GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Econometrics, PG_00021044		
Field of study	Mathematics		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2023/2024
Education level	first-cycle studies	Subject group	Optional subject group 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	3	Language of instruction	Polish
Semester of study	6	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Nonlinear Analysis and Statistics -> Faculty of Applied Physics and Mathematics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Krzysztof Świetlik	
	Teachers	dr inż. Krzysztof Świetlik	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	15.0	15.0	0.0	0.0	60

E-learning hours included: 0.0

Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=23005

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	60	0.0	0.0	60

Subject objectives

The ability to construct a model for a selected economic process, the ability to correctly estimate and verify the model

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W03	The student is able to identify the relationships between the phenomena in economics and describe them using the econometric model	[SW3] Assessment of knowledge contained in written work and projects
K6_U12	The student knows how to interpret the econometric model, can examine its stochastic properties using statistical tests	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
K6_K02	The student is able to formulate relationships between economic variables both using the econometric model and in an informal way	[SK4] Assessment of communication skills, including language correctness
K6_U05	The student is able to build and estimate a model using appropriately selected estimators or econometric software	[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools

Subject contents	The concept of an econometric model Single-equation models Model dynamization OLS estimator Properties of the OLS estimation. Stimulation in non-sphericity conditions of a random component Estimation of the model in errors autocorrelation and heteroscedasticity conditions. Generalized least squares GLS method. Zero-one variables in econometric modeling Econometric multi-equation models ILS method Instrumental variables (IV) method. Double least squares method. Stability of time series. Dickey-Fuler test ARIMA processes ARCH and GARCH processes Econometric forecasting, ex ante and ex post errors
Prerequisites and co-requisites	1. Basics of economics 2. Testing statistical hypotheses

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
lecture test	60.0%	20.0%
exercises test	60.0%	40.0%
laboratory test	60.0%	40.0%

Recommended reading

Basic literature	1. G.S.Maddala: Ekonometrics, PWE, Warszawa 2. A. Welfe, Ekonometrics, PWE, Warszawa 3. M. Doman, R. Doman: Volatility and risk modeling, Oficyna, Warszawa
Supplementary literature	1. W. Welfe, A. Welfe: Aplied econometrics, PWE, Warszawa
eResources addresses	Adresy na platformie eNauczanie: Ekonometria, WFTiMS, MF, sem. letni 23/24 - Moodle ID: 37764 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=37764

Example issues/ example questions/ tasks being completed	Give the linear regression assumptions for a model of multi explanatory variables. Give the general form of hypotheses for testing the significance of an individual explanatory variable. What are the conditions for the correct performance of the Durbin-Watson test? Provide and describe the properties of the OLS estimator. What are the consequences of the lack of normality of the random errors for the OLS estimated models? What is the autocorrelation of random errors? What are the consequences of the autocorrelation of a random errors? What are the reasons for the autocorrelation of a random errors? Present the method of testing the non-stationarity of time series with the DF test What is the occurrence of the ARCH effect? Present ARCH and GARCH models
Work placement	Not applicable