GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Computer Networks, PG_00048818		
Field of study	Electronics and Telecommunications		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2026/2027
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 -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Krzysztof Nowicki	
	Teachers	dr inż. Krzysztof Nowicki	

Lesson types

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_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
[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

<table>
<tr><td>Subject contents</td><td>Course content – lecture

1. Classification and general description of computer networks 2. Packet and circuit switching 3. Layered netwok architectures - ISO-OSI 4. Layered netwok architectures - ISO-OSI, TCP/IP 5. Local area networks - general characteristics - channel access methods 6. Contention type solutions: Ethernet networks - MAC sublayer functions and channel access principles - standaed IEEE 802.3 7. General characteristics of other wired LAN solutions 8. Wireless LAN networks - basic characteristics 9. IEEE 802.11 standard - operational modes 10. IEEE 802.11 standard -channel access methods 11. New Ethernet technologies 12. Fast Ethernet Networks 13. 10/40/100 Gb/s Ethernet 14. EFM 15. OAM Ethernet 16. Methods of connecting LAN networks 17. Hub 18. Switching 19. Switches 20. Routing 21. VLAN 22. Wide Area Networks - WANs 23. TCP/IP architecture - IP protocols 24. TCP/IP architecture -transport protocols 25. TCP/IP architecture - aplication 26. IPv6 protocols 27. Routing solutions in WAN networks 28. End-to-end flow control in IP networks 29. Congestion cotrol in IP networks 30. Network security 31. Selected applications and network services.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Midterm colloquium</td><td>50.0%</td><td>100.0%</td></tr>
</table></td></tr>
<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>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</td></tr>
<tr><td>Supplementary literature</td><td>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</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
</table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Description of network architectures and basic standards.

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.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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