



Subject card

Subject name and code	Automation of Technological Processes, PG_00048433						
Field of study	Automatic Control, Cybernetics and Robotics						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2022/2023		
Education level	second-cycle studies	Subject group			Optional subject group 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	1	Language of instruction			Polish		
Semester of study	1	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Automatic Control -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Piotr Kaczmarek					
	Teachers	dr inż. Piotr Fiertek dr inż. Piotr Kaczmarek					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	15.0	15.0	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	6.0		24.0	75	
Subject objectives	Introduction for automation of technological processes						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_U09] can carry out a critical analysis of the functioning of existing technical solutions and assess these solutions, as well as apply experience related to the maintenance of advanced technical systems, devices and facilities typical for the field of studies, gained in the professional engineering environment	The student can design IT systems supporting business and production processes			[SU1] Assessment of task fulfilment		
	[K7_W21] Knows and understands, to an advanced extent, methods and techniques of design and operation of automatic control systems, control and robotics systems, as well as the use of computers in the control and monitoring of dynamic objects	The student can design complex control systems based on feedback, cascade control and feedforward			[SW1] Assessment of factual knowledge		
[K7_W03] Knows and understands, to an increased extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum.	Student can analyze complex production processes.			[SW1] Assessment of factual knowledge			

Subject contents	1. Definition of mechanization and automation 2. Benefits of automation 3. Factors of automation 4. Automation in a machine-building industry 5. Production techniques in a machine-building industry 6. Components of manufacturing process 7. Automation of a simple manufacturing cycle 8. Automation of a machine feeding process 9. Automation of a workshop transport 10. Automation of an assembly process 11. Numerically controlled machine tools 12. Robots in automatic production processes 13. Quality control in automatic manufacturing systems 14. Computer aided design in automatic manufacturing systems 15. CRM/ MRP/ERP systems 16. CAD/CAM/CAE software 17. Automation in chemical industry 18. Control of heat and mass transfer processes 19. Design of control systems for chemical reactions 20. Automation of rectification and distillation processes														
Prerequisites and co-requisites															
Assessment methods and criteria	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:33%;">Subject passing criteria</th> <th style="width:33%;">Passing threshold</th> <th style="width:34%;">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>Seminar</td> <td>51.0%</td> <td>30.0%</td> </tr> <tr> <td>Written test</td> <td>51.0%</td> <td>30.0%</td> </tr> <tr> <td>Project</td> <td>51.0%</td> <td>40.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Seminar	51.0%	30.0%	Written test	51.0%	30.0%	Project	51.0%	40.0%
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Project	51.0%	40.0%													
Basic literature	B. Roffel, B. Betlem "Process Dynamics and Control" Wiley 2006 M. Piekarski, M. Poniewski "Dynamika i sterowanie procesami wymiany ciepła i masy" Warszawa WNT, 1994														
Supplementary literature	No requirements														
eResources addresses	Adresy na platformie eNauczenie:														
Example issues/ example questions/ tasks being completed															
Work placement	Not applicable														