

UNIVERSITY OF ECONOMICS - VARNA
MASTER DEGREE CENTER
DEPARTMENT OF INFORMATICS

Adopted by the FC (record №8 / 05.03.2020)

Adopted by the DC (record №6 / 17.02.2020)

ACCEPTED BY:

Dean:

(prof. Vladimir Sulov, PhD)

SYLLABUS

SUBJECT: "COMPUTER SYSTEMS"

DEGREE PROGRAMME: "Computer Science"; MASTER'S DEGREE

YEAR OF STUDY: 5 for other fields graduates; SEMESTER: 10

TOTAL STUDENT WORKLOAD: 360 hours; incl. curricular 60 hours

CREDITS: 12

DISTRIBUTION OF STUDENT WORKLOAD ACCORDING TO THE CURRICULUM

<i>TYPE OF STUDY HOURS</i>	WORKLOAD, hours	TEACHING HOURS PER WEEK, hours
CURRICULAR: incl.		
• LECTURES	30	2
• SEMINARS / LAB. EXERCISES	30	2
EXTRACURRICULAR	300	-

Prepared by:

1.
(Assoc. prof. Ivan Kuyumdzhiev, PhD)

2.
(chief assist. prof. Bonimir Penchev, PhD)

3.
(chief assist. prof. Radka Nacheva, PhD)

Head of department

of Informatics:
(Prof. Julian Vasilev, PhD)

I. ANNOTATION

The course "Computer Systems" provides the necessary knowledge and understanding in functional and structural organization of modern computer systems. Emphasis is placed on the practical aspects related to the principle of operation of the basic devices and their characteristics. In practical terms, it provides the knowledge of configuring and testing computer systems, as well as of installing, configuring and maintaining operating systems, in particular Linux.

Expected result is: formation of knowledge for evaluation, selection and upgrade of computer systems; understanding the role of operating systems, their architecture and underlying mechanisms. On the basis of this knowledge and through practical work in the laboratory exercises are created skills that can be applied in the administration of computer system and in the detection and elimination of problems in their work.

II. THEMATIC CONTENT

№	TITLE OF UNIT AND SUBTOPICS	NUMBER OF HOURS		
		L	S	L.E.
Theme 1. Organization of the Computer System.		2	-	
1.1.	Functional and structural organization of the computer.	1	-	
1.2.	Development of bus architecture. Types of buses. Standards.	1	-	
Theme 2. Processor and Memory Subsystem.		6	3	
2.1.	Processor. Key features. Multi-core processors.	2	1	
2.2.	System memory - hierarchy and classification. Synchronous dynamic memory - generations, basic features, modules.	2	1	
2.3.	Types of external memory - basic features and types of interfaces for connecting to the computer system.	2	1	
Theme 3. Expansion Cards.		2	1	
3.1.	Types of expansion cards. Basic interfaces.	1	-	
3.2.	Video card – implementation methods and key features. Multigraphic systems. Video interfaces.	1	1	
Theme 4. Input-Output Devices.		2	1	
4.1.	Essence and classification of input-output devices.	1	-	
4.2.	Monitors - types, key features, interfaces.	1	1	
Theme 5. Testing and Configuring of Computer Systems.		6	3	
5.1.	Motherboards - key features, ports, connectors.	2	-	
5.2.	Cases and power supply - key features, standards.	1	-	
5.2.	Selecting and configuring of the computer system. Requirements.	1	1	
5.3.	Assembling and testing the computer system.	1	1	
5.4.	Upgrade. Basic requirements and procedures.	1	1	
Theme 6. General features of the Operating Systems.		4	-	
6.1.	Purpose and main functions of the operating system. Classification.	2	-	
6.2.	Basic concepts - multitasking, system and user mode, command language, application programming interface, etc.	2	-	
Theme 7. Operating System Architecture and Basic Mechanisms.		8	-	
7.1.	Basic architecture and models for operating systems.	6	-	
7.2.	Events management (interruptions and exceptions), synchronization, local procedure callings, etc.	2	-	
Theme 8. Operating System Administration.		-	6	
8.1.	Operating system installation.	-	1	
8.2.	Maintenance and setup tools.	-	5	

Theme 9. Linux Configuration		-	8	
9.1.	Basic configuration files, configuration of the work environment.	-	1	
9.2.	Shell - basic commands.	-	2	
9.3.	Device management and file systems.	-	3	
9.4.	User accounts and groups.	-	2	
Theme 10. Fundamentals of Script Development		-	8	
10.1.	Script syntax - variables, conditional and cyclic structures, functions.	-	2	
10.2.	Scripts for administration of daily system tasks.	-	6	
		Total:	30	30

III. FORMS OF CONTROL:

№	TYPE AND FORM OF CONTROL	Number	extracurricular, hours
1.	Midterm control		
1.1.	Practice Test	2	120
Total midterm control:		2	120
2.	Final term control		
2.1.	Examination (test)	1	180
Total final term control:		1	180
Total for all types of control:		3	300

IV. LITERATURE

REQUIRED (BASIC) LITERATURE:

1. Lindsay, A. (2019). Linux: 2019 NEW Easy User Manual to Learn the Linux Operating System and Linux Command Line. Independently published.
2. Mueller, Sc. (2015). Upgrading and Repairing PCs (22nd Edition). Que Publishing.
3. Shotts, W. (2019). The Linux Command Line, 2nd Edition: A Complete Introduction. No Starch Press

RECOMMENDED (ADDITIONAL) LITERATURE:

1. Barrett, D. (2016). Linux Pocket Guide: Essential Commands. O'Reilly Media.
2. Knox, J. (2019). Linux for Beginners: An Introduction to Linux Programming Basics for Hackers, its Operating System, Command Line and Networking, Including Effective Strategies, Tips and Tricks to Learn How it Works. Independently published.
3. Nemeth, E. et. Al. (2017). UNIX and Linux System Administration Handbook (5th Edition). Addison-Wesley Professional.
4. Patterson, D., J. Hennessy. (2017). Computer Organization and Design, (RISC-V Edition), Morgan Kaufmann.
5. Yosifovich, P., Ionescu, A., Russinovich, M., Solomon, D. (2017). Windows Internals, 7th Edition, Part 1: System architecture, processes, threads, memory management, and more. Microsoft Press.)