GDAŃSK UNIVERSITY OF TECHNOLOGY

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 progamming, 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 eNauczanie: PROGRAMOWANIE SIECIOWE [2024/25] - Moodle ID: 41960 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=41960
Example issues/ example questions/ tasks being completed	- object programming in the client-server model - application of the network socket interface - multithreded client-server appliations - 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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