GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Computer Networks, PG_00047711
Field of study	Informatics

Date of commencement of studies	October 2022	Academic year of realisation of subject	2022/2023
Education level	second-cycle studies	Subject group	Obligatory subject group in the field of study
			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	1	Language of instruction	Polish
Semester of study	1	ECTS credits	7.0
Learning profile	general academic profile	Assessment form	exam

Conducting unit	Department of Computer Communications -> Faculty of Electronics, Telecommunications and Informatics

Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Krzysztof Nowicki
	Teachers	dr inż. Krzysztof Nowicki
		prof. dr hab. inż. Józef Woźniak
		dr inż. Krzysztof Gierłowski
		dr inż. Wojciech Gumiński
		dr inż. Michał Hoeft

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	24.0	0.0	15.0	0.0	0.0	39
	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	39	12.0	124.0	175

Subject objectives	Student classifies basic networking problems and identifies and analyzes selected protocols and mechanisms implemented in standard LAN and WAN solutions

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_U06] can analyse the operation of components, circuits and systems related to the field of study; measure their parameters; examine technical specifications; interpret obtained results and draw conclusions	Student is able to use methods and tools characteristic of ICT technology, in particular LAN networks of IEEE 802 series standards and IP networks	[SU4] Assessment of ability to use methods and tools
	[K7_W42] Knows and understands, to an increased extent, the principles and trends in the analysis and design of local and distributed IT systems and the basics of computer modeling and computerization of complex cognitive and decision-making processes.	1. Student knows network architectures and communication protocols. 2. Identifies flow control methods in the data link layer (ARQ) 3. Identifies the rules of the control algorithms used in the TCP protocol	[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.	1. Student knows network architectures and general principles of network communication. 2. Identifies the basic problems of information transmission using digital signals 3. Identifies the relationships between media and signal parameters and bandwidth and throughput. 4. It differentiates the principles of multiplexing access in the media and methods of device operation synchronization and basic algorithms of transmission security.	[SW1] Assessment of factual knowledge
	[K7_W02] Knows and understands, to an increased extent, selected laws of physics and physical phenomena, as well as methods and theories explaining the complex relationships between them, constituting advanced general knowledge in the field of technical sciences related to the field of study	1.Student knows the principles of assessing reliability of networks. 2. Defines the QoS models of services in IP networks (IP QoS). 3. Defines the concept of justice and geolocation in networks. 4. Defines the concept of net neutrality	[SW1] Assessment of factual knowledge
	[K7_U02] can perform tasks related to the field of study as well as formulate and solve problems applying recent knowledge of physics and other areas of science	The student is able to perform tasks related to problems occurring in computer systems and networks	[SU1] Assessment of task fulfilment

Subject contents	
	Transmission media - structured cabling standards
	Basic networking concepts - overview and analysis of layered architectures
	Fundamentals of signal and information theory
	Mechanisms of data link layer - multiplexing, synchronization and coding principles
	Flow control in the data link layer - ARQ algorithms
	Methods to ensure fairness of service and proper access to network resources
	Providing differentiated quality of service in IP networks - IP QoS models
	IPv6 solutions
	Methods for flow control at the transport layer protocol for example TCP
	Basic problems of geolocation in computer networks
	Problems of ensuring net neutrality
	Cloud systems

Prerequisites and co-requisites	
	Required knowledge of the basics of computer networks operation

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	lab	50.0%	40.0%
	lecture	50.0%	60.0%

Recommended reading	Basic literature	K. Nowicki, J. Światowiak: Protokoły IPv6
		Krawczyk H., Kaczmarek S., Nowicki K.: Aplikacje i usługi a technologie sieciowe, WN PWN 2018
		F. Halsall: Data Communications, Computer Networks and Open Systems. Addison-Wesley
		Lecture materials available in the form of pdf files
	Supplementary literature	J. Woźniak, K. Nowicki; Sieci LAN, MAN, WAN: protokoły komunikacyjne. O.W Politechniki Warszawskiej
		A. Tanenbaum: Computer Networks, J. Wiley
		W. Stallings: High-Speed Networks. Performance and Quality of Service, Prentice Hal
	eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	Issues and exam questions include a list of lecture topics

Work placement	Not applicable