



Subject card

Subject name and code	TIME SERIES MODELLING, PG_00067526						
Field of study	Economic Analytics						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	second-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	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		5.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Department Of Statistics And Econometrics -> Faculty Of Management And Economics -> Wydział Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor						
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	0.0	0.0	60
	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	60		5.0		60.0	125
Subject objectives	Effectively uses in-depth knowledge of economic time series analysis methods, applying the results of analyzes to formulate forecasts.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_U03] formulates research hypotheses and select appropriate methods for their verification using advanced it tools.		formulates research problems of complex economic phenomena, the solutions of which uses for forecasting, carrying out a critical assessment of the results		[SU4] Assessment of ability to use methods and tools		
	[K7_W04] has an in-depth understanding of analytical methods, reliable data sources, and copyright principles in the context of solving contemporary socio-economic problems.		creates time series models using known methods of their estimation, using advanced statistical software		[SW1] Assessment of factual knowledge		
Subject contents	Classical time series analysis (trend, cyclical fluctuations) Stochastic processes and time series Characteristics of stochastic processes Process spectrum autocorrelation functions Study of the stationarity of the time series Autoregressive (AR) processes Moving average (MA) processes Mixed processes (ARMA) Non-stationary mixed autoregression-moving average (ARIMA) processes Identification and estimation of models of stochastic processes Time series testing and forecasting						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Project		60.0%		50.0%		
	Exam		60.0%		50.0%		

Recommended reading	Basic literature	T. Kufel, Ekonometria Rozwiązywanie problemów z wykorzystaniem programu GRETL, PWN, 2011 M. Osińska, Ekonometria współczesna, TNOiK, 2007 Box G.E.P. i Jenkins G.M. Analiza szeregów czasowych PWN, Warszawa, 1983 Kot S.M., Sokołowski A., Jakubowski J. Statystyka, Difin, Warszawa, 2007
	Supplementary literature	R. Otnes, L. Enochson, Analiza numeryczna szeregów czasowych, WNT A. Weron, R. Weron, Inżynieria finansowa, WNT C. Ngai Hang, Time series: applications to finance with R and Splus, Wiley
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	What is a stochastic process and a time series? What is time series stationarity (including weak stationarity)? When is an AR(1) autoregression process stationary? What are the consequences of parameter ρ for the intervals (0;1) and (-1;0) How do we define the AR(3) function? How do we define the MA(2) moving average function? State the stationarity condition of the ARMA process (p;q) In what situations do we use the generalized ARIMA model to model a time series?	
Work placement	Not applicable	

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