GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Computer Networks - laboratory, PG_00047674		
Field of study	Informatics		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2028/2029
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	3	Language of instruction	Polish
Semester of study	5	ECTS credits	1.0
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	0.0	0.0	15.0	0.0	0.0	15

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	15	1.0	9.0	25

Subject objectives

Learning major layered networking architectures, protocols and network standards

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	Student uses various network device management techniques. Student deploys virtual LAN technologies.	[SU4] Assessment of ability to use methods and tools
[K6_U07] can apply methods of process and function support, specific to the field of study	The student applies solutions that increase the security level of IP networks. The student applies static routing mechanisms in IP networks.	[SU2] Assessment of ability to analyse information

Subject contents

Course content – laboratory
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 - standaed 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 18. DHCPv6, DNSv6 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. Basic model supporting mobile stations in IP networks - MIP 24. Network security 1.VLAN 2.Routing 3.Network management 4. WLAN 802.11 performance/security 5. IP network diagnostics

Prerequisites and co-requisites

<table>
<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>Laboratory exercises</td><td>50.0%</td><td>100.0%</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. 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 colspan="2">No requirements</td></tr>
<tr><td>eResources addresses</td><td colspan="2"></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3"></td></tr>
<tr><td>Practical activites within the subject</td><td colspan="3">Not applicable</td></tr>
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