University of Gdańsk

Subject card

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| Subject name and code | Econometrics, PG_00200435 | | |
| Field of study | Logistics and Mobility | | |
| Date of commencement of studies | October 2026 | Academic year of realisation of subject | 2026/2027 |
| Education level | Master's 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 | English |
| Semester of study | 2 | ECTS credits | 4.0 |
| Learning profile | academic | Assessment form | exam |
| Conducting unit | Department of International Economics and Economic Development -> Faculty of Economics -> Rector | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr hab. Dorota Ciołek, prof. UG | |
| | Teachers | dr hab. Dorota Ciołek, prof. UG | |

| Lesson types | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 15.0 | 15.0 | 0.0 | 15.0 | 0.0 | 45 |
| | E-learning hours included: 0.0 | | | | | | |

| Learning activity and number of study hours | | | | | |
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| | Learning activity | Participation in didactic classes included in study plan | Participation in consultation hours | Self-study | SUM |
| | Number of study hours | 45 | 0.0 | 55.0 | 100 |

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| Subject objectives | Presentation of the econometric model as a tool for hypothesis verification and forecasting in economics and management sciences. Acquiring knowledge and practical skills in building, estimating, interpreting and evaluating econometric models.. |

Learning outcomes

| Course outcome | Subject outcome | Method of verification |
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| [LMMU2_U15] can independently expand and improve acquired knowledge and skills in logistics and mobility; is open to new ideas and techniques; tends to learn using any accessible method and to interact with other participants of the learning process | can propose an econometric model suitable for verifying specific hypotheses or research goals | [SU2] presentation/project/paper/ report<br>[SU5] implementation of a problem task |
| [LMMU2_K03] inspires and organises preparation of projects in the field of logistics and mobility, following the idea of sustainable development, reconciling legal, economic, ecological, political and social requirements | can propose an econometric model suitable for verifying specific hypotheses or research goals | [SK4] test/exam - oral or written |
| [LMMU2_W06] has an in-depth knowledge of statistical and econometric methods and tools for description and macro- and microeconomic modelling of logistics and mobility processes and systems | knows the basic types of single-equation econometric models, methods of their estimation, tools for their verification and ways of interpreting them in relation to specific relationships in economics and other social sciences | [SW4] test/exam - oral or written |
| [LMMU2_U03] can analyse causes and course of logistics and mobility processes and systems, formulate his/her own opinions on the subject, construct research hypotheses, and select and apply methods of their verification | can propose an econometric model suitable for verifying specific hypotheses or research goals | [SU4] test/exam - oral or written |
| [LMMU2_U04] can forecast and model complex economic and social processes, as well as logistics and mobility processes and systems using quantitative and qualitative methods and tools developed by economic sciences (including statistics and econometrics) | is able to build and estimate a single-equation econometric model and verify its forecasting properties and use the model to build forecasts along with assessing their ex ante accuracy | [SU4] test/exam - oral or written |
| [LMMU2_K01] recognises the importance of knowledge in the field of logistics and mobility in the process of identifying and solving work-related problems and of consulting experts when having difficulties in solving them independently | student completes a project in which they design and prepare a summary of a research article related to their master's thesis, utilizing econometric modeling. The project is discussed and approved during a consultation with the instructor. | [SK3] text preparation/written work |
| [LMMU2_U02] can use acquired knowledge to describe and analyse the causes and course of logistics and mobility processes and systems, and can formulate his/her own opinions and critically select data and analysis methods based on the achievements of economic and social sciences | is able to build and estimate an econometric model and verify and interpret it | [SU2] presentation/project/paper/ report<br>[SU5] implementation of a problem task |

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| Subject contents | 1) The nature of economic data:- overview of the kinds of data sets that are used in business, finance, economics, and other social sciences - discussion of the difficulties associated with the inference of causality in the social sciences- econometrics as a tool of testing economic theories and evaluating policy effects when we must rely on nonexperimental data- econometric model used for predicting the dependent variable<br><br>2) Simple and Multiple Linear Regression Model- the study the relationship between two variables - multiple regression analysis as the most widely used vehicle for empirical analysis in economics and other social sciences- interpretation of the regression model as a tool of ceteris paribus analysis<br><br>3) Estimation of the parameters using the method of Ordinary Least Squares (OLS) - idea of OLS - interpreting the OLS regression equation- OLS fitted values and residuals- goodness-of-fit to the empirical values- statistical properties of OLS for the parameters in an underlying population model- consistency of OLS- the variance of the OLS estimators - efficiency- testing of OLS assumptions- robust standard errors<br><br>4) Model estimation - special issues - including irrelevant variables in a regression model- omitted variable bias- multicollinearity - highly correlated explanatory variables- outlying observations- using logarithmic functional forms- models with quadratics- models with interaction terms<br><br>5) Regression of Qualitative Information: Dummy Variables- describing qualitative information - binary variable- dummy explanatory variable- interpreting Coefficients on Dummy Explanatory- dummy variables for multiple categories<br><br>6) Time Series Data - Basic Regression - the nature of time series data- trends and seasonality- Unit Root tests and integrated values |
| Prerequisites and co-requisites | Student should be familiar with the principles of consumer and producer behavior, basic models of marker competition. General equilibrium and growth, international trade, capital and money markets.<br><br>The knowledge of elementary linear algebra, differential ant integral calculus, statistical theory. |

Assessment methods and criteria

| Subject passing criteria | Passing threshold | Percentage of the final grade |
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| Project | 51.0% | 20.0% |
| Practical test | 51.0% | 30.0% |
| Written exam | 51.0% | 50.0% |

Recommended reading

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| Basic literature | Koop G., Introduction to Econometrics., John Wiley and Sons, (2008)<br><br>Wooldridge J.M., Introductory Econometric. A modern approach. , South-Western Cengage Learning (4e - 2009 or 5e - 2013)<br><br>Ramanathan R., Introductory Econometrics with Applications. South-Western, Mason (2002) |
| Supplementary literature | Verbeek M., A guide to Modern Econometrics., John Wiley & Sons, Ltd (2e-2004)<br><br>Greene W.H., Econometric analysis., Prentice Hall, Upper Saddle River, (2008) |
| eResources addresses | |

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| Example issues/ example questions/ tasks being completed | |
| Work placement | Not applicable |

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