University of Gdańsk

Subject card

Subject name and code	Econometrics, PG_00178502						
Field of study	Informatics and Econometrics						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2027/2028			
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	part-time studies		Mode of delivery	at the university			
Year of study	2		Language of instruction	Polish			
Semester of study	3		ECTS credits	7.0			
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	16.0	8.0	16.0	0.0	0.0	40
	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	40		2.0		133.0	175
Subject objectives	Show how the econometric model serves as a measurement tool in economics and finance, and develop an understanding of its limitations.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[IiEL3_U01] The student can analyze and interpret social and economic processes and phenomena using knowledge and econometrics, informatics or statistics tools from management and quality sciences, economics and finance.	The student describes, analyzes and interprets economic and financial phenomena using descriptive econometric models.	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written [SU5] implementation of a problem task
[IiEL3_U03] Students can obtain data from appropriately selected sources, use these data to solve economic and social problems, and process and interpret them using econometrics, informatics or statistics tools.	The student extracts financial and economic data, both cross-sectional and time-series, with different frequencies from different data repositories, recognizes its correctness, and uses this data to build econometric models.	[SU2] presentation/project/paper/ report [SU5] implementation of a problem task
[IiEL3_U07] The student can prepare written papers, presentations, and oral speeches on problems in econometrics, informatics, or statistics.	The student cooperates to develop an econometric model and presents it to the group.	[SU2] presentation/project/paper/ report [SU5] implementation of a problem task
[IiEL3_U02] Students can select or construct econometrics, informatics or statistics tools and apply them to describe and solve economic and social problems.	The student chooses a suitable econometric model to address issues in economics, finance, management, and quality sciences.	[SU2] presentation/project/paper/ report [SU5] implementation of a problem task
[IiEL3_W05] To an advanced degree, the student knows and understands the methods, techniques and informatics or statistics tools used to acquire, collect, process and present data in decision-making processes.	The student recognizes different types of financial data, classifies econometric models, and selects methods for estimation and verification.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report [SW5] implementation of a problem task

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 heteroscedasticity Generalized 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, short and 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 nonstationarity, 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, estimation indirect 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
Credit for laboratories: written test (colloquium) + project	51.0%	30.0%
Credit for tutorials: written test (colloquium)	51.0%	30.0%
Written exam with tasks and open questions	51.0%	40.0%

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

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