

UNIVERSITY OF ECONOMICS - VARNA
MASTER DEGREE STUDIES CENTER
DEPARTMENT „INFORMATICS“

ACCEPTED BY:

Rector:

(Prof. Dr. Plamen Iliev)

SYLLABUS

SUBJECT: “COMPUTER ARCHITECTURE AND NETWORKS”;

DEGREE PROGRAMME: “Computer Science”; MASTER`S DEGREE

YEAR OF STUDY: 5 ; SEMESTER: 10 (other fields graduates);

TOTAL STUDENT WORKLOAD: 150 h.; incl. curricular 60 h.

CREDITS: 5

DISTRIBUTION OF WORKLOAD ACCORDING TO THE CURRICULUM

<i>TYPE OF STUDY HOURS</i>	WORKLOAD, h.	TEACHING HOURS PER WEEK, h
CURRICULAR:		
incl.		
• LECTURES	30	2
• SEMINARS (lab. exercises)	30	2
EXTRACURRICULAR	90	-

Prepared by:

1.
(Prof. Dr. Vladimir Sulov)

2.
(Assit. Prof. MihailRadev)

3.
(Assit. Prof. BonimirPenchev)

Head of department:
“Informatics” (Prof. Dr. Vladimir Sulov)

I. ANNOTATION

The course “Computer Architectures and Networks” aims to form basic knowledge of computer systems and their usage in the network infrastructure of the modern Network economy. The course provides the necessary knowledge of the structure, principles of operation and construction of computer systems and networks, which are the base of the modern business information systems. The laboratory exercises are performed on real network and computer equipment, which allows students to develop practical skills.

The acquired knowledge is a foundation for future specialized courses in the field of computer science and a necessary prerequisite for the development and implementation of modern information systems in all business areas.

II. THEMATIC CONTENT

No. by row	TITLE OF UNIT AND SUBTOPICS	NUMBER OF HOURS		
		L	S	L.E.
1. Computer architecture		3		3
1.1	General block diagram of a computer system. Instruction cycle.	1		1
1.2	Scalar and superscalar architecture.	1		1
1.3	Nature and development of the bus architecture. Standards.	1		1
2. Main computer system devices		6		6
2.1	Processor. Main features. Multi-core processors.	3		3
2.2	Memory – hierarchy, classification, features. DRAM – basic terms, main types, modular organization, main features.	3		3
3. Input-output computer system devices		4		4
3.1	Input-output device organization.	2		2
3.2	Video hardware. Storage hardware.	2		2
4. Computer system upgrade		2		2
4.1	Basics, necessity, prerequisites.	1		1
4.2	Computer system optimization.	1		1
5. Computer Networks – basic concepts		3		3
5.1	Network protocols.	1		1
5.2	Using layered models.	1		1
5.3	Network addressing.	1		1
6. IPv4 addressing		4		4
6.1	Subnetting an IPv4.	2		2
6.2	Routing. Calculating the subnets. Testing the network layer.	2		2
7. Transport OS layer		2		2
7.1	Transport layer of the OSI model. Roles, protocols, managing TCP sessions.	1		1
7.2	The UDP protocol.	1		1
8. Application layer		3		3
8.1	Well-known Application Layer protocols and services.	2		2
8.2	Application layer protocols.	1		1
9. Planning and cabling network		3		3
9.1	Developing a network project. Network security. Developing an addressing scheme.	2		2
9.2	Device interconnections. Measurement of productivity.	1		1
Total:		30		30

III. FORMS OF CONTROL:

No. by row	TYPE AND FORM OF CONTROL	№	extracurricular, h.
1.	Midterm control		
1.1.	Practice test	1	30
	Total midterm control:	1	30
2.	Final term control		
2.1.	Exam (test)	1	60
	Total final term control:	1	60
	Total for all types of control:	2	90

IV. LITERATURE

REQUIRED(BASIC) LITERATURE:

1. Mueller, Sc. Upgrading and Repairing PCs (22nd Edition). Que Publishing, 2015.
2. Tanenbaum, A. Computer Networks (5th Edition), Prentice Hall, 2010.
3. Cisco Networking Academy, Introduction to Networks Companion Guide: V. 5.1, Cisco Press, 2016.

RECOMMENDED(ADDITIONAL)LITERATURE:

1. Patterson, D., J. Hennessy. Computer Organization and Design, (4th Edition), Prentice Hall, 2010.
2. Richard Stevens, W. TCP/IP Illustrated, Volume 1: The Protocols (2nd Edition), Addison-Wesley Professional Computing Series, 2011.
3. Lowe D., Networking For Dummies, John Wiley & Sons, 2009