GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	ECONOMETRICS, PG_00070599		
Field of study	Economics		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2027/2028
Education level	first-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	2	Language of instruction	Polish
Semester of study	4	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Statistics and Econometrics -> Faculty of Management and Economics -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Dagmara Nikulin	
	Teachers		

Lesson types

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

eNauczanie source address: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=47539

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	3.0	52.0	100

Subject objectives

Preparing students to construct and verify econometric models that enable the analysis of economic phenomena and solving economic problems, based on knowledge in the fields of statistics, mathematics, and economics, as well as preparing them to use quantitative methods in decision-making processes within a company.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_K02] is prepared to make competent and ethical decisions to create and maintain economic, social, and environmental values, demonstrating entrepreneurial actions.	is ready to make ethical decisions based on econometric analysis results and to responsibly interpret models in the context of their economic and social consequences.	[SK5] Assessment of ability to solve problems that arise in practice
[K6_W05] possesses advanced knowledge in integrating data from various sources and in methods that enable a comprehensive analysis of economic problems.	knows and understands the methods of constructing, estimating, and validating econometric models in the context of analyzing complex economic processes and phenomena, economic problems, and decision-making issues within an enterprise.	[SW1] Assessment of factual knowledge
[K6_U07] uses advanced information technologies to enhance data analysis and decision-making processes.	is able to apply specialized econometric software to construct, estimate, and validate econometric models, thereby enhancing data analysis and supporting decision-making processes in enterprises and the economy.	[SU1] Assessment of task fulfilment [SU5] Assessment of ability to present the results of task

Subject contents

Course content – lecture
1. The econometric model and its components
2. Simple and multiple regression
3. Stages of building an econometric model
4. Specification of an econometric model
5. Estimation of parameters in a linear econometric model
6. The least squares method (OLS) for estimating a linear econometric model
7. Stochastic assumptions in an econometric model
8. Economic verification/validation of an econometric model
9. Statistical verification, assessment of model fit, and testing the stochastic properties of the model
10. Estimation of a linear regression model using the method of moments and maximum likelihood
11. Multiplicative models: properties and parameter estimation methods
12. Autocorrelation of the error term: causes, consequences, measurement, testing, and remedies
13. Heteroskedasticity of the error term
14. Generalised least squares (GLS)
15. Estimation of model parameters under autocorrelation and heteroskedasticity of the error term
16. Instrumental variables regression (IV)
17. Introduction to panel data
18. Introduction to time series
19. Dynamic models and causal effects over time
20. Experiments and quasi-experiments
21. Forecasting and big data an introduction

Course content – laboratory
1. The econometric model and its components
2. Simple and multiple regression
3. Stages of building an econometric model
4. Specification of an econometric model
5. Estimation of parameters in a linear econometric model
6. The least squares method (OLS) for estimating a linear econometric model
7. Stochastic assumptions in an econometric model
8. Economic verification/validation of an econometric model
9. Statistical verification, assessment of model fit, and testing the stochastic properties of the model
10. Estimation of a linear regression model using the method of moments and maximum likelihood
11. Multiplicative models: properties and parameter estimation methods
12. Autocorrelation of the error term: causes, consequences, measurement, testing, and remedies
13. Heteroskedasticity of the error term
14. Generalised least squares (GLS)
15. Estimation of model parameters under autocorrelation and heteroskedasticity of the error term
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20. Experiments and quasi-experiments
21. Forecasting and big data an introduction

Prerequisites and co-requisites

matematics, microeconomics, macroeconomics, statistics, mathematical statistics

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Problem questions (oral exam)	60.0%	70.0%
Computational and decision-making tasks (written test)	60.0%	30.0%

Recommended reading

Basic literature	1. Maddala, G.S. (2022). Ekonometria, Warszawa: Wydawnictwo Naukowe PWN 2. Borkowski, B., Dudek, H., Szczęsny, W. (2020). Ekonometria. Wybrane zagadnienia, Warszawa: Wydawnictwo Naukowe PWN
Supplementary literature	1. Nowak, E. (2022) Zarys metod ekonometrii. Zbiór zadań, Warszawa: Wydawnictwo Naukowe PWN
eResources addresses	

Example issues/ example questions/ tasks being completed

Consider the following inflation model: $inf_t = 8,0 + 0,6 inf_{t-1} - 0,7\, r_t +_t$,
where: inf_t annual inflation in period t (in%), r_t real interest rate at the beginning of period t (in%).
Identify the short-term effect of the impact of the interest rate on the level of inflation and the time-lagged inflation level.

Practical activites within the subject

Not applicable

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