



Subject card

Subject name and code	Production Processes - Methods of Decision Making, PG_00070258						
Field of study	PROCESY WYTWÓRCZE - METODY WSPOMAGANIA DECYZJI						
Date of commencement of studies	February 2025		Academic year of realisation of subject		2025/2026		
Education level	second-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Intelligent and Decision Support Systems -> Faculty of Electrical and Control Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Robert Piotrowski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	0.0	0.0	45
	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	45		5.0		25.0	75
Subject objectives	The aim of the course is for students to master selected issues of optimisation and decision support in manufacturing processes.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_W06] has an extended knowledge of the design of automation components and devices, control and decision support systems control and decision support systems and complex mechatronic systems		Defines optimisation tasks to support decision-making in industrial processes.		[SW3] Ocena wiedzy zawartej w opracowaniu tekstowym i projektowym		
	[K7_U03] is able to prepare and deliver a presentation on the results of an engineering task and own research		Finds a presentation on the subject.		[SU5] Ocena umiejętności zaprezentowania wyników realizacji zadania		
	[K7_U07] is able to use analytical, simulation and experimental methods to formulate and solve engineering tasks and simple research problems in the field of automation and robotics		Solves optimisation problems (discrete, binary and network).		[SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu		
	[K7_U04] has the ability for self-directed learning in order to improve his/her professional qualifications, and is able to identify directions for further learning		Finds a scientific article on the subject.		[SU1] Ocena realizacji zadania		

Subject contents	Course content – lecture 1. General information 2. Decision models for discrete processes 3. Discrete programming integer 4. Discrete programming binary 5. Network programming 6. Transport issues and the travelling salesman problem 7. Summary		
	Course content – laboratory 1. Discrete manufacturing processes: examples and modelling 2. Integer programming 3. Binary programming 4. Decision support methods network issues 5. Transport issues and the travelling salesman problem		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Laboratory	50.0%	30.0%
	Colloquium 2	50.0%	35.0%
	Colloquium 1	50.0%	35.0%
Recommended reading	Basic literature	Trzaskalik T. Wprowadzenie do badań operacyjnych z komputerem. Wydanie 3. Wydawnictwo PWE, Warszawa 2024.	
		Praca zbiorowa (red. Sikora W.). Badania operacyjne. Wydawnictwo PWE, Warszawa 2018.	
		Cormen T.H., Leiserson Ch.,E. Rivest R., Stein C. Wprowadzenie do algorytmów. Wydanie 7. Wydawnictwo PWN, Warszawa 2012 (tłumaczenie).	
		Deo N. Teoria grafów i jej zastosowania w technice i informatyce. Wydawnictwo PWN, Warszawa 1980 (tłumaczenie).	
Recommended reading	Supplementary literature	Praca zbiorowa (red. Trocki M.). Nowoczesne zarządzanie projektami. Wydawnictwo PWE, Warszawa 2012.	
		Durlik I. Inżynieria zarządzania część I. Strategie organizacji produkcji, nowe koncepcje zarządzania. Wydanie 7 uzupełnione. Wydawnictwo Placet, Warszawa 2007.	
		Jędrzejczyk Z., Kukuła K., Skrzypek J., Walkosz A. Badania operacyjne w przykładach i zadaniach. Wydanie 7. Wydawnictwo PWN, Warszawa 2015.	
		Wilson R.J. Wprowadzenie do teorii grafów. Wydanie 2. Wydawnictwo PWN, Warszawa 2012 (tłumaczenie).	
Recommended reading	eResources addresses		
	Example issues/ example questions/ tasks being completed		
Practical activites within the subject	What is the difference between an Eulerian cycle and a Hamilton cycle in a graph?		
	Not applicable		

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