UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	Uvod v informatiko
Course title:	Introduction to Informatics

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year
NOO projekt piloti: Naprednejša računalniška znanja (nivo: visokošolski strokovni študijski program)	Programiranje in razvoj aplikacij	2024/25
RRP pilot project: Advanced computer skills (level: first cycle professional study programme)	Programming and application development	2024/25

Vrsta predmeta / Course type: Obvezni / Obligatory

Univerzitetna koda predmeta / University course code: NOO-PRA-VS-UVI-2024-25

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	-	30	-	-	120	6

Nosilec predmeta / Lecturer: izr. prof. dr. Simon Vrhovec

Jeziki / Languages:	**Predavanja / Lectures:**	Slovenski / Slovenian, Angleški / English
	Vaje / Tutorial:	Slovenski / Slovenian, Angleški / English

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Pogoj za pristop k izpitu so opravljene naloge na vajah.

Prerequisits:

The prerequisites to attending the exam are completed exercises.

Vsebina:

- Uvod v informatiko. Teoretična in praktična znanstvena disciplina, Zgodovinski razvoj. Koncept informacijske družbe in pomen informatike. Ključni trendi na področju informatike. Pojav odprte kode.
- Pomen in vloga informacijske tehnologije v razvoju informatike. Vpliv informacijske tehnologije na družbo.
- Matematične osnove računalništva, digitalni zapis podatkov, teorija

Content (Syllabus outline):

- Introduction to informatics. Theoretical and practical discipline, history. The concept of information society and the importance of information technology. Key trends in the field of informatics. The Open Source phenomenon.
- The importance and role of information technology in the development of informatics. The impact of information technology on society.
- Mathematical fundamentals of computer science, digital data,

informacije, redundanca, kompresija, dvojiški številčni sistem. • Informacija in podatek, vrednost informacije. • Strukturni elementi informacijske tehnologije. Strojna, komunikacijska in programska oprema. Podatkovni mediji. • Sistemska programska oprema. Operacijski sistemi. • Tehnologije sodobnih informacijskih rešitev: virtualizacija, nivoji virtualizacije, Računalništvo v oblaku (Cloud computing), Programska oprema kot storitev (Software as a service) (SaaS), Storitveno usmerjena arhitektura (Service-oriented architectures (SOAs) • Razvijanje programske opreme. Analiza, specifikacija, programiranje, testiranje, uvajanje in vzdrževanje. • • Pomen in vloga informacijske tehnologije v ustvarjanju in prenosu znanja. Inteligentni sistemi in umetna inteligenca. • Računalniške komunikacije; terminologija; topologije omrežij; OSI nivoji; internetni protokoli. • Informacijska varnost, varnostni mehanizmi in grožnje, infrastruktura javnih ključev. • Relacijske baze podatkov.	information theory, redundancy of data, data compression, binary system. • Information and data, value of information. • Structural elements of information technology. Hardware, communication equipment, software. Data Storage Media. • System software. Operating systems. • Modern information technologies: virtualisation, levels virtualisation, Cloud computing, Software as a service (SaaS), Service-oriented architectures (SOAs) • Software development. Analysis, specification, programming, testing, deployment and maintenance. • • The importance and role of information technology in creating and transferring knowledge. Intelligent systems and artificial intelligence. • Computer communications; terminology; network topology; OSI Layers; Internet protocols. • Information security, security mechanisms and threats, public key infrastructure. • Relational databases.

Temeljni literatura in viri / Readings:

- Bavec, C., Kovačič, A., Krisper, M., Rajkovič, V., & Vintar, M. (2019). Slovenija na poti digitalne preobrazbe (Elektronska izd.). Založba UL FRI. http://zalozba.fri.uni-lj.si/bavec2019.pdf
- Stair, R. & Reynolds, G. (2020). *Principles of Information Systems* (14th ed.). Boston: Cengage Learning.

Cilji in kompetence:

Učna enota prispeva k razvoju naslednjih splošnih in predmetno-specifičnih kompetenc:

Splošne kompetence:
- poznavanje osnov računalništva in informacijske tehnologije
- poznavanje in razumevanje procesov, ki jih je mogoče informacijsko podpreti z uporabo spletnih tehnologij, ter sposobnost za njihovo analizo, sintezo in izbiro rešitev ter predvidevanje njihovih posledic
- zmožnost za prepoznavanje in izkoriščanje priložnosti, ki jih ponuja spletna tehnologija
- poznavanje in razumevanje interakcij med informacijsko komunikacijsko tehnologijo in posameznikom
- sposobnost fleksibilne uporabe znanja v praksi

Predmetno-specifične kompetence:
- poznavanje temeljnih definicij in idej v računalništvu in informatiki.
- poznavanje najpogostejših varnostnih groženj in protiukrepov.
- razumevanje zmogljivosti komponent računalniškega sistema in omrežnih naprav.
- komuniciranje s strokovnjaki v informacijski dejavnosti z uporabo ustrezne terminologije.

