Załącznik nr 9
do Zarządzenia Rektora PŚk Nr 35/19
w brzmieniu ustalonym Zarządzeniem Nr 12/22

COURSE DESCRIPTION

Course code	full-time studies	
	part-time-studies	
Course name	**Sieci komputerowe**	
Course name in English	**Computer networks**	
Valid from academic year	**2022/23**	

PLACEMENT IN THE TEACHING PROGRAM

Field of study	**Computer Science**
Level of education	**1st degree**
Studies profile	**General**
Form and method of teaching classes	**Full-time and part-time studies**
Specialization	**All specializations**
Organizational unit responsible for the course	**Katedra Systemów Informatycznych**
Course coordinator	**dr inż. Mirosław Płaza**
Approved by	**Dean of the Faculty of Electrical Engineering, Automatic Control and Computer Science Roman Deniziak, KUT prof., DSc, PhD**

GENERAL CHARACTERISTIC OF THE COURSE

Course affiliation		**General**
Course status		**Obligatory**
Language		**English**
Semester	full-time studies	**Semester IV**
	part-time-studies	**Semester V**
Requirements		**-**
Exam (YES/NO)		**YES**
ECTS		**6**

Course form		**lecture**	**classes**	**laboratory**	**project**	**other**
Hours per semester	full-time studies	**30**		**30**		
	part-time-studies	**18**		**18**		

LEARNING RESULTS

Category	Result Symbol	Learning Results	References to the field of study results
Knowledge	W01	Students know and understand computer network design methods and the applications of computer network components.	INF_W15
	W02	Students know and understand services and applications used in computer networks. They are familiar with operating systems.	INF_W15
	W03	Students know and understand the threats occurring in computer networks. They understand the meaning and role of selected network protocols and can assign them to specific layers of reference models.	INF_W15
Skills	U01	Students are able to configure basic network devices. They know and are able to use simulation tools in the analysis and design of computer networks.	INF_U15
	U02	Students are able to build a simple local network using real network devices. They are able to prepare structural cabling unassisted.	INF_U15
	U03	Students are able to analyze traffic in computer networks. They are able to configure network addressing and selected security components.	INF_U15
Social competence	K01	Students are prepared to assess the impact of computer networks on society.	INF_K1 INF_K2
	K02	Students are prepared to work and cooperate in a group in the scope of configuring selected network services.	INF_K1 INF_K2

COURSE CONTENT

Course Form	Content
lecture	1. **Introduction to computer networks** (basic concepts and definitions in the field of computer networks). 2. **Selected protocols and methods of communication in computer networks** (detailed characteristics of individual protocols and standards) 3. **Network access – physical layer and data link layer** (detailed analysis of physical layer and data link layer in detail). 4. **Network layer – basics of routing** (detailed analysis of IPv4 and IPv6 protocols). 5. **The principles of dividing the network into subnets** (division of the network using the variable mask length mechanism). 6. **Transport layer – its role in computer networks** (detailed characteristics of TCP and UDP protocols). 7. **Session, presentation and application layers** (characteristics of tasks occurring in the session, presentation and application layers). 8. **Threats in computer networks** (basic types of attacks and securing network devices).
laboratory	1. Configuration of basic functionality of a network router and switch. 2. Analysis of traffic in computer networks using selected applications. 3. Construction of simple network topologies including preparation of cabling. 4. Examination of the physical characteristics of the router. Construction of a network based on a switch and router. 5. Exploration of popular protocols used in computer networks. 6. Exploration of mechanisms for dividing networks into subnets. 7. Network design in a small business – selected aspects. 8. Exploration of security risks in computer networks.

LEARNING RESULTS VERIFICATION METHODS

Result Symbol	Learning results verification methods					
	Oral Exam	Written Exam	Midterm	Project	Report	Other
W01		X				
W02		X				
W03		X				
U01			X			
U02			X			
U03			X			
K01		X	X			
K02		X	X			

ASSESSMENT FORMS AND CRITERIA

Course Form	Assessment Form	Assessment Criteria
lecture	exam	Obtaining at least 50% of the points during the exam.
laboratory	pass with a grade	Obtaining at least 50% of the points from the pass tests during the laboratory classes.

STUDENT'S VOLUME OF WORK

ECTS Balance												
No.	Activity Type	Student Involvement										Unit
		full-time studies					part-time-studies					
1.	Participation in classes according to the schedule	Lec	C	Lab	P	S	Lec	C	Lab	P	S	h
		30		30			18		18			
2.	Other (consultations, exams)	4		2			4		2			h
3.	**Total with the direct assist of an academic teacher**	**66**					**42**					h
4.	**Number of ECTS, that students obtains with the direct assist of an academic teacher**	**2,64**					**1,68**					ECTS
5.	**Hours of unassisted student work**	**84**					**108**					h
6.	**Number of ECTS that student obtains working unassisted**	**3,36**					**4,32**					ECTS
7.	**Practical classes volume of work**	**30**					**18**					h
8.	**Number of ECTS obtained by student at practical classes**	**1,20**					**0,72**					ECTS
9.	**Total student's volume of work expressed in hours**	**150**					**150**					h
10.	**ECTS**	**6**										

BIBLIOGRAPHY

1. Cisco Academy, **Introduction to Networks Companion Guide**, 2020
2. Materials on the NetAcad platform available for students during laboratory.