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INFORMATION AND COMMUNICATION TECHNOLOGIES

Working modular curriculum and syllabus

Speciality: all
Number of credit discipline: 3

Ust-Kamenogorsk
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Working modular curriculum and syllabus developed at the department "Information systems and computer modeling" on the basis of the working curriculum, the modular educational program

Approved by FITB educational-methodical council

Chairman G. Uazyrkhanova

Protocol № ____ of _____ y.

Discussed at the meeting of the department "Information systems and computer modeling"

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1 CHARACTERISTICS OF THE DISCIPLINE, ITS PLACE IN THE EDUCATIONAL PROCESS

1.1 Summary of the discipline

Discipline consists of three components: a theoretical course, laboratory and workshop material for self-study.

In the theoretical course of study information about - communication technologies, developing common scientific and general cultural skills to work with information.

Guidelines for laboratory work contain a description of the work with the necessary minimum of theoretical knowledge, individual tasks, procedures and guidelines (recommendations) to carry out these works, checklists for self-control and protection of the report, recommended literature.

Independent work is intended to complement the general theoretical knowledge of the material, having a specific application purpose.

1.2 Aims and objectives of the discipline

The aim of the course is to master the basics of s ICT.

Objectives of the course in respect of all professions: teaching students of all disciplines methods of solving various problems using the computer and prepare them for the effective use of computer systems and information technologies in the future professional activity.

1.3 Results of the study discipline

Learning outcomes are determined on the basis of the Dublin descriptors the appropriate level of education and are expressed in terms of competence.

Knowledge and understanding:

Students should

- to know trends and prospects in the development of modern information and communication technologies;
- to have an understanding of the theoretical foundations of information processes;
- to know the methods of information processing.

Applying knowledge and understanding:

- to acquire practical skills in the use of office applications;

- to acquire practical skills for the development of algorithms for the definite task;
- to master modern computer technology and modern software for the definite task;
- to acquire the ability to work in the global Internet;
- to acquire skills of acquisition, analysis and processing of various types of information;
- to acquire skills in work with academic, special and periodical literature in the field of information technology.

Communication skills:

- to be able to work in a group on the use of decision-making methods;
- to develop communication skills for the organization of the learning process of decision-making methods of the company's.

Skills training or learning abilities:

- to formulate the software requirements,
- to assess their quality and efficiency,
- to select the software best suited to the needs of users.

1.4 Prerequisites

The student must have basic knowledge of computer science, to be able to work on your computer at the user level, be familiar with the basics of the Windows operating system, the basic techniques of work in office applications.

1.5 Postrequisites

Knowledge and skills acquired during the course of the study can be used by students when performing Student works, processing of statistical data in the subject area, as well as in the preparation of research projects.

2 CONTENTS

The content of the discipline is divided into two modules.

Module 1: "Basic information and communication technologies in professional activity."

Module 2: "Introduction to Programming of local applications. Web Pages Development."

2.1 Topical plan

Module topics number	Title of the content	Reference to literature and other sources	The complexity in credits
1	2	3	4
Module 1 "Fundamentals of computers"			
	Lectures		
1	The role of ICT in key sectors of society. ICT Standards.	1-6, 10, 11	
2	Introduction to computer systems. Computer systems architecture	1-6, 10, 11	
3	Software. Operating systems.	1-6, 10, 11	
4	Human-computer interaction.	6, 7	
5	Database systems	5, 6, 13	
6	Data analysis. Data management.	5, 6, 13	
7	Networks and Telecommunications.	6, 9, 10, 14	
	Total		**0,5**
Laboratory studies			
1	Working with operating system. Files and folders (create, delete, copy, and search). Planning. Task Manager.		
2	Working with word processors and editors: creating macros, hotkeys.		
3	Creating interactive multimedia presentation		
4	Working with a spreadsheets		
5	Working with a spreadsheets: data consolidation, Creating Pivot Tables		
	Total		**1**
Independent work of the student under the teacher guidance (IWSTG)			
1	Data Representation in Computer System: number systems, ASCII codes, pseudocode.		
2	Automation of work with folders and files: create batch files and scripts.		
3	Traditional encryption techniques		
4	Graphical Representation of the Social Network. Algorithms to find the shortest path.		
5	Vector and raster images		
Independent work of the student (IWS)			
1	The concept of information. Information processing, the acquisition, recording, organization, retrieval, display,		
2	The History of Computer Development.		
3	Conceptual, logical and physical data models		
4	Description and visualization of a process		
5	Technical and software implementation of information processes		

