

COURSE DESCRIPTION

1) Course title: Forecasting and simulation in the enterprise		2) Coursecode ROZ_ZiP_S2Ms3_W_04E		
3) Validity of course description: 2018/2019				
4) Level of studies: Second-degree studies				
5) Mode of studies: full-time studies				
6) Field of study: Management and Production Engineering (ROZ)				
7) Profile of studies: Academic				
8) Programme:				
9) Semester: I				
10) Faculty teaching the course: ROZ1				
11) Course instructor: <u>Maciej Wolny PhD</u>				
12) Course classification: Common				
13) Course status: Compulsory				
14) Language of instruction: English				
15) Pre-requisite qualifications: mathematics, statistics				
16) Course objectives: Acquisition of the ability to use selected statistical and econometric methods for economic forecasting.				
17) Description of learning outcomes:				
Nr	Learning outcomes description	Method of assessment	Teaching methods	Learning outcomes reference code
1	The ability to decompose time series	Test at the computer station	Laboratory	ROZ_ZiIP_2A_W06 ROZ_ZiIP_2A_W11 ROZ_ZiIP_2A_U02 ROZ_ZiIP_2A_U15 ROZ_ZiIP_2A_K01 ROZ_ZiIP_2A_K07
2	The ability to set parameters of forecasting models using optimization methods	Test at the computer station	Laboratory	ROZ_ZiIP_2A_W06 ROZ_ZiIP_2A_U15 ROZ_ZiIP_2A_U22
3	The ability to independently analyse economic phenomena which are defined by time series	Evaluation of the forecasting project	Lecture	ROZ_ZiIP_2A_W03 ROZ_ZiIP_2A_W11 ROZ_ZiIP_2A_U01 ROZ_ZiIP_2A_U03 ROZ_ZiIP_2A_U10 ROZ_ZiIP_2A_K01 ROZ_ZiIP_2A_K02 ROZ_ZiIP_2A_K07

4	The ability to predict economic phenomenon and verify the prediction (ex ant and ex post)	Evaluation of the forecasting project	Lecture	ROZ_ZiIP_2A_W06 ROZ_ZiIP_2A_W13 ROZ_ZiIP_2A_U01 ROZ_ZiIP_2A_U03 ROZ_ZiIP_2A_U05 ROZ_ZiIP_2A_U06 ROZ_ZiIP_2A_U10 ROZ_ZiIP_2A_U15 ROZ_ZiIP_2A_K02 ROZ_ZiIP_2A_K04
5	The ability to use selected IT packages to forecasting and simulation	Test at the computer station, evaluation of the forecasting project	Lecture, Laboratory	ROZ_ZiIP_2A_W03 ROZ_ZiIP_2A_U14 ROZ_ZiIP_2A_U16 ROZ_ZiIP_2A_U22 ROZ_ZiIP_2A_K01 ROZ_ZiIP_2A_K07

18) Teaching modes and hours

Lecture	Classes	Laboratory	Project	Seminar
15		15		

19) Syllabus description:

Lecture:

1. The introduction and the basic steps in a forecasting task. Time series decomposition.
2. The sales forecasting based on econometric models. The forecast errors – ex ante and ex post.
3. The Forecasting enterprise resources based on time series. Naïve methods, averaging methods, Brown's method.
4. The demand forecasting based on time series. Linear regression model. Ex ante error and ax post analysis.
5. The Forecasting production costs based on time series. Adaptive approach – Holt trend method. The assessment of the forecast.
6. The modelling of non-linear relationships. Non-linearity in the parameters - transformation into the linear relationship. Logistic trend.
7. The seasonality methods: Winter's method and seasonality indicators methods.
8. The application of simulation models in the enterprise.

Laboratory:

1. The introduction and the basic steps in a forecasting task. Time series decomposition. Time plots and time series pattern.
2. The sales forecasting based on econometric models. The forecast errors.
3. The Forecasting enterprise resources based on time series. Naïve methods and smoothing methods.
4. The demand forecasting based on time series. Linear regression model. Ex ante error and ax post analysis.
5. The Forecasting production costs based on time series. Adaptive approach – Holt trend method. The assessment of the forecast.
6. The modelling of non-linear relationships. Non-linearity in the parameters - transformation into the linear relationship. Logistic trend.
7. The seasonality methods: Winter's method and seasonality indicators methods.
8. The application of simulation models in the enterprise.

20) Examination: no		
21) Primary sources: 1.Makridakis S., Wheelwright S.C., Hyndman R.J.: Forecasting. Methods and Applications., Wiley, 1998 (3 rd Ed.)		
22) Secondary sources: 2.Hyndman R.J., Athanasopoulos G. : Forecasting: principles and practice, OTexts, 2014 (https://www.otexts.org/fpp)		
23) Total workload required to achieve learning outcomes		
Lp.	Teaching mode :	Contact hours / Student workload hours
1	Lecture	15/15
2	Classes	
3	Laboratory	15/45
4	Project	
5	BA/ MA Seminar	
6	Other	
	Total number of hours	30/60
24) Total hours:		90
25) Number of ECTS:		3
26) Number of ECTS credits allocated for contact hours:		1
27) Number of ECTS credits allocated for in-practice hours (laboratory classes, projects):		2
28) Comments		

Approved:

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(date, Instructor's signature)

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(date, the Director of the Faculty Unit signature)