GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Network Programming, PG_00038329					
Field of study	Automation, Robotics and Control Systems					
Date of commencement of studies	October 2022		Academic year of realisation of subject		2023/2024	
Education level	second-cycle studies		Subject group		Optional subject group Subject group related to scientific research in the field of study	
Mode of study	Part-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 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	10.0	0.0	10.0	0.0	0.0	20
	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	20	9.0	46.0	75

Subject objectives	Acquisition of skills by the students in network data transmission diagnostics and protocols monitoring, network application programming in the client-server architecture in C++, C, Python using selected operating systems and software development environments including multithreaded data transfer, prioritization of network service, network sockets interface, layers, ports, TCP / IP protocols and basics of the cryptographic algorithms.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K7_U12	Student describes the layered model TCP / IP protocol stack, model client-server communication, creation support libraries network applications and defined classes, functions / methods and method their use.	[SU1] Assessment of task fulfilment
	K7_K02	The student explains the sequences functions called in the application client and server to establish communication with the use of connection protocol with transmission control and no control transmission.	[SK5] Assessment of ability to solve problems that arise in practice
	K7_W02	Student can work in group taking different roles in it. The student explains phases of the network application project design.	[SW3] Assessment of knowledge contained in written work and projects

Subject contents	Definitions and issues of computer networks, transmission types, network topologies, network protocol stack, TCP / IP, network addressing, ports, network sockets interface, network configuration and diagnostics, client - server architecture communication, event programming, multithreaded data transmission programming, prioritization of network services, basic cryptographic algorithms, client-server application based network programming, web-browsert network programming
Prerequisites and co-requisites	Basic knowledge on computer networks and C/C++ programming.

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Laboratory tasks and project	100.0%	50.0%
	Lectures colloquium	50.0%	50.0%

Recommended reading	Basic literature	1. Sosinsky Barrie: Sieci komputerowe - Biblia, Helion, 2011. 2. A. Sopala: Pisanie programów internetowych, Mikom, 2000. 3. A. Jones, J. Ohlund Programowanie sieciowe Microsoft Windows, RM, 2000. 4. Eckel Bruce, Thinking in Java,, IV edition 5. Beej's Guide to Network Programming Using Internet Sockets: http://beej.us/guide/bgnet/
	Supplementary literature	1. E. Harold Java: programowanie sieciowe, READ ME, 2001.
	eResources addresses	Adresy na platformie eNauczanie: PROGRAMOWANIE SIECIOWE [Niestacjonarne][2023/24] - Moodle ID: 32276 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=32276

Example issues/ example questions/ tasks being completed	• development of network application "echo" in C, C#, Python languages • software design for network transmission between PC application and microcontroller • application of connected and connectionless network sockets, • design of multi-threaded "server" application for handling network communication with dedicated "client" applications and a web browser. • design of a virtual measuring instrument for remote monitoring of selected industrial processes • event-oriented and multithreaded programming of client-server applications,

Work placement	Not applicable