GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Computer networks - lectures, PG_00045321		
Field of study	Data Engineering, Data Engineering		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2028/2029
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	English
Semester of study	5	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	exam
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 hab. inż. Artur Tomaszewski	
	Teachers	dr hab. inż. Artur Tomaszewski	

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	10.0	60.0	100

Subject objectives

The student learns: how to talk about computer networks - learns basic notions (e.g., protocol), their meaning and their relations; how computer networks are built and operated - learns basics of network operation (e.g., packet switching), and network architecture (e.g., network planes), and becomes familiar with main network technologies (e.g., IP protocol); how computer networks evolve - learns about network evolution history, requirements evolution, standardization processes, network development perspectives.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U07] uses information technologies to improve the acquisition, analysis and processing of data in business applications	knows the architecture and structure of computer networks, understands the purpose and usage of individual architecture elements and network technologies in the realization of services, and the transfer and processing of data	[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information
[K6_U01] analyzes and evaluates complex processes in the context of their improvement possibilities, using various methods, including analytical and simulation	understands and evaluates computer network services requirements, knows the characteristics and limitations of network technologies, evaluates if they are appropriate and useful to realize the service, evaluates network solutions' security mechanisms and network and service security level	[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information
[K6_W06] classifies the acquired information, assessing its usefulness in solving the formulated problems	knows the architecture of basic computer network services and the principles and protocols of their applications communication, knows the principles of computer networks operations, knows solutions and technologies of local-area and wide-area networks	[SW1] Assessment of factual knowledge

Subject contents	Course content – lecture 1. Computer network applications and services (4) 2. Network stakeholders and applications and stakeholders requirements (2) 3. Network operation, network architecture and network technology basics (4) 4. Network organization, network services, and network evolution (2) 5. Home, corporate, and data-center local area networks and their technologies (4) 6. Network end-to-end data delivery solutions and protocols (4) 7. Network structure and organization and traffic routing solutions and protocols (4) 8. Application data transport protocols (4) 9. Network security (2)
Prerequisites and co-requisites	There are no entry requirements

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
written exam	50.0%	100.0%

Recommended reading

Basic literature	Larry L. Peterson and Bruce S. Davie: Computer Networks: A Systems Approach, The Morgan Kaufmann Series in Networking, Morgan Kaufmann, sixth edition, 2021
Supplementary literature	David D. Clark: Designing an Internet, The MIT Press, 2018 Douglas E. Comer: The Internet Book, Taylor & Francis, CRC Press, fifth edition, 2018 James F. Kurose and Keith W. Ross: Computer Networking, Pearson, eighth edition, 2020 Classical papers and video presentations on the history and intellectual foundations of computer networking K. Nowicki, J. Woźniak: Przewodowe i bezprzewodowe sieci LAN, Oficyna Wydawnicza Politechniki Warszawskiej K. Nowicki, J. Światowiak: Protokoły IPv6 J. Woźniak, K. Nowicki: Sieci LAN, MAN, WAN - protokoły komunikacyjne, Wydawnictwa Postępu Telekomunikacji K. Nowicki: Materiały z wykładu Sieci Ethernet H. Krawczyk, S. Kaczmarek, K. Nowicki: Aplikacje i usługi a technologie sieciowe, Państwowe Wydawnictwa Naukowe
eResources addresses	

Example issues/ example questions/ tasks being completed	Description of network architectures and basic standards. Comparison of standard wired and wireless LAN networks. Comparison of network connection methods and devices. Description of addressing methods in LAN and WAN networks. Description of selected routing protocols and basic communication protocols in IP networks. Description of selected network applications.

Practical activites within the subject	Not applicable

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