1	2	3	
6	Construction of block designs for the development of algorithmic thinking		
7	Parallel computer architectures.		
	Total		**1,5**
Module 2 "Basic information and communication technologies in professional activity"			
8	Cybersecurity.	6, 12	
9	Internet technologies.	6, 9,10,14	
10	Cloud and Mobile technologies.	6, 9, 10,14	
11	Multimedia technologies	10	
12	Smart technologies	14	
13	E-technologies. E-business. E-learning. E-government.	3, 5, 15,16	
14	Information technology in the professional sphere. Industrial ICT.	14, 16	
15	Prospects of ICT development.	3	
	Total		**0,5**
	Laboratory studies		
1	Working with databases		
2	Website design: the basics of HTML		
3	Encryption		
	Total		**1**
	Independent work of the student under the teacher guidance (IWSTG)		
1	Classful and classless IP addressing. IPv4, IPv6.		
2	Working with cloud services (for example, google docs,		
3	Working with e-technologies (e-government, e-payment, e-learning).		
4	Using smart mobile services		
5	Mobile payment systems		
	Independent work of the student (IWS)		
1	Creating a Simple Network		
2	Website creation based on CMS		
3	Mobile Operating Systems		
4	Model OSI. Application-level protocols: purpose and		
5	The use of problem-oriented application packages in the		
6	The using multimedia tools to develop an electronic book		
7	Electronic government of the Republic of Kazakhstan.		
8	Organizational measures for information protection.		
	Total		**1,5**

2.2 Assignments for independent work (IWSTG, IWS)

Subject	The purpose and content of the job	Recom-mended literature	Dura-tion, hour.	Form of control	Deadline Number of week
Module 1 "Fundamentals of computers"					
The choice of the themes 1-4	To examine the terminology and the basic directions of development of the selected theme	Internet resources	23	Presentation	3
The choice of the themes 5-7	To examine the terminology and the basic directions of development of the selected theme	Internet resources	22	Presentation	7
Module 2 "Basic information and communication technologies in professional activity"					
The choice of the themes 1-4	To examine the terminology and the basic directions of development of the selected theme	Internet resources	23	Presentation	11
The choice of the themes 5-8	To examine the terminology and the basic directions of development of the selected theme	Internet resources	22	Presentation	14

2.3 **Timetable for implementation and control of the tasks for the discipline**

Type of control	Academic training period, week														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Laboratory work defense		100		100	100	100		100		100		100	100		
Presentation to scientific publications			100				100				100			100	
Electronic portfolio		+	+	+	+	+	+	+		+	+	+	+	+	
Control testing							100								100
Total															

3 LIST OF RECOMMENDED LITERATURE

1. June J. Parsons, New Perspectives on Computer Concepts 18th Edition—Comprehensive, Thomson Course Technology, a division of Thomson Learning, Inc Cambridge, MA, COPYRIGHT © 2016; ISBN-10: 1-4239-0610-1, ISBN-13: 978-1-4239-0610-0.
2. Reema Thareja Fundamentals of Computers. – Oxford University press: Oxford, 2014. - 288p
3. George Beekman. Computer Confluence: Exploring Tomorrow's Technology. ISBN 0130661880, 9780130661883. Prentice Hall, 2003
4. Симонович С.В. и др. Информатика. Базовый курс: учебное пособие для высших технических учебных заведений. – СПб.: Питер, 2011. – 639 с.
5. Thomas M. Connolly, et al. Database Systems: A practical approach to Design, Implementation, and Management. 4th Edition ISBN: 0321210255 Addison-Wesley, 2004
6. H. L. Capron. Computers: Tools for an Information Age. Addison-Wesley, 1998. ISBN: 0201336138| 9780201336139
7. Roqers Y., H. Sharp, J. Preece. Interaction design beyond human - computer interaction - Third Edition.- Italy: WILEY & Sons Ltd, 2011.- 585 p.
8. Ducket, J. Beginning Web Programming with HTML, XHTML, and CSS: 2th ed. / Jon Ducket.- U.S.A: Wiley Publishing. Inc, 2008.- 739c. ISBN 978-1-0-470-25931-3.
9. Stephen P Borgatti, Martin G. Everett, Jeffrey C. Johnson Analyzing Social Networks Paperback. ISBN: 978-1446247419 – 30 Apr 2013
10. Уша Рани Вьясулу Редди. Серия учебников по ИКТР для молодежи. Учебник 1: Введение в ИКТ для развития. UN-APCICT/ESCAP 2011
11. Дейтел Х. М., Дейтел П. Дж., Чофнес Д. Р. Операционные системы. Часть 1. Основы и принципы. – М.: Бином-Пресс, 2011. – 677 с.
12. Ярочкин В.И. Информационная безопасность: Учебник для вузов. – М.: Акад. Проект, 2008. – 544 с.
13. Голицына О.Л. Базы данных: Учебное пособие. – М.: Форум, 2012. – 400 с.
14. Keith Worden, W.A. Bullough, J. Haywood. Smart Technologies. World Scientific Pub Co Inc (April 14, 2003). ISBN-10: 9810247761 | ISBN-13: 978-9810247768
15. https://e.edu.kz/ru/
16. http://egov.kz/cms/en

