

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Practical design of local and wide area networks		Code 1010804181010822435
Field of study Electronics and Telecommunications	Profile of study (general academic, practical) general academic	Year /Semester 4 / 8
Elective path/specialty -	Subject offered in: Polish	Course (compulsory, elective) elective
Cycle of study: First-cycle studies	Form of study (full-time, part-time) part-time	
No. of hours Lecture: 20 Classes: 20 Laboratory: - Project/seminars: -		No. of credits 4
Status of the course in the study program (Basic, major, other) other		(university-wide, from another field) university-wide
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 4 100% 4 100%
Responsible for subject / lecturer: dr hab. inż. Mariusz Głabowski, prof. nadzw. email: mariusz.glabowski@put.poznan.pl tel. +48 61 665 3904 Faculty of Electronics and Telecommunications ul. Piotrowo 3A 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basis of computer networks K1_W22
2	Skills	Is able to find information in literature, as well as other reference sources; is able to integrate and interpret obtained information, draws conclusions and justifies opinions K1_U01
3	Social competencies	Knows the limitations of her/his own knowledge and skills, understands the need for further education and cooperation. K1_K01
Assumptions and objectives of the course: To make students familiar with the practical methods for design, configuration and maintenance of local and wide area networks		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Has a basic, systematic knowledge of structure, operation and standards related to the technologies of local and wide area networks - [K1_W22]		
2. Knows about development trends in the area of local area networks, metropoliatan area network and wide area networks - [K1_W24]		
3. Has knowledge of routers - [K1_W20]		
Skills:		
1. Is able to prepare a well-documented specification, in English or in Polish, on problems related to design of local and wide area networks. - [K1_U03]		
2. Is able to prepare an oral presentation on the prepared technical specification of the project of local or wide area network(in Polish or in English). - [K1_U04]		
3. Is able to configure devices and launch a local computer network. - [K1_U25]		
4. Is able to solve standard/typical problems related to design of computer networks and parametrization of network elements - [K1_U26]		
5. Is able to select the proper technologies for securing data transmission in wide area networks - [K1_U26]		
Social competencies:		

<p>1. Is aware of the limitations of his/her current knowledge and skills; is committed to further self-study. - [K1_K01]</p> <p>2. Demonstrates responsibility and professionalism in solving technical problems. Is able to participate in collaborative projects. - [K1_K02]</p> <p>3. Demonstrates responsibility for designed communications networks. Is aware of the hazards they pose for individuals and communities if they are improperly designed or produced - [K1_K03]</p> <p>4. Is aware of the impact electronics and ICT systems and networks will have on the development of the information society. - [K1_K04]</p>
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Assessment methods of study outcomes

Forming assessment:
 Lectures: Written exam; exam is passed when student receives at least 50% points. Exam can be taken after the completion of exercises.
 Exercises: on the basis of short questions after each of exercises.

Course description

- analysis of investor's needs and potential for development
- layered model of networks' design
- basics of structured cabling
- planning wireless local area networks
- access networks' technologies
- design of logical topology of local area networks (VLAN)
- selection of appropriate routing protocols
- planning networks with OSPF, ISIS and BGP protocols
- Frame Relay, ATM, Metro(Carrier) Ethernet, Wimax
- MPLS and GMPLS
- design of virtual private networks
- network testing

Basic bibliography:

1. www.ietf.org
2. <http://metroethernetforum.org/>
3. McCabe, J.D. Network Analysis, Architecture and Design, 3rd ed. San Francisco, California: Morgan Kaufmann Publishers, Inc., 2007.
4. Oppenheimer, P. Top-Down Network Design, 3rd ed. Indianapolis, Indiana: Cisco Press, 2010.
5. Seifert, R. and J. Edwards The All New Switch Book: The Complete Guide to LAN Switching Technology, 2nd ed. New York, New York: John Wiley & Sons, Inc, 2008.

Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. Lectures	20
2. Preparation for lectures	20
3. Exercises	20
4. Preparation for exercises	25
5. Exam	2
6. Discussion of exam outcomes	2
7. Consultation	5

Student's workload

Source of workload	hours	ECTS
Total workload	100	4
Contact hours	45	2
Practical activities	60	1