GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Computer Networks, PG_00058929
Field of study	Informatics

Date of commencement of studies	October 2023	Academic year of realisation of subject	2024/2025
Education level	first-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	2	Language of instruction	Polish
Semester of study	4	ECTS credits	4.0
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				
		dr inż. Wojciech Gumiński				
		dr inż. Michał Hoeft				
		dr inż. Krzysztof Gierłowski				
		dr inż. Tomasz Gierszewski				
		dr hab. inż. Jacek Rak				
		prof. dr hab. inż. Józef Woźniak				

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	8.0	62.0	100

Subject objectives	Student becomes familiar with logical layered architectures, 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
		[K6_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 technical systems, devices and facilities typical for the field of studies, gained in the professional engineering environment	The student is able to assess the changes and trends occurring in the analyzed network technologies. The student is able to assess the current state and trends observed in standardization and implementation works, as well as assess processes taking place on the ICT technology market.	[SU2] Assessment of ability to analyse information
		[K6_U06] can analyse the operation of components, circuits and systems related to the field of study, measure their parameters and examine technical specifications	Student is able to analyze the operation of network elements, systems and systems as well as measure their parameters and test technical characteristics	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
		[K6_W03] Knows and understands, to an advanced 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	The student has knowledge of wired and wireless networks described by the standards of the IEEE 802 series. The student has knowledge about the basic protocols of IP networks. The student knows the principles of operation of switches and routers	[SW1] Assessment of factual knowledge
		[K6_W42] Knows and understands, to an advanced extent, architecture, design principles and methods of hardware and software support for local and distributed information systems, including computing systems, databases, computer networks and information applications, as well as the principles of human cooperation with computers and computer-aided teamwork	The student has knowledge about basic architectures, protocols and network devices. Student is able to analyze the work of selected devices and protocols used in LAN and IP networks	[SW1] Assessment of factual knowledge
		[K6_U42] can apply tools and methods of designing, optimization, monitoring, management, increasing reliability and protection from safety hazards in local and distributed information systems and applications	The student is able to use the tools and methods of design, optimization, monitoring, management, increasing reliability and protection against security threats in local and wide area networks	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment

Subject contents	
	1. General characteristics of the goals of computer networks, applications, classifications 2. The logical architecture of the ISO / OSI and TCP / IP 3. The mechanisms controlling the flow of information in networks. 4. Access protocols. Addressing issues in LAN 5. Selected technologies for wired and wireless LAN and MAN - general characteristics. 6. Standard series 802.3 Ethernet 7. Evolution of Ethernet: Fast Ethernet and 1/10 Gigabit Ethernet 8. Wireless Networks WLAN-basic 9. IEEE 802.11 (a, b, g, e). 10 WAN standards of basic problems. 11. LAN connection method - characteristics 12. Organization of IP networks. 13. Cooperation between networks (Internet & Internet, corporate networks, VPNs), 14. Routing Protocols 15. QoS Architecture for IP networks and computer network security. 16. Network services Lab. 1. Network Management 2. Virtual Local Area Networks 3. Static and Dynamic Routing 4. 802.11 wireless network configuration 5. IP Network Diagnostics 6. Network monitoring

Prerequisites and co-requisites	No recomendations		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	laboratory tasks	50.0%	50.0%
	exam	50.0%	50.0%

Recommended reading	Basic literature	Nowicki K., Woźniak J.: Przewodowe i bezprzewodowe sieci LAN, OW PW 2002
	Supplementary literature	Nowicki K.: Ethernet - sieci, mechanizmy, Infotech 2006
		Krawczyk H., Kaczmarek S., Nowicki K.: Aplikacje i usługi a technologie sieciowe, WN PWN 2018
		Tannenbaum A.: Sieci komputerowe, Helion
	eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	Description of network architectures and basic standards.Comparison of selected standard wired and wireless LAN networks.Comparison of methods and devices for connecting networks.Description of addressing methods in LAN and WAN networks.Description and comparison of selected routing protocols and basic communication protocols in IP networks.Description of selected network applications.
Work placement	Not applicable