GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Simulation Modelling of Processes, PG_00044322		
Field of study	Engineering Management		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2024/2025
Education level	first-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	3	Language of instruction	Polish
Semester of study	5	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Management -> Faculty of Management and Economics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Andrzej Szuwarzyński	
	Teachers		

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	8.0	32.0	100

Subject objectives

The aim is to acquire the practical skills to construct models of the processes using iGrafx Process software, simulation experiments, inference based on simulation results.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U08] analyses engineering and managerial solutions in decision-making processes, taking into account pro-quality and pro-environmental aspects, as well as safety of work processes	Interprets simulation results Combines knowledge from management and simulation modelling	[SU4] Assessment of ability to use methods and tools
[K6_W13] has a basic knowledge of the design, modelling and optimisation of technical processes and systems	Describes processes with the use of iGrafx software. Identifies process stages.	[SW1] Assessment of factual knowledge
[K6_U04] forecasts phenomena and processes in the organisation, including technical and innovative processes	Models real processes. Analyses the process on the bases of simulation results. Interprets simulation results. Combines knowledge from management and simulation modelling.	[SU4] Assessment of ability to use methods and tools

Subject contents

Introduction to the course. Defining of basic terms, queuing systems, models. General characteristics of process approach in the organization. Structure of simulation model (static and dynamic). Rules of process map building. Introduction to the iGrafx software. Structure: department, activity, resources, costs, generator, schedules. Rules of setting properties for the activity: inputs, outputs, resources, attributes. Defining task (type, duration, schedule, capacity). Defining activity inputs (starting point, collecting transactions at input). Generators, types and ways of defining. Resources, defining (types, costs, schedule, overtime, costs, availability, attributes), allocating for tasks (type, origin, way of allocation, limitations, waiting options, relation). Tasks, types (work, delay, subprocess), costs (class of values), overtime. Attributes, defining (location, type, value, name), setting the value. Defining decisions. Defining simulation environment. Rules of scenario creation. Carrying out simulation experiment. Results analysis. Preparation of a simple queuing system on the basis of a description. Preparation of individual project of cpmplex queuing system.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Practical exercise	50.0%	50.0%
Written exam	50.0%	50.0%

Recommended reading	Basic literature	.
	Supplementary literature	.
	eResources addresses	
Example issues/ example questions/ tasks being completed	Build a simulation model of the selected process Carry out a simulation experiment Interpret the results and make improvements to the process	
Work placement	Not applicable	