



Subject card

Subject name and code	Econometrics, PG_00021044						
Field of study	Mathematics						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2024/2025		
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_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		
	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_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		

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: Econometrics, PWE, Warszawa	
		2. A. Welfe, Econometrics, PWE, Warszawa	
		3. M. Doman, R. Doman: Volatility and risk modeling, Oficyna, Warszawa	
	Supplementary literature	1. W. Welfe, A. Welfe: Applied econometrics, PWE, Warszawa	
	eResources addresses	Adresy na platformie eNauczanie:	

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

Document generated electronically. Does not require a seal or signature.