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	**Podstawy routingu i przełączania**	
Course name in English	**Routing and Switching Essentials**	
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	**Information and communication technology**
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		**Speciality**
Course status		**Obligatory**
Language		**English**
Semester	full-time studies	**Semester V**
	part-time-studies	**Semester VI**
Requirements		**Computer networks**
Exam (YES/NO)		**NO**
ECTS		**4**

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 the role of switching in ICT networks.	INF_W30
	W02	Students know and understand the role of routing in ICT networks.	INF_W30
	W03	Students know and understand the role of security issues of selected network components.	INF_W30
Skills	U01	Students are able to design and build an ICT network including the elements of routers and switches configuration.	INF_U30
	U02	Students are able to configure security services in ICT networks.	INF_U30
	U03	Students are able to configure virtual local networks, selected protocols and network services.	INF_U30
Social competence	K01	Students are prepared to assess the impact of ICT networks on society.	INF_K1 INF_K2
	K02	Students are prepared to work and cooperate in a group in the scope of configuring routing and switching protocols in ICT networks.	INF_K1 INF_K2

COURSE CONTENT

Course Form	Content
lecture	1. **Introduction to the issues of switched networks** (functions and types of switches, switching configuration, switch security). 2. Typical switching problems in ICT networks. 3. **Virtual local area networks** (VLAN) – concepts and applications (configuration and design of virtual local area networks, routing between VLANs). 4. **Routing concepts** (routing table analysis, static routing, dynamic routing). 5. Typical routing problems in data communications networks. 6. **Basics of wireless networks** (configuration of wireless networks). 7. Typical problems associated with wireless networks.
laboratory	1. Advanced switch configuration including security features. 2. VLAN implementation study and VLAN configuration. 3. Configuration of static IPv4 and IPv6 routing. 4. Configuration and examination of dynamic routing protocols. 5. Configuration of routing between VLANs. Error detection and analysis. 6. Troubleshooting routing problems. 7. Wireless network configuration and troubleshooting.

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			
K02			X			

ASSESSMENT FORMS AND CRITERIA

Course Form	Assessment Form	Assessment Criteria
lecture	pass with a grade	Obtaining at least 50% of the points from the pass tests during the laboratory classes.
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)	2		2			2		2			h
3.	**Total with the direct assist of an academic teacher**	**64**					**40**					h
4.	**Number of ECTS, that students obtains with the direct assist of an academic teacher**	**2,56**					**1,60**					ECTS
5.	**Hours of unassisted student work**	**36**					**60**					h
6.	**Number of ECTS that student obtains working unassisted**	**1,44**					**2,4**					ECTS
7.	**Practical classes volume of work**	**30**					**18**					h
8.	**Number of ECTS obtained by student at practical classes**	**1,2**					**0,72**					ECTS
9.	**Total student's volume of work expressed in hours**	**100**					**100**					h
10.	**ECTS**	**4**										

BIBLIOGRAPHY

1. Allan Johnson, **Switching, Routing, and Wireless Essentials Course**, 2020
2. Materials on the NetAcad platform available for students during laboratory.