I050	**Computer Networks**	L	S	E	ECTS
		2	1	2	7

Course objectives. Learn basic concepts of computer networks by describing basic functionalities of modern computer networks using Internet as an example.

Course prerequisites. Introduction to Computer Science, Object-Oriented programming

Syllabus.

1. Basic overview of Internet functionality by components and protocols. Internet protocol stack model.
2. Fundamentals of application layer functionalities and its protocols (Web services, email, P2P, etc.).
3. Using socket programming to develop simple network applications in Python.
4. Fundamentals of transport layer: TCP, UDP protocols and properties.
5. Network layer: IP protocol and problems of data routing.
6. Data layer and physical layer: technical characteristics of shared media.
7. Network security: types of security attacks, SSL protocol.

EXPECTED LEARNING OUTCOMES

No.	**LEARNING OUTCOMES**
1.	To design a simple network application.
2.	To implement a broad variety of functionalities on different network layers.
3.	To be able to compare different network protocols.
4.	The ability to use network monitoring tools and diagnose network malfunctions.
5.	To understand the operating principle of network applications.
6.	To understand the TCP/IP protocol.

COUPLING OF THE EXPECTED LEARNING OUTCOMES, TEACHING PROCESS ORGANIZATION AND THE EVALUATION OF THE TEACHING OUTCOMES

TEACHING PROCESS ORGANIZATION	ECTS	LEARNING OUTCOMES **	STUDENT ACTIVITY *	EVALUATION METHOD	SCORE	
					Min	max
Lecture attendance	1	1-6	Class attendance, discussion, solving the problems individually and in a team	Lists with signatures, observing the activity during the lectures	0	10
Homework	2	1-4	Solving the problems individually	Grading	18	30
Repeated exams	2	1-6	Preparation for the written exam	Grading	16	30
Final exam	2	1-6	Seminar presentation	Oral exam	16	30
TOTAL	7				50	100

Teaching methods and student assessment. Students' knowledge is continuously assessed through homework and mid-term exams. In lectures, students study principles of computer networks and their services on the example of Internet. In exercises, students should become able to solve programming techniques and acquire some skills referring to the usage of network services and protocols. The final examination takes place after the completion of all lectures and exercises and consists of successful participation in homework assignments and mid-term exams and a public seminar presentation of independent programming project.

Can the course be taught in English: Yes

Basic literature:

1. Kurose, Ross: Computer Networking - A Top-down Approach Featuring the Internet, 6th Ed, Addison-Wesley, 2012

Recommended literature:

1. John Goerzen, J., Rhodes, B.: Foundations of Python Network Programming: The Comprehensive Guide to Building Network Applications with Python, 3nd Ed, Apress, 2014
2. Tanenbaum, A.S.: Computer Networks, Prentice Hall, Indian International Ed.; 5th edition (January 9, 2010)