R, STATA and Python</i> (2nd ed.). Palgrave Macmillan. LeSage, J. P., & Pace, R. K. (2015). <i>Introduction to spatial econometrics</i> (Reprint ed.). CRC Press.	
	Supplementary literature		
	eResources addresses	Adresy na platformie eNauczanie:	
	Example issues/ example questions/ tasks being completed	Based on the spatial data of the Central Statistical Office, conduct an analysis of the location and concentration of the number of employees by sectors and voivodeships from the selected year	
Work placement	Not applicable		

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