

### 1.3. Module/ course form

To be completed by Course Team	Module name: <b>COMPUTER NETWORKS</b>				Module code: M10		
	Course name: Computer networks				Course code:		
	Faculty: <b>Institute of Applied Informatics</b>						
	Field of study: <b>INFORMATICS</b>						
	Mode of study: full-time course		Learning profile: practical		Speciality:		
	Year/ semester: <b>2/3</b>		Module/ course status: <b>obligatory</b>		Module/ course language: <b>Polish</b>		
	Type of classes	lecture	lessons	lab	project	tutorial	other (please specify)
	Course load	<b>30</b>		<b>30</b>			

Module/ course coordinator	<b>Andrzej Borys (Ph.D. and D.Sc.)</b>
Lecturer	<b>Andrzej Borys (Ph.D. and D.Sc.), Katarzyna Wasielewska (Ph.D.) Jerzy Skurczyński (Ph.D.), Andrzej Stojek (M.Sc.)</b>
Module/ course objectives	Objective of this course is to get acquainted with basic mechanisms of operation of computer networks, with their topologies, technologies, routing schemes and communication protocols used in computer networks as well as with principles of traffic control and management applied therein. This course should enable good understanding of networking processes and yields solid theoretical basis for further advanced learning of computer networks.
Entry requirements	None.

LEARNING OUTCOME		
Nr	LEARNING OUTCOME DESCRIPTION	Learning outcome reference
1	Knowledge of basic technologies of computer networks (wired and wireless) and their communication protocols.	K_W04, K_W05, K_W08
2	Knowledge of network topologies and models, and of standards used in the area of computer networks, in particular standards regarding security issues.	K_W04, K_W08, K_W16
3	Practical knowledge of addressing rules used in IP networks.	K_W15
4	Student is capable of designing computer networks in different technologies.	K_U12, K_U24
5	Student knows functionalities of different network devices and is capable of exploiting them effectively, and knows principles of their servicing.	K_U12, K_U22 K_U24

6	Student possesses skills to optimize addressing in IP networks according to the rules learned.	K_U07,K_U23
7	Student is capable of using proper tools for diagnosis and servicing of a computer network and services offered in it.	K_U06, K_U13
8	Student possesses skills useful in analysis and identification of networking problems, skills needed for solving network security problems, and knows how to document correctly events occurring in networks.	K_U01, K_U03, K_U05, K_U08, K_U10, K_U14
9	Student is able to use tools that enable effective and fast communication.	K_K07
10	Student follows rules of honesty and impeccable manner in network communication.	K_K03

### CURRICULUM CONTENTS

#### Lecture

Basic notions regarding computer networks, classification of networks, LAN, MAN, WAN, and WLAN networks, network standards, topologies, layer models of communication protocols ISO/OSI and TCP/IP, communication media, network access methods, network devices, client-server architecture, principles regarding operation of the data link layer, networking terminology, addressing methods in IP networks, principles of static and dynamic addressing, NAT mechanisms, routing fundamentals, static and dynamic routing, wired and wireless technologies, virtual networks, internet telephony, security problems in computer networks.

#### Laboratory

Addressing in IP networks, computer configuration for connecting a network, collision and broadcasting domains, throughput, delays, reliability and network load, communication protocols IP, ARP, ICMP, tools for diagnosis and monitoring of computer networks, basic network services: WWW, e-mail, FTP, network devices, basic security mechanisms implemented in computer networks.

Basic literature	<ol style="list-style-type: none"> <li>1. Andrew S. Tanenbaum, Computer networks, Prentice Hall PTR, 2003.</li> <li>2. Douglas E. Comer, Computer Networks and Internets, Pearson/Prentice Hall, 2009.</li> <li>3. James F. Kurose, Keith W. Ross, Computer Networking: A Top-Down Approach, Pearson, 2013.</li> <li>4. Mark A. Dye, Rick McDonald, Antoon „Tony” W. Ruffi, CCNA Exploration Network Fundamentals, Cisco Networking Academy, 2011.</li> </ol>
Additional literature	

Teaching methods	Lecture and laboratory exercises.	
Assessment method		Learning outcome number
One final test during the semester.		01, 02
Lecture-final exam.		01 - 03
Lab entrance checking, checking student's work at lab, and lab exercises reports.		02 - 10

Form and terms of an exam	Student must pass final test during the semester and lecture-final exam, and get positive assessment for laboratory.
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<b>STUDENT WORKLOAD</b>	
	Number of hours
Participation in lectures	30
Independent study of lecture topics	10
Participation in tutorials, labs, projects and seminars	30
Independent preparation for tutorials*	40
Preparation of projects/essays/etc. *	
Preparation/ independent study for exams	10
Participation during consultation hours	5
Other	2
<b>TOTAL student workload in hours</b>	<b>127</b>
<b>Number of ECTS credit per course unit</b>	<b>5</b>
Number of ECTS credit associated with practical classes	<b>70</b> <b>2,8 ECTS</b>
Number of ECTS for classes that require direct participation of professors	<b>67</b> <b>2,7 ECTS</b>