



## Subject card

Subject name and code	Computer Networks, PG_00048818						
Field of study	Electronics and Telecommunications						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2024/2025		
Education level	first-cycle studies	Subject group			Optional subject group 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	3	Language of instruction			Polish		
Semester of study	5	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
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. Michał Hoefft dr inż. Krzysztof Gierłowski					
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	2.0		18.0	50	
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_U31] can identify telecommunications network architectures, differentiates their areas and functional elements, evaluates the quality of service delivery, calculates parameters of functional elements	1. Student defines logical architectures of computer networks. 2. Student identifies wired LAN solutions. 3. Student identifies the characteristic features of the technology wireless standards IEEE 802 series. 4. Student identifies and explains features of IP and UDP/TCP protocols. 5. Student differentiates routing algorithms used in WAN networks. 6. Student explains the principles of traffic control in IP networks.			[SU2] Assessment of ability to analyse information		
	[K6_W35] Knows the concepts of the technique of signal transmission, operation of telecommunications networks and multimedia services and the rules for providing them	1. Student classifies various telecommunications and computer network solutions 2. The student has knowledge of selected network applications and the principles of their implementation.			[SW1] Assessment of factual knowledge		

Subject contents	1. Classification and general characteristics of computer networks 2. Packet and channel switching 3. Layered network architectures - ISO-OSI and TCP/IP models 4. LANs - general characteristics - classification of access methods 5. Contention-type solutions: Ethernet networks - MAC sublayer functions and channel access principles - IEEE 802.3 standard 6. Wireless LANs - general characteristics 7. IEEE 802.11 standard - operating modes, channel access methods 8.. Development of Ethernet technology - 10-800 Gb/s 9.. EFM 10. OAM Ethernet 11. Methods of connecting LAN networks 12. Network connection devices - hub, switch, router 13. Virtual local area networks 14. Wide area networks 15. TCP/IP architecture - IP protocols 16. TCP/IP architecture - transport protocols 17. TCP/IP architecture - applications 18. Protocols IPv6 19. Routing methods in WAN networks 20. End-to-end flow control in IP networks 21. Congestion control in IP networks 22. Selected network applications and services.(DNS, DHCP, mail, NTP) 23. Network security.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Midterm colloquium	50.0%	100.0%
Recommended reading	Basic literature	<p>Nowicki K., Woźniak J. : Przewodowe i bezprzewodowe sieci LAN. Oficyna wyd. PW</p> <p>Nowicki K. Sieci Ethernet</p> <p>Nowicki K, Świątowski J.: Protokoły IPv6</p> <p>Materiały z wykładu</p>	
	Supplementary literature	<p>Tannenbaum A.: Computer Networks, Prentice Hall;</p> <p>Stallings W.: High Speed Networks and Internets. Prentice Hall</p> <p>Krawczyk H., Kaczmarek S. Nowicki K.: Aplikacje i usługi a technologie sieciowe. PWN 2018</p> <p>Woźniak J., Nowicki K.: Sieci LAN, MAN, WAN - protokoły komunikacyjne. Wyd. Postępu Telekomunikacji</p>	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	<p>Description of network architectures and basic standards.</p> <p>Comparison of standard wired and wireless LAN networks.</p> <p>Comparison of methods and devices for connecting networks.</p> <p>Description of addressing methods in LAN and WAN networks.</p> <p>Description and comparison of selected routing protocols and basic communication protocols in IP networks.</p> <p>Description of selected network applications.</p>		
Work placement	Not applicable		

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