



Subject card

Subject name and code	FORECASTING AND SIMULATIONS, PG_00060795						
Field of study	Economic Analytics						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2023/2024		
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			English		
Semester of study	2	ECTS credits			5.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Katedra Statystyki i Ekonometrii -> Faculty of Management and Economics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Michał Pietrzak					
	Teachers	dr hab. Michał Pietrzak					
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	Analyzes economic phenomena in an innovative way, using in-depth knowledge in the selection of appropriate forecasting methods and verification of the received forecasts.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_U01] creates innovative solutions to complex and unstructured problems, taking into account the variability of the environment by synthesising information from many sources		creates innovative solutions to complex problems by recognizing the relationships between variables in the process of forecasting and simulation		[SU3] Assessment of ability to use knowledge gained from the subject		
	[K7_W03] demonstrates in-depth preparation in the application of analytical methods and techniques for formulating and solving problems		selects appropriate methods by calculating forecasts of complex socio-economic phenomena		[SW1] Assessment of factual knowledge		
Subject contents	Introduction to the subject of forecasting and simulation - basic concepts Assessment of the quality of forecasting models and forecasts Adaptive forecasting methods review Forecasting based on linear and non-linear trends, with seasonal fluctuations and without fluctuations Other forecasting methods based on time series Assumptions for forecasting based on econometric models Forecasting based on cause-and-effect econometric models - conditional forecasts The use of autoregressive models in forecasting Forecasting in conditions of autocorrelation of the random component Forecasting in conditions of instability of structural parameters Forecasting based on multi-equation models Qualitative data models in forecasting						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Exam		55.0%		100.0%		

Recommended reading	Basic literature	Zeliaś A., Pawełek B., Wanat S., Prognozowanie ekonomiczne, teoria, przykłady, zadania, PWN, Warszawa 2003 Radzikowska B. (red.), Metody prognozowania. Zbiór zadań, AE Wrocław 2004 Dittman P., Prognozowanie w przedsiębiorstwie - metody i ich zastosowanie, Wolters Kluwer, Kraków 2008
	Supplementary literature	Cieślak M., Prognozowanie gospodarcze - metody i zastosowania, PWN Warszawa 1997 i nowsze Radzikowska B. (red.), Metody prognozowania. Zbiór zadań, AE Wrocław 2004
	eResources addresses	Adresy na platformie eNauczanie: Forecasting_and_simulations_2023_2024 - Moodle ID: 36333 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36333
Example issues/ example questions/ tasks being completed	Based on monthly observations of cash in the vaults of monetary financial institutions of MFIs for the period from January 2017 to July 2020 (National Bank of Poland https://www.nbp.pl/home.aspx?f=/statystyka/statystyka.html), determine all possible expired forecasts and the expired forecast of phenomena for August 2020 using the following methods: naive method, simple moving average method with k smoothing constants of 3.4 and 5, respectively, weighted moving average method with k=3 smoothing constant and simple method of Brown's exponential smoothing with the smoothing constant =0.7 and the real time prediction h=1. Calculate the errors for the August 2020 forecast and the root mean square error of the expired forecasts.	
Work placement	Not applicable	