SYLLABUS

Name: ***Forecasting and simulation in the enterprise (ZIPAOZ>SM1FaSiE19O)***
Name in Polish:
Name in English: ***Forecasting and simulation in the enterprise***

Information on course:

Course offered by department: Faculty of Organization and Management
Course for department: Silesian University of Technology

Default type of course examination report:

ZAL

Language:

English

Course homepage:

https://platforma2.polsl.pl/roz/course/view.php?id=104

Short description:

Acquisition of the ability to use selected statistical and econometric methods
for economic forecasting

Description:

Lectures:
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 andseasonality 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 andsmoothing 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.

Total workload required to achieve learning outcomes:
Lecture - Contact hours 15 / Student workload hours 15
Laboratory - Contact hours 15 / Student workload hours 15

Total hours 90
Number of ECTS credits: 2
Number of ECTS credits allocated for contact hours: 1

Bibliography:

Hyndman, R.J., & Athanasopoulos, G. (2018) Forecasting: principles and practice, 2nd edition, OTexts: Melbourne, Australia. OTexts.com/fpp2.
Hyndman, R.J., & Athanasopoulos, G. (2021) Forecasting: principles and practice, 3rd edition, OTexts: Melbourne, Australia. OTexts.com/fpp3
Diebold, F. X. (2017). Forecasting in economics, business, finance and beyond. University of Pennsylvania. https://www.sas.upenn.edu/~fdiebold/Teaching221/Forecasting.pdf

Learning outcomes:

Description of learning outcomes:
1. KNOWLEDGE: knows and understands. Selected issues in the field of advanced detailed knowledge of forecasting, simulation and optimization methods in an industrial enterprise. (K2A_W05)
2. SKILLS: is able to. When identifying and formulating specifications for engineering tasks and solving them:
-use analytical, simulation and experimental methods,
-see their systemic and non-technical aspects, including ethical issues,
-make a preliminary economic assessment of proposed solutions and undertaken engineering activities. (K2A_U03)
3. Plan and conduct experiments, including measurements and computer simulations, interpret the obtained results and draw conclusions related to solving engineering problems. (K2A_U06)
4. SOCIAL COMPETENCE: is ready for. Critical evaluation of the acquired knowledge and received content.(K2A_K01)

Assessment methods and assessment criteria:

Test at the computer station

Evaluation of the forecasting project

Element of course groups in various terms:

Course group description	First term	Last term
missing group description in English (ZIPAOZ>SM1-19-O)	2020/2021-Z	
missing group description in English (ZIPAOZ>SM1-23-O)	2023/2024-Z	

Course credits in various terms:

<without a specific program>

Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	3	2020/2021-Z	

Management and Production Engineering, full-time master degree studies 3 sem. (ZIPAOZ-SM3)

Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	2	2023/2024-Z	