**ICT 1105 Information and Communication Technology**

**1 и 2 семестр 2018-2019 учебного года**

**Краткое содержание дисциплины:**

**Computer Architecture.** The development of computer architecture. Types of computers. The main components of the computer. Memory chips. Processor chips and bus. Representation of data in computer memory. Command systems, command types, addressing methods. Architecture background Neumann. The basic principles of the computer. The device processor and its purpose.

High-performance computing systems. Supercomputers. Quantum computers. Vector supercomputers. Multicore microprocessors. Graphic accelerators. Cluster solvers.

Mobile platforms. Overview of mobile platforms. The basic concepts of developing applications for mobile platforms. Computer platforms Android and Windows Phone. Principles and tools for developing and publishing applications for mobile devices running on the Windows Phone 7.5 platform using Silverlight and XNA technologies. Introduction to mobile programming.

**Кредитная стоимость дисциплины:**

**Course type (compulsory/elective):** compulsory

**Credit points:** 5 ECTS, 3 KZ

**Semester**: 1 or 2

Total of hours – 135

Active teaching hours – 45

Theoretical classes – 30

Laboratory classes – 15

Independent learning – 90 (included 22.5 hours with teacher – consultations)

**Exam** – 1 or 2 semester

**Цель дисциплины:**

**The purpose of teaching the discipline:** mastering students of professional and personal competencies, which will make it possible to use modern information technologies in various fields of professional activity, scientific and practical work, for self-education and other purposes. Along with the practical goal, the course implements educational and educational objectives, contributing to the expansion of students' horizons, increasing their overall culture and education.

**The tasks of teaching the discipline:**

• to give an idea about the construction of algorithms and the use of application packages;

• give an idea of the architecture of computing systems, operating systems and networks;

• familiarize with the basic concepts of developing network and Web applications, with the basics of information security;

• outline the principles of information and communication technology and e-learning;

• learn how to conduct an independent creative search;

• explore the possibilities of modern information technologies and their development trends.

**Результаты обучения:**

**Requirements to the knowledge, skills and competences**

As a result of studying this discipline, the student will

**know**:

* basic concepts of automated information processing;
* main methods and means of processing, storing, transmitting and accumulating information;
* basics of task algorithms;
* purpose and principles of using system and application software;
* main components and principles of information and telecommunication networks;
* main threats and methods of ensuring information security;
* legal aspects of the use of information technology and software;

**be able to:**

* use information resources to search and store information;
* use automated office workflow systems;
* use specialized software to solve problems in the relevant field;
* apply methods and means of information protection;
* apply various forms of e-learning to enhance professional knowledge;

**have skills:**

* building algorithms and flowcharts;
* work with databases, main office applications;
* use of information and communication technologies for searching and processing information.

**Содержание:**

**Thematic plan**

|  |  |  |  |
| --- | --- | --- | --- |
| **№** | **Topics** | **Active teaching hours** | **Independent learning** |
| **Lect.** | **Lab.** | **Total** | **Consult.** |
| 1 | Computer architecture | 2 | 1 | 6 | 1 |
| 2 | High-performance computing systems | 2 | 1 | 6 | 1 |
| 3 | Mobile platforms | 2 | 1 | 6 | 1 |
| 4 | Introduction to operating systems | 2 | 1 | 6 | 1 |
| 5 | Application software | 2 | 1 | 6 | 1 |
| 6 | Man-machine interaction | 2 | 1 | 6 | 2 |
| 7 | Network technologies and telecommunications | 2 | 1 | 6 | 2 |
| 8 | Cloud technology | 2 | 1 | 6 | 2 |
| 9 | Information security and its components | 2 | 1 | 6 | 2 |
| 10 | Applications of information and communication technologies in the professional field | 2 | 1 | 6 | 2 |
| 11 | Multimedia technology | 2 | 1 | 6 | 1 |
| 12 | Data mining and data visualization | 2 | 1 | 6 | 1 |
| 13 | Industrial Information and Communication Technologies | 2 | 1 | 6 | 1 |
| 14 | E-government | 2 | 1 | 6 | 2 |
| 15 | Smart technology | 2 | 1 | 6 | 2.5 |
| **Total:** 135 hours(3kz) | **30** | **15** | **90** | **22.5** |

**Пререквизиты**

School course in Informatics, Mathematics and physics.

**References:** Primary: D. Shynybekov, R. Uskenbayeva, V. Serbin, N. Dyuzbayev, A. Moldagulova, K. Duysebekova, R. Satybaldiyeva, G. Khasenova, B. Urmashev «Information and communication technologies». International Information Technology University Textbook. 1st edition. – Almaty, 2017.

Additional: Simonovich S.V. and others. Informatics. Basic course: textbook for higher technical educational institutions. - SPb .: Peter, 2011. - 639 p.

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**Использование компьютера:**

1 Computer architecture

2 High-performance computing systems

3 Mobile platforms

4 Introduction to operating systems

5 Application software

6 Man-machine interaction

7 Network technologies and telecommunications

8 Cloud technology

9 Information security and its components

10 Applications of information and communication technologies in the professional field

11 Multimedia technology