



## Subject card

Subject name and code	SIMULATION MODELING OF PROCESSES, PG_00061458						
Field of study	Engineering Management						
Date of commencement of studies	October 2023		Academic year of realisation of subject		2025/2026		
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	Part-time studies (on-line)		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish		
Semester of study	5		ECTS credits		5.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Department Of Management -> Faculty Of Management And Economics -> Wydziały Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Marzena Grzesiak				
	Teachers		dr inż. Marzena Grzesiak				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	16.0	0.0	16.0	0.0	0.0	32
	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	32		7.0		86.0	125
Subject objectives	Analyzes organization processes using the simulation modeling methodology, creating models and using simulation results to improve processes						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U01] analyzes and evaluates complex processes in the context of the possibility of their improvement, using various methods, including analytical and simulation		conducts experiments using built-in simulation models, and uses the obtained simulation results to improve the tested processes		[SU4] Assessment of ability to use methods and tools		
	[K6_W05] integrates data from many sources to analyze complex problems of modern management		designs the structure of the simulation model, mapping all the essential elements of the real process, in accordance with the adopted methodology		[SW1] Assessment of factual knowledge		
Subject contents	Introduction to the subject Defining basic concepts, queuing systems, models General characteristics of the process approach in the organization Simulation model structure (static and dynamic) Principles of building a process map Introduction to iGrafx Structure: department, activity, resources, costs, transaction generator, schedules Rules for assigning properties to activities: inputs, outputs, task, resources, attributes Task definition (task type, duration, schedule, capacity) Defining inputs to activities (starting point, collecting transactions at input) Transaction generators, types and ways of defining Resources, definition (classification, costs, schedule, overtime, costs, availability, attributes), assignment to tasks (type, origin, assignment method, constraint, waiting options, affinity) Tasks, types (work, delay, subprocess, concurrent process), costs (value class), overtime performance Attributes, defining (location, type, value, name), determining the value Defining decision-making activities Defining the simulation environment Scenario building rules Running a simulation experiment Analysis of the results. Implementation based on the model description of a simple queuing system Implementation of an individual project of a complex queuing system						

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Practical exercises	50.0%	50.0%
	Exam	50.0%	50.0%
Recommended reading	Basic literature	Filipowicz B.: Modele stochastyczne w badaniach operacyjnych. WNT, Warszawa 1996 Grajewski P.: Organizacja procesowa, PWE, Warszawa 2007 Mielczarek B.: Modelowanie symulacyjne w zarządzaniu. Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2009 Dokumentacja programu iGrafx Process 2013, dostępna w Internecie	
	Supplementary literature	Adair C.B., Murray B.A.: Radykalna reorganizacja firmy. Wydawnictwo Naukowe PWN, Warszawa 2002 Champy J.: X-engineering przedsiębiorstwa. Wydawnictwo Placet, Warszawa 2003 Hammer M.: Reinżynieria i jej następstwa. Wydawnictwo Naukowe PWN, Warszawa 1999 Tyszer J., Symulacja cyfrowa, WNT, Warszawa 1978	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Build a simulation model of the selected proces Carry out a simulation experiment Interpret the results and make improvements to the proces		
Work placement	Not applicable		

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