



Subject card

Subject name and code	Network Programming, PG_00016975						
Field of study	Automation, Robotics and Control Systems						
Date of commencement of studies	February 2024		Academic year of realisation of subject		2024/2025		
Education level	second-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Controlled Electric Drives -> Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Piotr Kołodziejek				
	Teachers		dr inż. Piotr Kołodziejek				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	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	30		7.0		38.0	75
Subject objectives	The aim of the course is learning to create computer programs that communicate in computer network in the client-server model architecture using the TCP / IP protocols stack with ANSI C, C ++, C #, JAVA, Python programming languages. The course covers programming of the network socket interface, multithreaded programming issues, concurrent programming, distributed applications, broadcasting protocols and technologies for creating web applications (design patterns) and blockchain technology applications.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K7_W02		student explains network programming environment and language selection criteria		[SW1] Assessment of factual knowledge		
	K7_U12		Student explains layered model of the TCP/IP protocols, client-server model of communication, network libraries, classes, functions/ methods and methods of their application.		[SU1] Assessment of task fulfilment		
	K7_K02		Student explains functional classification of the informatic project.		[SK5] Assessment of ability to solve problems that arise in practice		
Subject contents	Computer network definitions and issues, types of transmission, network topologies, protocol stack network, TCP / IP, network addressing, ports, network socket interface, broadcast transmission, network configuration and diagnostics, client-server communication architecture, event programming, object-oriented programming, multi-threaded programming, transmission and service priorities customers, network communication in industrial applications using dedicated client - server application, network communication web browser - server application, programming client-server application in ANSI C, C ++, C #, JAVA, Python, web service programming with using blockchain technology and dedicated API.						
Prerequisites and co-requisites	Informatic basics.						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Lectures colloquium		50.0%		50.0%		
	Laboratory tasks and project		100.0%		50.0%		

Recommended reading	Basic literature	1. Sosinsky Barrie: "Sieci komputerowe - Biblia", Helion, 2011. 2. R. Blum: "C# Network Programming", John Wiley & Sons, 2006 3. A. Jones, J. Ohlund Programowanie sieciowe Microsoft Windows, 2000. 4. Troelsen A., Japikse P., "C# 6.0 and .NET 4.6 Framework", Nowy Jork 2015 5. Beej's Guide to Network Programming Using Internet Sockets: http://beej.us/guide/bgnet/ 6. Sierra K., Bates B.: "Head First Java" 2004
	Supplementary literature	1. Metsker S. J., "C#. Wzorce projektowe" 2005 2. Drescher D., "Blockchain. Podstawy technologii łańcucha bloków w 25 krokach"
	eResources addresses	Adresy na platformie eNauczenie: PROGRAMOWANIE SIECIOWE [2024/25] - Moodle ID: 41960 https://enauczenie.pg.edu.pl/moodle/course/view.php?id=41960
Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"> - object programming in the client-server model - application of the network socket interface - multithreaded client-server applications - network GUI with virtual measurement devices - interactive web-browser GUI design - application design pattern utilization - blockchain technology application 	
Work placement	Not applicable	

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