University of Gdańsk

Subject card

Subject name and code	Econometric Time Series Analysis, PG_00157091		
Field of study	Information Science and Econometrics		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
Education level	postgraduate 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	1	Language of instruction	Polish
Semester of study	1	ECTS credits	6.0
Learning profile	academic	Assessment form	
Conducting unit	Katedra Ekonometrii -> Faculty of Management -> Rektor		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Marta Chylińska	
	Teachers	dr Marta Chylińska	

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	0.0	0.0	30
	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	30	15.0	100.0	145

Subject objectives	Developing skills in time series analysis and modeling

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[IiEMU2_W02] The student has an in-depth knowledge of economic structures and institutions, the processes taking place in them, the connections between them and their dynamics, and has an in-depth knowledge of the phenomena and processes taking place in their environment.	Is able to perform a statistical description of financial time series at an advanced level and verify hypotheses regarding their formation	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
	[IiEMU2_U07] The student is able to build advanced formal models of complex economic phenomena and processes, estimate them, carry out their verification and apply them to modeling, forecasting and optimization of resources of economic institutions of varying degrees of complexity, their structure and the course of processes in them.	Can specify, estimate and validate advanced econometric models based on time series.	[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written [SU6] demonstration of practical skills
	[IiEMU2_K01] The student understands the need for continuous completion and deepening of acquired knowledge. The student inspires and organizes others' learning processes.	Understands the need to continually supplement and deepen acquired knowledge of financial time series	[SK5] implementation of a problem task
	[IiEMU2_W04] The student has an in-depth knowledge of advanced mathematical, statistical, econometric and IT methods that enable the acquisition, processing and analysis of data reflecting the functioning and growth of the national economy and its components, as well as the phenomena and processes occurring in their environment.	The student possesses a comprehensive understanding of economic structures and institutions, including the processes, connections, dynamics, and phenomena within them and their environment which enables him/her to model the national economy and its components.	[SW1] oral statement/ conversation/discussion
	[IiEMU2_U05] The student is able to make a statistical description of basic and detailed economic categories at an advanced level, formulate and verify hypotheses about their formation.	Is able to perform a statistical description of financial time series at an advanced level and verify hypotheses regarding their formation	[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written [SU6] demonstration of practical skills
	[IiEMU2_K03] The student is able to communicate freely with the public inside and outside the workplace, transfer his knowledge and share his skills through various media.	Is able to communicate freely with the environment in and outside the place of study, transfer his/her knowledge and share his/her skills in the field of time series modeling	[SK1] oral statement/conversation/ discussion
Subject contents	1. Fundamentals of time series analysis. Time series and its characteristics. Time series components and their extraction. From theory to practice empirical properties of economic and financial time series.2. Dynamic single-equation econometric model. General form, restrictions imposed on structural parameters, interpretation of models embedded in it, multiplier analysis, estimation and verification of the model. From theory to practice analysis of dynamic dependencies in economics and finance.3. Linear stationary time series models and their applications. The concept of stationarity, covariance and autocorrelation functions, linear time series. Simple autoregressive (AR), moving average (MA) and mixed (ARMA) models properties, estimation, identification methods, assessment of fit. Seasonality, differentiation of series SARIMA models. From theory to practice identification of AR, MA, ARMA and SARIMA models for selected economic and financial categories.4. Models of linear non-stationary time series and their applications. The concept and types of non-stationarity. Models of random walk. Trendstationary time series. Basic tests of unit root and stationarity. From theory to practice identification of the nature of time series for selected economic and financial categories.5. Models of non-stationary time series and their applications. The concept of cointegration of variables and methods of testing their cointegration. One-dimensional error correction model specification, estimation and verification. From theory to practice analysis of relationships between selected economic and financial categories.		
Prerequisites and co-requisites	Knowledge of elementary mathematics		

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	exam	51.0%	50.0%
	test	51.0%	50.0%
Recommended reading	Basic literature	Charemza W., Deadman D. (1997), Nowa ekonometria, Polskie Wydawnictwo Ekonomiczne. Osińska M. (2006), Ekonometria finansowa, Polskie Wydawnictwo Ekonomiczne. Witkowska D., Matuszewska-Janica A., Kompa K. (2012), Wprowadzenie do ekonometrii dynamicznej i finansowej, Wydawnictwo SGGW.	
	Supplementary literature	Tsay R.S. (2012), An Introduction to Analysis of Financial Data with R., Wiley.	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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