

Study program: Information technologies and systems
Type and level of studies: undergraduate academic studies
Course unit: Introduction to information technologies
Teacher in charge: Miroslava Jordović Pavlović
Language of instruction: English
ECTS: 7
Prerequisites: /
Semester: winter
<p>Course unit objective:</p> <p>The course covers a wide range of concepts and trends in technologies that form the foundation of both modern information technologies and their future development. Students will learn the basic principles of effective application of information systems, with a particular focus on networks and distributed computing, including the Internet. Other explored topics include: hardware and operating systems, software development tools and processes, security and cryptography, business intelligence. Students will be trained to work with tools for web and graphical user interfaces (GUI). Topics such as the relevance and applications of information technologies to all aspects of life in the modern world, as well as the social issues of such applications, are discussed too.</p>
<p>Learning outcomes of the course unit</p> <ul style="list-style-type: none"> • The student understands and explains the differences between computer disciplines. • The student is familiar with the historical development of computing, information technology, and the Internet. • The student distinguishes between data and information and understands the process of transforming data into information and knowledge. • The student is familiar with the number systems used in computing and understands the principles of data representation, coding systems, as well as basic logical operations and their application in computing. • The student understands and explains the role and function of computer components. • The student understands and explains the role and function of the operating system. • The student is familiar with the basic types of operating systems and explains the differences between them. • The student is familiar with the programming languages paradigm. • The student understands and explains the benefits of networking. • The student understands and explains the functionalities of basic network elements and components, as well as the need for network protocols. • The student understands and explains how cloud computing works and lists cloud computing services. • The student understands how the Internet works and is familiar with the basic standards and protocols that underpin the Internet. • The student understands and explains the concepts of authorization, data security, data protection, virtual communities, and potential risks of working in a global computer network. • The student is familiar with the importance of business intelligence for modern business. • The student understands and explains the necessity of lifelong learning and the significance of continuous professional development for IT professionals. • The student understands and explains how computing and society influence each other. • The student understands and explains how IT impacts the development and improvement of other fields. • The student uses information technology tools. • The student understands the basic principles and technologies used in web application programming. • The student can create a simple web presentation using HTML, CSS, and JavaScript. • The student uses MS Word and MS Excel.
<p>Course unit contents</p> <p><i>Theoretical classes</i></p> <p>Introduction: basics of computing, information technology, and related disciplines. History of computing and information technology. Data, information, knowledge. Number systems and data encoding schemes. Architecture</p>

and operating principles of computer system. Operating systems' concept, classification, and basic layers. Basics of programming languages. Types and components of computer networks, protocols, and standards. Basic Internet services, applications, and usage. Basics of web technologies. Security in computing: encryption and digital signatures. Development of information systems. Business intelligence: data mining and data warehouses. Social context of computing.

Practical classes

Work in the computer lab with at least 2 hours per week under the supervision of the course instructor and assistant. Work with demonstration examples. Work on individually assigned tasks. Work on homework assignments. Development of a project that proves the student has mastered the knowledge and skills in developing web presentations using modern Internet technologies.

Literature

Basic literature:

1. W. Stallings, Organization and architecture of computers: project in the context of performance. 11. edition, CET, 2020.

Additional literature:

2. O. Bonaventure, Computer Networking : Principles, Protocols and Practice, Saylor; eBook, 2022.
3. D. Wielgosik, How to Code in HTML5 and CSS3, Yon You Cloud, eBook, 2018.
4. M. Grant, Z. Palmer, S. Smith, Principles of Programming Languages, eBook, 2020.

Number of active teaching hours				Other classes
Lectures:	Practice:	Other forms of classes:	Independent work: 1	

Teaching methods

Examination methods (maximum 100 points)

Exam prerequisites	No. of points:	Final exam	No. of points:
Student's activity during lectures	10		
practical classes/tests	/	written examination 1	20
Seminars/homework	5 x 6 = 30	written examination 2	20
Project	20		
Other	/		

Grading system		
Grade	No. of points	Description
10	91-100	Excellent
9	81-90	Exceptionally good
8	71-80	Very good
7	61-70	Good
6	51-60	Passing
5	Less than 51	Failing