

Course title: Information and Communication Technology 1	Credit number: 3
Type of lessons: lecture and laboratory practice Number of lectures/seminars: 3 hours per week	
Type of evaluation: oral and written exams; laboratory tests	
Place in curriculum: second/spring term	
Course prerequisites: none	
Course description:	
Course content:	
<p>LECTURE: Information science and related fields. The information society. Social generations. History of information, communication, computers and the internet. Basic concepts: data, information and knowledge. Data representation and encoding. Binary and hexadecimal codes. The Shannon-Weaver model of communication. Quantities of information. Analog signals, digitizing, digital representation of multimedia data. Encoding of text, graphics and sound. Data compression. Various file formats. Computer architectures and platforms. The von Neumann architecture. Main hardware components. The concept of algorithm. Ways of expressing algorithms. Programming languages. Types of software. Main software components of a computer. Operating systems. Graphical, text-based and command line user interfaces. Utility software. Basics of computer networks. The OSI and TCP/IP reference model. Data and information security. The World Wide Web. Creating simple web pages. Information search through the internet. Search engines. Web 2.0.</p> <p>LABORATORY: The Windows operating system. The basics of the system (file system, folders structure, basic settings etc.). Various utilities: Total Commander, Notepad (Notepad++), Paint, IrfanView, etc. The basics of MS Office applications: Word, Excel, PowerPoint. Useful web pages.</p>	
Learning objectives:	
<p>The aim of the course is to provide students with basic theoretical and practical knowledge, as well as problem-solving and other transferable skills in the field of ICT (often called as 'informatics'). The lectures cover the main aspects of ICT (i.e. basic terminology, key concepts, definitions, examples, etc. of selected fields). Computer laboratory practice focuses mainly on the ability to use common software applications including e.g. file manager and data compression utilities, graphics software, image viewers, text editors, and optionally word processors, spreadsheets, presentation software and web browsers. The course challenges and helps students to develop useful and lifelong skills and to practise them regularly and effectively at home, school and work, in different home, learning and work environments.</p>	
Required and optional reading (The 3-5 most important required and optional pieces):	
Required reading	
<ol style="list-style-type: none"> 1. Graves, Michael: Computer Technology Encyclopedia. Delmar Cengage Learning, 2008. (ISBN-13: 978-1-4283-2236-3) 	

https://books.google.hu/books/about/Computer_Technology_-_Encyclopedia.html?id=WRI4F_nQfioC&redir_esc=y (2016-06-27)

2. Henderson, Harry: Encyclopedia of Computer Science and Technology. New York: Facts On File - Infobase Publishing, 2009. (ISBN-13: 978-0-8160-6382-6)
https://books.google.hu/books/about/Encyclopedia_of_Computer_Science_and_Tec.html?id=3Tla6d153uwC&redir_esc=y (2016-06-27)

Optional reading

1. Wikipedia. <https://en.wikipedia.org/> (2016-06-12)
2. Webopedia: Online Tech Dictionary for IT Professionals. <http://www.webopedia.com/> (2016-06-27)
3. Computer Glossary, Computer Terms – Technology Definitions and Cheat Sheets from WhatIs.com – The Tech Dictionary and IT Encyclopedia. <http://whatis-techtarget.com/> (2016-06-27)
4. Computer technology, computer technologies – WordWeb dictionary definition. <http://www.wordwebonline.com/en/COMPUTERTECHNOLOGY> (2016-06-27)
5. Windows help. <https://support.microsoft.com/en-us/products/windows?os=windows-10/> (2016-06-20)
6. Microsoft Office help and training – Office Support. <https://support.office.com/> (2016-06-20)

Course syllabus:

Week 1 - Information science and related fields: information technology (IT), information and communications technology (ICT), informatics, computer technology, computer science. The information society. Social generations.

Week 2 - History of information, communication and computers (computing devices, analog computers, electromechanical devices, generations of digital computers etc.). From the ARPANET to the modern internet.

Week 3 - Basic concepts: data, information and knowledge. Data representation and encoding. Binary and hexadecimal codes. The Shannon-Weaver model of communication. Quantities of information.

Week 4 - Analog signals, digitizing, digital representation of multimedia data. Encoding of text, graphics and sound. Data compression. Various file formats.

Week 5 - Computer architectures and platforms. The von Neumann architecture (fully electronic and automatic computing; stored program, binary notation; CPU, memory and i/o devices; sequential execution of instructions; universal Turing machine).

Week 6 - Types of computers. Main hardware components of a personal computer (computer case, power supply, mainboard, CPU, memory, video card, expansion cards, storage and i/o devices etc.).

Week 7 - The concept of algorithm. Ways of expressing algorithms (natural language, flowcharts, pseudocode etc.). Some examples. Programming languages.

Week 8 - Types of software (system software, utility and application software, program development tools etc.). Main software components of a personal computer. The basics of MS Office applications: Word, Excel, PowerPoint.

Week 9 – Operating systems, basic functions. Types of operating systems. The basics of the Windows operating system (file system, folders structure, basic settings etc.).

Week 10 - Graphical, text-based and command line user interfaces. Basic commands. Examples of utility software (Total Commander, Notepad or Notepad++, Paint, IrfanView etc.).

Week 11 - Basics of computer networks. The OSI and TCP/IP reference model. Data and information security. Security issues on the internet. Digital signature.

Week 12 - The World Wide Web (client-server architecture, browsers etc.). The concept of hypertext. The HTML and CSS language. Creating simple web pages.

Week 13 - Information search through the internet. Search engines. Accessibility issues, the WCAG standard. Web 2.0 services (social networking sites, blogs, wikis, internet forums, video sharing etc.). Useful web pages.

Course instructor in charge: Dr. habil. István Boda, college professor

Additional course instructor(s): –