

(faculty stamp)

**COURSE DESCRIPTION**

Z1-PU7

WYDANIE N1

Strona 1 z 3

<b>1. Course title: COMPUTER NETWORKS</b>		<b>2. Course code</b>		
<b>3. Validity of course description: 2012/2013</b>				
<b>4. Level of studies: 1<sup>st</sup> cycle of higher education</b>				
<b>5. Mode of studies: intramural studies</b>				
<b>6. Field of study: MACROCOURSE CONTROL, ELECTRONIC AND INFORMATION ENGINEERING</b>			RAU	
<b>7. Profile of studies:</b>				
<b>8. Programme:</b>				
<b>9. Semester: 5</b>				
<b>10. Faculty teaching the course: Automatic Control, Electronics and Computer Science</b>				
<b>11. Course instructor: dr inż. Jerzy Mościński</b>				
<b>12. Course classification: common courses</b>				
<b>13. Course status: compulsory</b>				
<b>14. Language of instruction: English</b>				
<b>15. Pre-requisite qualifications:</b> Course attendants are supposed to have general knowledge concerning computers and computer applications, including using computer networks services. Students are also supposed to possess practical skills concerning computers and Internet usage as well as programming in at least one high level programming language. It is assumed that students passed the following courses: Fundamentals of Computer Programming, Theory of Computer Science.				
<b>16. Course objectives:</b> Course is part of specialized curriculum content and is related to education in areas of computer network technologies, Internet techniques and communication technologies. The course aims objectives include having the students got acquainted with hardware and software solutions in computer networks, benefits from computer networks based communication, usage and administration of network operating systems and network programming.				
<b>17. Description of learning outcomes:</b>				
Nr	Learning outcomes description	Method of assessment	Teaching methods	Learning outcomes reference code
1.	Knows rules for designing and building computer networks and benefits from establishing communication between computer systems	examination	lecture	
2.	Knows basic models, protocols and specification used for creating computer networks, analysing computer network traffic, ensuring necessary quality of computer network services and security of network functioning	examination	lecture	
3.	Knows how to use computer networks in industry, education and for designing Internet services	examination	lecture	
4.	Can administer computer network system to basic extent, by means of using standard software tools and programming languages for network systems administration	laboratory exercise	laboratory	
5.	Can design and implement software for establishing basic communication between computer network devices and running network servers	laboratory exercise	laboratory	
6.	Can use basic script programming languages and network database systems for configuring and running computer network servers and network services	laboratory exercise	laboratory	

7.	Is able to work in team and design and implement components of larger tasks of establishing communication and running services in computer networks	laboratory exercise	laboratory	
<b>18. Teaching modes and hours</b> <b>Lecture</b> 30 h / <b>BA /MA Seminar / Class / Project / Laboratory</b> 30 h				
<b>19. Syllabus description:</b> <b>Lecture:</b> <p>Overall objectives of the course include providing students with basic as well as advanced knowledge concerning components of computer network: communication methods, server computers, client computers, network infrastructure. Types of services offered by computer network servers are covered in detail as part of the course. Internet services, Internet and TCP/IP protocol suite, TCP/IP protocol structure, physical, data, network, transport and application layers tasks in computer network are also considered. Specific topics covered during course lectures and laboratory exercises include the following: computer networks types and systems; local area network LAN and wide area network WAN; packets, frames, reliable and unreliable transmission; LAN cabling systems, physical topology, interfaces; Internet and TCP/IP protocol suite; network servers and types of services; Internet network protocol, TCP/IP protocol family. TCP/IP protocol structure, tasks and services concerning the physical layer, data layer, network layer, transport and application layers in computer network; DNS system and its role in naming hosts in computer networks; WAN techniques, routing and tracing routes; internetworks, architecture and protocols; basic applications of computer networks services; using electronic mail systems; www pages and browsers; advanced elements of UNIX/Linux operating system using; multimedia networking applications; streaming audio and video with networks; quality of Internet services – differentiated and aggregated services models; security in computer networks; cryptography, authentication, certification, firewalls; Internet commerce; computer network management.</p> <b>Laboratory:</b> <ul style="list-style-type: none"> <li>– UNIX/Linux operating system basics.</li> <li>– Bash shell programming.</li> <li>– DNS basics and configuration.</li> <li>– Advanced e-mail system configuration and administration.</li> <li>– Client/server programming.</li> <li>– Internet Protocol details, IP addressing, DHCP service.</li> <li>– DNS protocol, DNS server configuration.</li> <li>– Simple www server programming and configuration.</li> <li>– Security issues, firewall configuration.</li> <li>– Virtual LAN configuration.</li> <li>– Network protocols and applications analysis.</li> <li>– E-learning support system design and setup.</li> <li>– PHP programming, Internet based databases</li> </ul>				
<b>20. Examination:</b> yes – at the end of semester 5; written form				

<b>21. Primary sources:</b> Andrew Stuart Tanenbaum, Computer Networks, 5 <sup>th</sup> Edition, Pearson, 2010, ISBN-10: 0132126958, ISBN-13: 978-0132126953. Douglas E. Comer, Computer Networks and Internets with Internet Applications, 5 <sup>th</sup> Edition, Pearson – Prentice Hall, 2008, ISBN-10: 0136066984, ISBN-13: 978-0136066989. William Stallings, Data and Computer Communication, 9 <sup>th</sup> Edition, Pearson, 2010, ISBN13: 9780132172172, ISBN10: 0132172178.
<b>22. Secondary sources:</b> James F. Kurose, Keith W. Ross, Computer Networking: A Top-Down Approach, 6 <sup>th</sup> Edition, Pearson, 2012, ISBN-10: 0132856204, ISBN-13: 978-0132856201. Douglas E. Comer, Internetworking with TCP/IP, Vol. 1, 5 <sup>th</sup> Edition, Addison-Wesley, 2005, ISBN-10: 0131876716, ISBN-13: 9780131876712. Karol Krysiak, Sieci Komputerowe. Kompendium, Wydanie II, Helion, 2005, ISBN 83-7361-995-X, 837361995X.

<b>23. Total workload required to achieve learning outcomes</b>		
Lp.	Teaching mode :	Contact hours / Student workload hours
1	Lecture	30/10
2	Classes	/
3	Laboratory	30/40
4	Project	/
5	BA/ MA Seminar	/
6	Other	15/25
	Total number of hours	75/75
<b>24. Total hours:</b> 150		
<b>25. Number of ECTS credits:</b> 6		
<b>26. Number of ECTS credits allocated for contact hours:</b> 3		
<b>27. Number of ECTS credits allocated for in-practice hours (laboratory classes, projects):</b> 3		
<b>26. Comments:</b>		

Approved:

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(date, Instructor's signature)

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(date, the Director of the Faculty Unit signature)