

Business Prognosis and Symulation - opis przedmiotu

Informacje ogólne	
Nazwa przedmiotu	Business Prognosis and Symulation
Kod przedmiotu	06.9-WM-ZiIP-ANG-D-04_20
Wydział	Wydział Mechaniczny
Kierunek	Management and Production Engineering
Profil	ogólnoakademicki
Rodzaj studiów	drugiego stopnia z tyt. magistra inżyniera
Semestr rozpoczęcia	semestr zimowy 2020/2021

Informacje o przedmiocie	
Semestr	1
Liczba punktów ECTS do zdobycia	3
Typ przedmiotu	obowiązkowy
Język nauczania	angielski
Sylabus opracował	dr inż. Julian Jakubowski, prof. UZ

Formy zajęć					
Forma zajęć	Liczba godzin w semestrze (stacjonarne)	Liczba godzin w tygodniu (stacjonarne)	Liczba godzin w semestrze (niestacjonarne)	Liczba godzin w tygodniu (niestacjonarne)	Forma zaliczenia
Laboratorium	15	1	9	0,6	Zaliczenie na ocenę
Wykład	15	1	9	0,6	Egzamin

Cel przedmiotu

Skills and competences: statistical data analysis, time series, the use of econometric models, quality models, methods for modelling discrete and continuous processes, use of methods of forecasting and simulation of processes in the enterprise.

Wymagania wstępne

Basic knowledge of: manufacturing processes, economics, statistics. Thorough knowledge of Excel.

Zakres tematyczny

Lecture

W1 Production process. Manufacturing company. The importance of forecasts for the company. Basic concepts. Classification of forecasting methods. Forecasting process. Making managerial decisions. Forecasting methods. Forecasting horizon.

W2 Measures for the quality of forecasts. Errors of forecast ex post and ex ante.

W3 Quantitative forecasting methods. Forecasts based on time models. Formation of time series. Models of time series with trends.

W4 Analytical models. Linear exponential smoothing models. Autoregression and moving average (ARMA and ARIMA) models.

W5 Methods based on econometric models. Stages of formation of an econometric model. Single equation econometric models.

W6 Qualitative forecasting methods. Forecasting based on heuristics. Analogue models. Models with leading variables. Models of cohort analysis. Market tests

W7 Simulation of continuous and discrete processes.

W8 Application scenarios in forecasting.

Laboratory

L1 Application of the method of least squares in forecasting. Determination of the regression line. Implementation of MNK Excel (LINEST).

L2 Extrapolation of a linear function of trend. Determination of the point and interval forecasts.

L3 Forecasting using non-linear trend model. Linearization of a function.

L4 Forecasting based on time series. Random and seasonal fluctuations. Forecasting based on adaptation models. A naive method. Methods: simple moving average and weighted average.

L5 Exponential smoothing models (Brown's, Holt's and Winters')

L6 Econometric models.

L7 Heuristic forecasting methods.

Metody kształcenia

Conventional lecture. Computer laboratory

Efekty uczenia się i metody weryfikacji osiągnięcia efektów uczenia się

Opis efektu	Symbole efektów	Metody weryfikacji	Forma zajęć
The student has an orderly theoretical knowledge of forecasting and simulation in an enterprise.	K_W10	- egzamin - ustny, opisowy, testowy i inne - obserwacje i ocena umiejętności praktycznych studenta	Wykład
The student can use accepted methods and mathematical models and computer simulations to analyse and evaluate management systems and decision-making systems.	K_U16	- bieżąca kontrola na zajęciach - kolokwium	Laboratorium
The student is able to both choose -and use- appropriate computer applications for calculating, simulating, designing and also verifying solutions in Management and Production Engineering.	K_U11	- kolokwium - sprawdzian	- Wykład - Laboratorium
The student understands the importance of the non-technical aspects and effects of engineering, including their impact on the environment; the student is aware of the responsibilities resulting from decisions taken in this regard.	K_K02	- aktywność w trakcie zajęć - egzamin - ustny, opisowy, testowy i inne	- Wykład - Laboratorium
The student is able to design and apply tools for the quality control of processes and of mechanical engineering products	K_U27	bieżąca kontrola na zajęciach	Laboratorium

Warunki zaliczenia

Lecture: lecture credit is awarded after passing a written exam which verifies the knowledge of the issues included in the lecture curriculum.

Laboratory: graded credit, based on the component ratings of current tests.

Literatura podstawowa

- Hanke J.E. Reitsch, Business Forecasting, Prentice Hall, Upper Saddle River, 1998.
- Makridakis S., S.C. Wheelwright, V.E. McGee, Forecasting, John Wiley, New York 1983
- Chambers J.C. Mullick S.T., Smith D.D. How to chose the right forecasting technique. Harvard Business Review, Vol. 4., 1991.

Literatura uzupełniająca

- Lapin L.L., StatisticFor Modern Business Decision. Harcourt Brace Javanovich Inc., New York, 1987.

Uwagi

Zmodyfikowane przez dr inż. Julian Jakubowski, prof. UZ (ostatnia modyfikacja: 26-04-2020 11:57)

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