

DESCRIPTION OF THE STUDY SUBJECT

Title

COMPUTER HARDWARE

Scope of the subject

Semester	Mode of studies	Structure*					Total number of hours	Number of credits	Group and type of subjects
		L	Lw	C	PR	S			
III	Full-time	13	20	6	60	65	164	6	Compulsory subjects / practice of the study field
IV	Part-time	6	12	21	60	65	164	6	

*L – lectures, PS – practical activities, seminars, LW – laboratory work, PR – practice, CP – course paper, C – consultations, S – self-study

Aim of the subject

To understand processes taking place in the computer, to evaluate and optimally select parameters of constituents of a modern personal computer, performing installation, adjustment, maintenance and repair of the computer and its peripheral equipment. To select hardware and software meeting the needs of the company. To know how to replace the broken electronic components in the computers, to acquire practical work skills with soldering equipment.

Necessary background knowledge for studying the subject

Students shall have heard subjects physics, electronics.

Content of the subject

Title of the topic and description of the content	Number of contact hours					Total number of hours
	L	Lw	PR	C	S	
1. The concept of information system, basic concepts and components. The structure of the personal computer, portable computers, the structure, parameters of main components. Internet of things.	4	-	-	2	1	7
Laboratory work No.1. Parameters, connections of CPU, motherboard, comparison of chipsets. Laboratory work No.2. Graphics cards, study of operating and fixed storage devices.	-	6	-	-	12	18
Preparation for the defence of laboratory works and their defence No. 1						
2. Peripheral equipment of the computer, upgrading of the computer according to the user's needs, adjustment of equipment.	3	-	-	2	1	6
Laboratory work No.3. Assembly of a new computer, identification of the user's needs, evaluation of the necessity for upgrading of components. Laboratory work No.4. Preparation of the commercial proposal for computer purchase.	-	6	-	-	10	16
Preparation for defence of laboratory works and their defence No. 2						
3. Testing of the computer and its components, failure detection, removal and prevention.	3	-	-	1	2	6
Laboratory work No.5. Evaluation of efficiency of the processor, observation of RAM of the computer and hard disk load, complete destruction of information, BIOS management.	-	4	-	-	7	11
4. Servers and other modern computer equipment.	3	-	-	1	2	6
Laboratory work No.6. Study of cases of use of servers and modern computer equipment.	-	3	-	-	6	9
Preparation for the defence of laboratory works and their defence No. 3						
Practice assignments						
1. The analysis of computer hardware and software. <i>Using special software, to find out the parameters of used computer components. To identify used operating systems, applied software, their versions.</i>	-	-	8	-	-	8

Title of the topic and description of the content	Number of contact hours				S	Total number of hours
	L	Lw	PR	C		
2. To analyze efficiency and rationality of the use of computer hardware and software. <i>To find out efficiency, stability, failures of computer operation, whether the status of components is good and so on. To check software, efficiency of its use, to eliminate software that are not related to direct work, are malware and so on. To evaluate suitability of existing computer hardware and software to perform given tasks.</i>	-	-	10	-	-	10
3. To provide proposals for the increase of the efficiency and rationality of the use of computer hardware and software. <i>To provide reasoned proposals regarding upgrading, repair or replacement of computer hardware and software. To find the supplier of components, to perform the analysis of prices and to submit a purchase proposal.</i>	-	-	10	-	2	12
4. To assemble the computer according to given requirements.	-	-	10	-	-	10
5. To get familiarised with marking and purpose of components in printed circuit boards, with soldering equipment, work safety while soldering, purpose and composition of solders, melting temperature, fluxes for soldering. To solder given components using soldering irons, hot air stations.	-	-	20	-	4	24
6. To prepare a report of the professional practice using text editor, to prepare presentation of professional practice.		-	-	-	8	8
Preparation for the defence of practice and its defence			2	-	6	8
Total number of hours	13	20	60	6	65	164

Assessment of learning outcomes

Ten-point criteria-based assessment system as well as cumulative assessment using individual cumulative index (ICI) are applied. The overall grade is the sum of grades for the defence of laboratory works (DLw) and practice (P) multiplied by weighted coefficients.
 $ICI = 0,5 DLw + 0,5 P$

Recommended literature

Key literature						
No.	Year of publishing	Author(s) and title of the publication	Publishing house	Number of copies and/or internet link		
				ŠSSC library	Other premises	Other libraries *
1.	2015	Dr. Jatindra Kumar deka. Computer Organization And Architecture	Indian Institute of Technology	http://nptel.ac.in/courses/Webcours_e-contents/IIT-%20Guwahati/comp_org_arc/web/index.htm		
2.	2008	Kirdeikis S. Kompiuterio konstravimas ir remontas	Smaltija	3	-	
3.	2007	Urbanavičius V. Kompiuteriai ir jų architektūra	Technika	5	-	14
Additional literature						
No.	Year of publishing	Author(s) and title of the publication	Publishing house and/or internet link			

1.	2015	Kaklauskas L. Kompiuterio aparatinė įranga	E. studijų kursas: http://moodle.svako.lt (autorizuota prieiga)
2.	2012	Kižauskienė L. ir kt. Kompiuterio architektūra	Technologija
3.	2010	Bakutienė V., Palepšaitis S., Sluckuvienė Z. Studijų darbų techninė dokumentacija	Šiaulių valstybinės kolegijos leidykla
4.	2008	Kazanavičius E. Kompiuterių elementai	Technologija
5.	2007	Urbanavičius V. Kompiuteriai ir jų architektūra	Technika
6.		Aparatinės įrangos analizė ir pripažinti tarptautiniai testai	http://www.tomshardware.com/ http://www.pcworld.com/ http://reviews.cnet.com http://www.xbitlabs.com/

* ŠAVB – Šiauliai Region Povilas Višinskis Public Library, ŠU – library of Šiauliai University

Required material resources and their short description

<ul style="list-style-type: none"> • Equipment (devices): a computers (16 units), computers connected to the local network and connected to the Internet, multimedia projector, printer. • Mounting laboratory with soldering equipment, soldering materials, computer components. • Computer hardware laboratory with computer components (RAM, motherboard, video card, hard drive, power supply, CPU, connecting cables and other wires, installation tools). • Software: Windows 10, 8.1, 7 or another operating system, Linux operating system, Microsoft Office 2013 or another OpenOffice 4.1 or another analogous software.

The description prepared by:

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