



## Subject card

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|--|--|--|--|------------|--|---------|-----|
| Subject name and code  | Spatial Econometrics, PG_00037081  |  |  |            |  |         |     |
| Field of study   | Economic Analytics   |  |  |            |  |         |     |
| Date of commencement of studies  | October 2021   | Academic year of realisation of subject  |  |            | 2021/2022  |         |     |
| Education level  | second-cycle studies   | Subject group  |  |            | Obligatory subject group in the field of study<br>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 Economic Sciences -> Faculty of Management and Economics   |  |  |            |  |         |     |
| Name and surname of lecturer (lecturers)   | Subject supervisor   |  | dr Aneta Sobiechowska-Ziegert                            |            |  |         |     |
|  | Teachers   |  | dr Aleksandra Kordalska<br>dr Aneta Sobiechowska-Ziegert |            |  |         |     |
| 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   |  |  |            |  |         |     |
| <p>Ekonometria Przestrzenna AGII sem2 - 2022 - Moodle ID: 18033<br/> <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=18033">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=18033</a></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  | 45   | 10.0   | 45.0       | 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_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_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   |         |     |
|  | [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_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  |         |     |

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| Subject contents   | <ol style="list-style-type: none"> <li>1. Introduction to spatial data analysis.</li> <li>2. Classification and visualization of spatial data.</li> <li>3. Drawing quantile, box and other maps in GeoDa and QGIS.</li> <li>4. Basics of clustering and classification of spatial research.</li> <li>5. Concentration and specialization in economic spatial analyzes (location factors, Lorenz Curve, Gini Index, Index of regional specialization).</li> <li>6. Measurement and statistical tests of exploratory spatial data analysis (spatial heterogeneity and autocorrelation).</li> <li>7. Weight matrices and testing of global and local spatial autocorrelation.</li> <li>8. One-equation and one-dimensional spatial regression models - types of spatial interactions in an econometric model.</li> <li>9. Construction of spatial models with different types of interactions, estimation and verification, spatial model selection procedure.</li> <li>10. Spatial panel models - construction.</li> <li>11. The selection procedure of spatial panel model.</li> <li>12. Multi-equation spatial models - seemingly independent regression.</li> <li>13. Spatial models of jointly determined equations.</li> </ol> |  |                               |
| Prerequisites and co-requisites                                | Econometrics, Statistics  |  |                               |
| Assessment methods and criteria                                | Subject passing criteria  | Passing threshold  | Percentage of the final grade |
|  | Project and midterm colloquium  | 55.0%  | 50.0%                         |
|  | Written exam  | 55.0%  | 40.0%                         |
|  | Quizzes   | 0.0%   | 10.0%                         |
| Recommended reading  | Basic literature  | <p>Kopczewska K., Spatial Econometrics and Statistics using R program Cran, ed. CeDeWu Warsaw 2007<br/>         Suchecki B. ed., Spatial Econometrics. Methods and models of spatial data analysis, ed. C.H.Beck, Warsaw 2010<br/>         Suchecki B. ed. , Spatial Econometrics II. Advanced models, ed. C.H.Beck, Warsaw 2012</p> |                               |
|  | Supplementary literature  | <p>Baltagi B.H., Econometric Analysis of Panel Data, 5<sup>th</sup> ed, Wiley, Chichester 2014</p> <p>Suhecka J. ed., Spatial Statistics. Methods of spatial structures analysis, ed. C.H.Beck, Warsaw 2014</p>  |                               |
|  | eResources addresses  |  |                               |
| Example issues/<br>example questions/<br>tasks being completed | Based on data from the CSO perform spatial analysis of location and concentration of the number of employees by sectors and provinces in 2013.  |  |                               |
| Work placement   | Not applicable  |  |                               |