GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Computer Networks, PG_00047671		
Field of study	Informatics		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2022/2023
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	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	4	ECTS credits	3.0
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	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	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	12.0	33.0	75

Subject objectives: Learning major layered networking architectures, protocols and network standards

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W04] Knows and understands, to an advanced extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, and organisation of systems using computers or such devices	Student describes and compares various LAN and WAN network solutions and specific for them technologies. The student knows selected network services and applications. Student is able to analyze and differentiate the operation of selected network devices.	[SW1] Assessment of factual knowledge
[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 about basic network architectures and communication protocols. The student knows and understands the mechanisms of creating virtual networks in a LAN environment. The student has knowledge on wired and wireless networks described by the standards of the IEEE 802 series. The student has knowledge on the basic IP network protocols.	[SW1] Assessment of factual knowledge

Subject contents	1. Classification and general description of computer networks 2. Layered netwok architectures - ISO-OSI, TCP/IP 3. The teoretical basis for data communications 4. Data Link Layer design issues (synchronistion, flow control, error detection and correction, multliplexing) 5. Local area networks - general characteristics - channel access methods 6. Contention type solutions: Ethernet networks - MAC sublayer functions and channel access principles - standard IEEE 802.3 7.Wireless LAN networks - basic characteristics 8. IEEE 802.11 standard - operational modes 9. IEEE 802.11 standard -channel access methods 10. New Ethernet technologies 11. 10/40/100 Gb/s Ethernet 12. EFM 13. Methods of connecting LAN networks 14. VLAN 15. Wide Area Networks - WANs 16. TCP/IP architecture - IP and transport protocols 17. IPv6 protocols, addresses 19. Migration IPv4/IPv6 20. Routing solutions in WAN networks 21. End-to-end flow control in IP networks 22. Congestion cotrol in IP networks 23. Network security	
Prerequisites and co-requisites		
Assessment methods and criteria	Subject passing criteria: Written exam	Passing threshold: 50.0% / Percentage of the final grade: 100.0%
Recommended reading	Basic literature	Nowicki K., Woźniak J. : Przewodowe i bezprzewodowe sieci LAN. Oficyna wyd. PW Materiały z wykładu Nowicki K. Sieci Ethernet Nowicki K, Światowiak J.: Protokoły IPv6 Woźniak J., Nowicki K.: Sieci LAN, MAN, WAN - protokoły komunikacyjne. Wyd. Postępu Telekomunikacji
	Supplementary literature	Tannenbaum A.: Computer Networks, Prentice Hall; Stallings W.: High Speed Networks and Internets. Prentice Hall Krawczyk H,. Kaczmarek S. Nowicki K.: Aplikacje i usługi a technologie sieciowe. PWN 2018
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Comparison of 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	