

Modelling and simulation in production processes - opis przedmiotu

Informacje ogólne	
Nazwa przedmiotu	Modelling and simulation in production processes
Kod przedmiotu	06.9-WM-ZiIP-IJ-ANG-D-23_17
Wydział	Wydział Mechaniczny
Kierunek	Management and Production Engineering
Profil	ogólnoakademicki
Rodzaj studiów	drugiego stopnia z tyt. magistra inżyniera
Semestr rozpoczęcia	semestr zimowy 2018/2019

Informacje o przedmiocie	
Semestr	2
Liczba punktów ECTS do zdobycia	4
Typ przedmiotu	obieralny
Język nauczania	angielski
Sylabus opracował	dr hab. inż. Sławomir Kłos, 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
Wykład	15	1	-	-	Egzamin
Projekt	30	2	-	-	Zaliczenie na ocenę

Cel przedmiotu

The aim of the course is to acquaint students with the method of computer simulation and familiarization with the techniques of building simulation models of processes and production systems. After completion of the course students should be able to use the selected software to simulate production processes (eg. Tecnomatix Plant Simulation, Enterprise Dynamics, Arena, etc.), model building (mapping the actual system in a form of a simulation model), Designing of simulation experiments and analysis of research results.

Wymagania wstępne

Knowledge of basic production processes implemented in enterprises.

Zakres tematyczny

Computer simulation as a research method - introduction. Stages of the construction of a simulation model. Generating pseudorandom data based on various probability distributions. Basic objects needed to build the simulation model of the production system. Planning of a simulation experiment. Modelling and simulation of discrete manufacturing processes. Modelling and simulation of assembly processes. Analysis of the efficiency of utilization of production resources. Analysis of the efficiency of logistics processes and inventory levels of work in progress. Analysis of the effectiveness of employees on the basis of a simulation model of the production system.

Metody kształcenia

Lecture – Conventional lecture with the use of a videoprojector.

Project – practical classes carried out with the use of a selected simulator.

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 computer-aided management in an enterprise.	K_W09	kolokwium	Wykład
The student has knowledge of development trends and new developments in manufacturing engineering.	K_W16	kolokwium	Wykład
The student is able to obtain, integrate and interpret knowledge, draw conclusions and formulate opinions on the basis of catalogue entries issued by manufacturers of appliances, advertising material, information obtained from literature, databases and other modern means of communication, which relate to issues of mechanical engineering and management methods in this field.	K_U04	- kolokwium - projekt	Projekt
The student is able to choose and use appropriate computer applications for calculation, simulation, designing and verification of solutions related to Management and Production Engineering.	K_U12	- kolokwium - projekt	Projekt
The student is able to think and act both creatively and entrepreneurially.	K_K06	projekt	Projekt

Warunki zaliczenia

Lecture - a written exam at the end of the semester.

Project – final grade is the weighted sum of grades obtained for the completion of individual laboratory classes. The contribution of individual components of evaluation: grade for project classes - 50%, grade for the lecture – 50%.

Final grade = 50 % of grade for lecture + 50 % of grade for project classes.

Literatura podstawowa

1. S. Bangsow, Tecnomatix Plant Simulation: Modeling and Programming by Means of Examples, Springer; 2016
2. S. Bangsow, Manufacturing Simulation with Plant Simulation and Simtalk: Usage and Programming with Examples and Solutions, Springer, 2010
3. G. L. Curry, R. M. Feldman, Manufacturing Systems Modeling and Analysis, Springer, 2010

Literatura uzupełniająca

1. W. D. Kelton, R. Sadowski, Simulation with Arena, McGraw-Hill Education, 2009

Uwagi

Zmodyfikowane przez dr inż. Tomasz Belica (ostatnia modyfikacja: 13-09-2018 19:42)

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