GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	TIME SERIES MODELLING, PG_00068683		
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	Part-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 -> Wydziały 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	16.0	0.0	16.0	0.0	0.0	32

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	32	5.0	88.0	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
Stationarity of 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
Cointegration of time series
Vector autoregressive (VAR) models, measuring the lenghth of lags, estimation, hypothesis testing
Impuls response function

Prerequisites and co-requisites

statistics, mathematical statistics, econometrics

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Exam	60.0%	50.0%
Project	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 j 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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