4 ASSESSMENT OF KNOWLEDGE

4.1 Teacher requirements

Teacher requirements:

- Visiting lectures and laboratory classes, schedule IWSTG is required;
- The presence of students in the classroom is checked at the beginning of lessons, in case of delay the student must enter quietly into the audience and join in the work, and at half-time teacher to explain the reason for the delay;
- Measured on a scale laboratory work must be handed in on time, to the control test allowed for students who defended at least one lab of the current rating;
- Repeated passage of a student boundary control, in case of unsatisfactory evaluation, is not permitted;
- For students who have received an average rating of $P_{av} = (P_1 + P_2)/2$ less than 50%, the exam is not permitted;
- During the sessions mobile phones must be turned off;
- The student is obliged to attend classes in business clothes.

4.2 Criteria for assignment

Evaluation of all types of tasks carried out on a 100-point system.

Monitoring is carried out in accordance with the schedule of current and boundary control on discipline (p.5) and includes control of attending lectures, laboratory work and the defense of individual tasks for independent work.

Boundary control of knowledge is held on the 7th and 15th week of the semester in the form of testing. Rating is calculated as the average of the following types of control:

Assessment period	**Academic training period, week**													
	Defense of laboratory Work 1	Defense of laboratory Work 2	Defense of laboratory Work 3	Defense of laboratory Work 4	Defense of laboratory Work 5	Defense of laboratory Work 6	Defense of essey	Boundary control	Defense of laboratory Work 7	Defense of laboratory Work 8	Defense of laboratory Work 9	Defense of laboratory Work 10	Essay	Boundary control
Module 1 – rating 1	100	100	100	100	100	100	100	100						
Module 2 – rating 2									100	100	100	100	100	100

The exam for the discipline takes place during the examination session in the form of testing.

The final grade student knowledge includes:

- 40% of the result obtained in the exam;
- 60% of the results of current progress.

The formula of calculation of the final evaluation:

$$И = 0{,}6\frac{P_1 + P_2}{2} + 0{,}4Э, \quad (1)$$

where P_1, P_2 - the digital equivalent of the first estimates, the second ratings, respectively; Э - the digital equivalent of the exam assessment.

The final letter grade and its digital equivalent in points:

Assignment in the alphabetic system	The digital equivalent	The percentage content, %	Assignment in the traditional system
A	4,0	95–100	отлично
A–	3,67	90–94	
B+	3,33	85–89	хорошо
B	3,0	80–84	
B–	2,67	75–79	
C+	2,33	70–74	удовлетворительно
C	2,0	65–69	
C–	1,67	60–64	
D+	1,33	55–59	
D	1,0	50–54	
F	0	0–49	неудовлетворительно

4.3 Materials for boundary and final control

4.3.1 Materials for boundary and final control for Module 1 "Basic information and communication technologies in professional activity"

4.3.2 Materials for boundary and final control for Module 2 "Introduction to Programming of local applications. Web Pages Development"

5 KEY FORMS AND METHODS OF TEACHING

Methods and forms of organizing training used in the discipline are given in the table.

Methods and forms of teaching organization	Lectures	Laboratory works	IWSTG, IWS
IT methods	+	+	+
Case-study	+		
Methods of problem-based learning			
Learning from experience	+	+	+
Advancing independent work	+	+	+
Project method		+	+
Searching method	+	+	+
The research method is based on the teacher's elements of research		+	+
Other methods			

6. CONSULTATION TIME

- According to the teacher's schedule