University of Gdańsk

Subject card

Subject name and code	Econometrics, PG_00156743						
Field of study	Ekonometria						
Date of commencement of studies	October 2024		Academic year of realisation of subject	2025/2026			
Education level	Bachelor's 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	2		Language of instruction	Polish			
Semester of study	3		ECTS credits	8.0			
Learning profile	academic		Assessment form	exam			
Conducting unit	Department of Econometrics -> Faculty of Management -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Sabina Nowak				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	30.0	0.0	0.0	75
	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	75		30.0	95.0	200	
Subject objectives	Demonstrate the econometric model as a measurement tool in economics and finance and develop an awareness of the limitations of its use.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[IiEL3_U09] The student can prepare a typical written work, oral speech and multimedia presentation on the functioning and development of the national economy and its elements, the course of simple economic phenomena and processes, obtaining data about them, collecting, processing and analyzing them. and economic processes, obtaining data about them, their collection, processing and analysis using modern mathematical, statistical, econometric and IT techniques, econometric and information technology, as well as their use in modeling, forecasting and optimization.	The student can write a paper on econometric modelling based on independently collected data from reliable sources and then deliver a clear presentation on the topic to the group.	[SU2] prezentacja/projekt/referat/ raport [SU3] opracowanie tekstowe/ praca pisemna
	[IiEL3_U03] The student is able to identify institutional-legal and social constraints on the functioning of economic structures and institutions and reflect them in modelling, forecasting and optimization.	The student can identify and code the qualitative determinants of the market and the national economy using dummy variables and then correctly utilize these variables in econometric modelling.	[SU3] opracowanie tekstowe/ praca pisemna [SU5] realizacja zadania problemowego
	[IiEL3_W05] The student has advanced knowledge of the sources of socio-economic data, their databases and ways of creating them.	The student knows how to acquire socio-economic and financial market data from a variety of sources, including databases.	[SW2] prezentacja/projekt/referat/ raport [SW3] opracowanie tekstowe/ praca pisemna
	[IiEL3_U06] The student can forecast complex economic phenomena and processes and verify the properties of the obtained forecasts.	The student can use an econometric model to create point and interval forecasts and evaluate their quality.	[SU3] opracowanie tekstowe/ praca pisemna [SU4] test/egzamin - ustny lub pisemny
	[IiEL3_K01] The student understands the need to constantly supplement and deepen acquired knowledge; is open to new ideas and teaching methods.	The student comprehends the importance of enhancing the understanding of econometric modelling and is eager to learn contemporary techniques in the field.	[SK1] wypowiedź ustna/rozmowa/ dyskusja [SK2] prezentacja/projekt/referat/ raport
	[IiEL3_K02] The student can communicate with the public on computer science and econometrics topics in and outside the workplace, communicate his knowledge and share his skills through various media.	The student can discuss econometric modelling and present it in an understandable way for the group.	[SK1] wypowiedź ustna/rozmowa/ dyskusja [SK2] prezentacja/projekt/referat/ raport
	[IiEL3_U07] The student can build formal models of complex economic phenomena and processes, estimate them, carry out their verification, and apply them to modelling, forecasting and optimization of the resources of low-complexity economic institutions, their structure and the course of processes in them.	The student can specify and estimate different types of econometric models describing selected economic relationships, verify them, and assess their predictive properties.	[SU2] prezentacja/projekt/referat/ raport [SU3] opracowanie tekstowe/ praca pisemna [SU4] test/egzamin - ustny lub pisemny [SU5] realizacja zadania problemowego
	[IiEL3_W04] The student has advanced knowledge of mathematical, statistical, econometric and computer methods of obtaining, processing and analysing data depicting the functioning and development of the national economy and its elements, as well as the phenomena and processes occurring in their environment.	The student is able to identify different methods for modeling economic, social, and financial data, depending on their type. They should also understand the various types of econometric models that describe patterns in the national economy, methods for estimating these models, tools for verifying them, and ways to interpret their results	[SW4] test/egzamin - ustny lub pisemny [SW2] prezentacja/projekt/referat/ raport [SW3] opracowanie tekstowe/ praca pisemna

Subject contents	1. What is econometrics, and how does it differ from economic modelling? Model forms and the principles of interpreting parameters. 2. Classical linear regression model, the numerical and stochastic assumptions, and the consequences of fulfilling or not fulfilling these assumptions. Typical economic hypotheses. 3. Ordinary Least Squares method of estimation (OLS). Form and properties of the OLS estimator. Gauss-Markov theorem. Empirical examples of OLS estimation. 4. Model verification: economic vs statistical verification; the stages of model verification; the individual and joint significance of structural parameters; including and removing variables; testing of restrictions imposed on parameters. Testing for homoscedasticity, lack of autocorrelation, and normality of the error term distribution. Testing the correctness of model specification and stability of structural parameters. Measures of goodness of fit. 5. Estimation of the model in cases where the classical linear regression assumptions are not met: estimation in the case of autocorrelation of error term and heteroscedasticityGeneralized Method of Least Squares (GLS). Random explanatory variables (causes of randomness, model verification procedure, examples of model specification with random explanatory variables). 6. Modelling of qualitative and cyclical phenomena with dummy variables. 7. Dynamic models: general and detailed forms, parameter interpretation, shortand long-run multipliers. 8. Maximum likelihood method: model verification and hypothesis testing. 9. Econometric modelling based on non-stationary time series: definition and different types of non-stationarity, spurious regressions, unit-root testing, model estimation for non-stationary explanatory and explanatory variables. 10. Multivariate models: examples of model specification, structural and reduced form, the classification and identification problem, estimationindirect least squares method, two-stage least squares method, and instrumental variables method.
Prerequisites and co-requisites	Students should have a solid understanding of consumer and producer market behavior, fundamental market competition models, equilibrium and economic growth concepts, international trade dynamics, as well as capital and money market operations. Additionally, a basic grasp of linear algebra, differential and integral calculus, statistics, and practical data mining skills is necessary.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Written exam with tasks and open questions	51.0%	40.0%
Credit for laboratories: written test (colloquium) + project	51.0%	30.0%
Credit for tutorials: written test (colloquium)	51.0%	30.0%

Recommended reading

Basic literature	1. M. Gruszczyński M. Podgórska, T. Kuszewski, Ekonometria i badania operacyjne. Podręcznik dla studiów licencjackich. Wydawnictwo Naukowe PWN, Warszawa 2022. 2. T. Kufel, Rozwiązywanie problemów z wykorzystaniem programu Gretl. Wydawnictwo Naukowe PWN, Warszawa 2004. 3. G.S. Maddala, Ekonometria. Wydawnictwo Naukowe PWN, Warszawa 2006. 4. G. Koop, Wprowadzenie do ekonometrii. Oficyna Wolters Kluwer, Warszawa 2011.
Supplementary literature	1. M. Osińska (red.), Ekonometria współczesna. TNOiK, Toruń 2007. 2. R. Ramanathan, Introductory Econometrics with Applications. South-Western, Mason 2002. 3. L.C. Adkins, Using *gretl* for Principles of Econometrics, 5th Edition, Version 1.0, 2018. 4. J.C. Wooldridge, Introductory Econometrics. A modern approach. 5th edition. South-Western Cengage Learning 2013.
eResources addresses	Supplementary https://www.learneconometrics.com/gretl/poe5/using_gretl_for_POE5.pdf - L.C. Adkins, Using gretl for Principles of Econometrics, 5th Edition, Version 1.0, 2018 (https://www.learneconometrics.com/gretl/index.html).
Example issues/ example questions/ tasks being completed	
Work placement	Not applicable

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