GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	SPATIAL ECONOMETRICS - A TEAM PROJECT, PG_00060697
Field of study	Economic Analytics

Date of commencement of studies	October 2023	Academic year of realisation of subject	2023/2024
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	Katedra Statystyki i Ekonometrii -> Faculty of Management and Economics

Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Michał Pietrzak
	Teachers	dr hab. Michał Pietrzak dr Aleksandra Kordalska

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	10.0	45.0	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_W02] explains the meaning and interdependence of key components describing economic processes, using in-depth knowledge consistent with the main trends in the development of scientific disciplines related to the field of study	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
	[K7_U01] creates innovative solutions to complex and unstructured problems, taking into account the variability of the environment by synthesising information from many 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] cooperates with other people in the implementation of teamwork, both as a leader and a team member, effectively achieving the assumed goals	performs analytical work demonstrating the ability to work in a team	[SU3] Assessment of ability to use knowledge gained from the subject

Subject contents	**I. Spatial data analysis**
	II. Inference and spatial data
	III. Spatial statistics; spatial econometrics: initial motivations
	IV. Spatial and temporal autocorrelation
	V. Mutual influence of cross-sectional observations; Graphs of relationships between cross-sectional observations
	VI. Tests of spatial autocorrelation, model specification
	VII. Spatial autoregressive models: conditional (CAR) and simultaneous (SAR)
	VIII. Estimation of spatial autoregressive models: methods (GMM, ML, Bayesian)
	IX. Eigenvectors and eigenvalues of graphs of relationships between cross-sectional observations
	X. No orthogonality between regression and autoregression coefficients
	XI. Prediction and spatial models
	XII. Spatial panel models
	XIII. Models LMM, GLMM, GAM, spatial limited dependent variable models
	XIV. Multi-level spatial models

Prerequisites and co-requisites	Knowledge of the subjects Statistics and Econometrics.

Assessment methods and criteria			
	Subject passing criteria	Passing threshold	Percentage of the final grade
	Team project	55.0%	40.0%
	Exam	55.0%	60.0%

Recommended reading	Basic literature	1. Suchecki B. red. nauk., Ekonometria przestrzenna. Metody i modele, analizy danych przestrzennych, Wyd. C.H.Beck, Warszawa 2010 2. Kopczewska K., Ekonometria i Statystyka przestrzenna z wykorzystaniem programu R Cran, Wyd. CeDeWu Warszawa 2007 3. Suchecki B. red. nauk., Ekonometria przestrzenna II. Modele zaawansowane, Wyd. C.H.Beck, Warszawa 2012
	Supplementary literature	1. Baltagi B.H., Econometric Analysis of Panel Data, 5th ed, Wiley, Chichester 2014 2. Suchecka J. red.nauk., Statystyka przestrzenna. Metody analizy struktur przestrzennych, Wyd. C.H.Beck, Warszawa 2014
	eResources addresses	Adresy na platformie eNauczanie: Ekonometria_przestrzenna_2023_2024 - Moodle ID: 36332 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36332

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