GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Introduction to Computer Networks, PG_00047632		
Field of study	Automatic Control, Cybernetics and Robotics		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2025/2026
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	3.0
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	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	15.0	0.0	0.0	45

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	45	3.0	27.0	75

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 solution

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U04] can apply knowledge of programming methods and techniques as well as select and apply appropriate programming methods and tools in computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study	The student is able to choose and apply appropriate methods and tools for building and evaluating the work of computer networks	[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools
[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	Student is able to analyze and differentiate the work of selected systems and network devices.	[SW1] Assessment of factual knowledge

Subject contents

1. Classification and general characteristics of computer networks 2. Layered network architectures - ISO / OSI, TCP / IP 3. Theoretical foundations of data transmission 4. Problems of designing the data link layer (synchronization, flow control, error detection and detection) 5. LAN networks - general characteristics - classification of access methods 6. Wired solutions of the competitive type: Ethernet networks - MAC layer functions and medium access rules - IEEE 802.3 standard 7. Wireless LANs - general characteristics 8. IEEE 802.11 standard - operating modes 9. Standard 802.11 - methods access 10. New technologies of Ethernet network 11. 10/40/100 Gb / s Ethernet 12. Methods of connecting LAN networks 13. Local virtual networks 14. Wide area computer networks - WAN networks 15. TCP / IP architecture - IP protocols and transport protocols 16 IPv6 protocols, addressing, 17. Migration of IPv4 / IPv6 18. Routing methods in WAN networks 19. Methods of preventing congestion in IP networks 20 Network Security

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="3"></td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>lec.</td><td>50.0%</td><td>60.0%</td></tr>
<tr><td>lab.</td><td>50.0%</td><td>40.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">Nowicki K., Woźniak J.: Przewodowe i bezprzewodowe sieci LAN, OW PW 2002</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">Tannenbaum A.: Computer Networks, Prentice Hall;
Nowicki K.: Ethernet - sieci, mechanizmy, Infotech
Nowicki K, Światowiak J.: Protokoły IPv6
Krawczyk H., Kaczmarek S., Nowicki K. - Aplikacje i usługi a technologie sieciowe, WN PWN 2018</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">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>Work placement</td><td colspan="3">Not applicable</td></tr>
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