Computer Networks

Course description

Basic information

Field of study : Analytical Computer Science

Path : -

Organizational unit : Faculty of Mathematics and Computer Science

Education level : first-cycle studies

Form of study : full-time studies

Study profile : general academic

Obligatory status : mandatory

Education cycle : 2022/23

Course code : UJ.WMIIANS.140.01925.22

Languages of instruction : Polish

Disciplines : Computer Science

ISCED classification : 0612 Database and network design and administration

USOS code : WMI.TCS.SK.OL

Course coordinator

Grzegorz Gutowski

Course instructor

Grzegorz Gutowski

Period Semester 3	Form of verification of learning outcomes exam Teaching methods and hours lecture: 30 laboratory classes: 30	Number of ECTS credits 6.0

Educational aims of the course

C1	During the course, students will learn theoretical models and practical solutions used in designing, managing, and operating various types of computer networks, and will learn to apply this knowledge in programming projects.

Learning outcomes for the course

Code	Effects in terms of	Directional learning outcomes	Verification methods
Knowledge – The student knows and understands:			
W1	After completing the course, the student knows and understands theoretical and practical issues related to network architectures, technologies, and applications.	IAN_K1_W03, IAN_K1_W16	written exam, project, presentation
Skills – The student can:			
U1	After completing the course, the student can analyze, design, use, and program network solutions.	IAN_K1_U04, IAN_K1_U11, IAN_K1_U12, IAN_K1_U13, IAN_K1_U17, IAN_K1_U18, IAN_K1_U19, IAN_K1_U21	written exam, project, presentation
Social competences – The student is ready to:			
K1	After completing the course, the student is ready to discuss social aspects related to network technologies.	IAN_K1_K01, IAN_K1_K06	written exam, project, presentation

ECTS credits balance

Form of student activity	Average number of hours* devoted to completed types of activities
lecture	30
laboratory classes	30
preparation for classes	15
project preparation	45
problem solving	45

exam preparation	13
exam participation	2

Total student workload	Number of hours 180	ECTS credits 6.0

* hour (lesson) means 45 minutes

Course content

No.	Course content	Learning outcomes for the course
1.	During the course, the student will encounter the following topics: - communication methods - basic concepts of signal theory - layered models of computer networks - data link layer issues - problems, technologies, and algorithms related to Ethernet networks - problems, technologies, and algorithms related to WiFi networks - network layer issues - problems, technologies, and algorithms related to the Internet - issues related to packet buffering - transport layer issues - problems, technologies, and algorithms used in TCP protocol - issues related to implementation of network protocols - problems, technologies, and algorithms related to HTTP protocol - network communication security issues - issues related to peer-to-peer networks	W1, U1, K1

Extended information

Teaching methods:

conventional lecture, laboratory classes

Type of classes	Forms of credit	Course credit requirements
lecture	written exam	The student receives a final grade based on the sum of points awarded during exercises (0-60) and points obtained during the written exam (0-40). To pass the course, a positive grade from exercises and a minimum of 60 points in total are required.
laboratory classes	project, presentation	The student receives a final grade based on points awarded for active participation in exercises, credit projects, and systematically submitted solutions to homework and programming tasks (0-60 points). To pass, all projects and all mandatory tasks must be submitted, and a minimum of 40 points must be obtained.

Literature

Required

1. documentation of the discussed network technologies

Additional

1. Andrew S. Tanenbaum, David J. Wetherall, Computer Networks