GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Computer Networks and Internet Technologies, PG_00038089						
Field of study	Automation, Robotics and Control Systems						
Date of commencement of studies	October 2024		Academic year of realisation of subject	2024/2025			
Education level	first-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery	at the university			
Year of study	1		Language of instruction	Polish			
Semester of study	2		ECTS credits	3.0			
Learning profile	general academic profile		Assessment form	assessment			
Conducting unit	Katedra Inteligentnych Systemów Sterowania i Wspomagania Decyzji -> Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Tomasz Rutkowski					
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	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		3.0	42.0		75
Subject objectives	The course aims to familiarize students with fundamental issues related to computer networks and Internet technologies.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U05] can use analytical and simulation methods to solve tasks in the field of automation and robotics and use various techniques to carry out engineering tasks related to automation and robotics devices and systems	Student is able to use a variety of techniques to carry out engineering tasks for the diagnosis of computer networks and the implementation of simple Internet applications.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
[K6_K02] can work in a group taking on different roles in it	The student is able to implement a simple dynamic website using HTML, CSS cascading style sheets, PHP language and MySQL database. The student is able to cooperate in a task group realizing the design, configuration and diagnostics of a simple heterogeneous Ethernet network.	[SK3] Assessment of ability to organize work [SK2] Assessment of progress of work [SK1] Assessment of group work skills
[K6_W09] has knowledge in the field of security of ICT systems and networks	The student is able to describes the importance of the TSL transport layer security protocol for establishing authenticated and encrypted connections between computers on the Internet. The student identifies the differences between the HTTP, HTTPS and S-HTTP protocols.	[SW1] Assessment of factual knowledge
[K6_W06] knows the structure of computers and microprocessors and the tasks of operating systems, has basic knowledge of the basics of computer software, drivers, microprocessor technology, design of simple algorithms and the operation of information networks	The student is able to describes the components of a computer network (hardware and software). The student is able to use basic tools for making and diagnosing Ethernet connection cables. Distinguishes between the advantages and disadvantages of different transmission media. Explains the roles and functions of the individual layers of the ISO/ OSI reference model. Explains the functions of the ARP, IP, TCP, and UDP protocols. Lists and describes the basic application layer protocols. Describes the operation of wireless WLAN (WiFi) networks. Makes basic use of HTML, CSS, PHP, SQL and the MySQL database to build simple dynamic web pages.	[SW1] Assessment of factual knowledge

Subject contents

LECTURE Computer networks history and computer networking fundamentals. Types of computers networks (LAN, WAN, MAN). Types of LAN network topology. Transmissions media types and network cabling types. ISO/OSI reference model. Ethernet network. Role and functions of the network accessories. TCP/IP protocols family. IP addressing, static and dynamic addresses. Role and functions of the DNS and DHCP servers. Wireless network WLAN (WiFi). Application layer selected protocols (including: HTTP, FTP, SMPT, POP, TSL, SSH). Networking and network security. Client-server and peer-to-peer technologies. Introduction to HTML, CSS, PHP and SQL languages. The basics of database administration (MySQL).

TRAINING LABORATORY Wire and diagnosis of Ethernet cable basic types. The basic throughput testing methods for various transmissions media types. Creating, configuration and testing of small heterogeneous computer network. Domain owner identification. Datagram s route identification. The basics of IP network traffic analysis. Create simple connected web pages with HTML. Cascading style sheets CSS utilization in the project. Dynamic web pages construction with PHP and MySQL database.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Tests during laboratory exercises	50.0%	10.0%
Laboratory project	50.0%	35.0%
Lecture test	50.0%	50.0%
Laboratory exercise reports	50.0%	5.0%

Recommended reading

Basic literature

1. Douglas E. C.: Sieci komputerowe i intersieci. Warszawa: WNT, 2000.
2. Gajda W. HTML, XHTML i CSS. Praktyczne projekty. Helion, 2007.
3. Welling L., Thomson L.: PHP i MySQL. Tworzenie stron WWW, Vademecum profesjonalisty. Gliwice: Helion, 2005.

	Supplementary literature	1. Krysiak K.. Sieci komputerowe, Kompendium. Wydanie II. Helion, 2005. 2. Lemay L. HTML i XHTML dla każdego. Helion, 2004. 3. Meyer E. A. CSS według Erica Meyera, Sztuka projektowania stron WWW. Helion, 2005. 4. Praca zbiorowa. PHP5, Apache i MySQL od podstaw. Helion, 2005.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	[1] List and describe basics elements of computer networks. [2] Describe advantages and disadvantages of various transmissions media types. [3] Describe role and functions of particular layers in the ISO/OSI reference model. [4] Explain functions of the ARP, IP, TCP and UDP protocols. [5] List and describe basic protocols of the TCP/IP model application layer.	
Work placement	Not applicable	