Objectives and competences:

The instructional unit contributes to the development of the following general and subject-specific competences:

General competences:
- familiarity with the basics of computer science and information technology
- familiarity with and understanding of processes allowing information-aided use of web technologies, and the ability to analyse and synthesize them as well as select solutions and predict their consequences
- ability to recognize and seize opportunities offered by the web technology
- familiarity and understanding of interactions existing between the information and communication technology and the individual
- ability to use the acquired knowledge in practice in a flexible manner

Subject-specific competences:
- knowledge of fundamental definitions and ideas in computer science and informatics
- familiarity with the most frequent security threats and countermeasures.
- understanding capabilities of computer system components and network devices.
- communication with information technology experts using appropriate terminology.

Predvideni študijski rezultati:

Znanje in razumevanje:

Študent/študentka:
- spozna temeljne definicije in ideje ter terminologijo v računalništvu in informatiki, kar mu/ji omogoči komuniciranje z drugimi strokovnjaki na področju računalništva in informatike
- spozna ključne koncepte informacijske družbe in uporabe informacijske tehnologije v sodobni družbi

Intended learning outcomes:

Knowledge and understanding:

The student:
- learns about the basic definitions and terminology and ideas in computer science and informatics, allowing them to communicate with other professionals in the field of computer science
- learns about the key concepts of the information society and the use of information technology in the modern society

• se seznani z zgradbo in strukturnimi elementi informacijskih sistemov • se seznani s tehnologijami, ki se uporabljajo pri implementacijah in medsebojnem povezovanju sodobnih informacijskih sistemov • spozna ključne varnostne grožnje in protiukrepe ter zna uporabljati osnovne varnostne protiukrepe	• is acquainted with the structure and structural elements of information systems • is acquainted with the technology used in implementations and connections between contemporary information systems • learns about key security threats and countermeasures, and can use basic security countermeasures

Metode poučevanja in učenja:	**Learning and teaching methods:**
• *predavanja* z aktivno udeležbo študentov (razlaga, diskusija, vprašanja, primeri, reševanje problemov) • *laboratorijske vaje* (delo na osebnem računalniku, spoznavanje opreme, omrežij, operacijskih sistemov, baz podatkov, iskanje sekundarnih podatkov, internetnih virov ipd.) • individualne in skupinske *konzultacije* (diskusija, dodatna razlaga, obravnava specifičnih vprašanj)	• *lectures* with the active participation of students (presentation, discussion, questions, cases, problem solving) • *lab work* (work on a personal computer, familiarization with hardware, networks, operating systems, databases, searching for secondary data, internet resources, etc..) • individual and group *consultation* (discussion, additional explanation, consideration of specific issues)

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Način (pisni izpit, ustno izpraševanje, naloge, projekt):		Type (examination, oral, coursework, project):
• pisni izpit • opravljene naloge na vajah	50 50	• written exam • completed exercises

Reference nosilca / Lecturer's references:

- MIKULETIČ, Samanta, VRHOVEC, Simon, SKELA-SAVIČ, Brigita, ŽVANUT, Boštjan. Security and privacy oriented information security culture (ISC) : explaining unauthorized access to healthcare data by nursing employees. Computers & security. [Print ed.]. Jan. 2024, vol. 136, art. 103489, 14 str., ilustr. ISSN 0167-4048. DOI: 10.1016/j.cose.2023.103489. [COBISS.SI-ID 169206787]
- VRHOVEC, Simon, MARKELJ, Blaž. We need to aim at the top : factors associated with cybersecurity awareness of cyber and information security decision-makers. PloS one. 18 Oct. 2024, iss. 10, e0312266, 27 str., tabele. ISSN 1932-6203. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0312266, DOI: 10.1371/journal.pone.0312266. [COBISS.SI-ID 212243459]
- VRHOVEC, Simon, BERNIK, Igor, MARKELJ, Blaž. Explaining information seeking intentions. Computers & security. [Print ed.]. Feb 2023, vol. 125, art. 103038, 12 str. ISSN 0167-4048. DOI: 10.1016/j.cose.2022.103038. [COBISS.SI-ID 133817347]
- FUJS, Damjan, VRHOVEC, Simon, VAVPOTIČ, Damjan. Balancing software and training requirements for information security. Computers & security. [Print ed.]. Nov. 2023, vol. 134, [article no. 103467], str. 1-13, ilustr. ISSN 0167-4048. https://www.sciencedirect.com/science/article/pii/S0167404823003772, Repozitorij Univerze v Ljubljani – RUL, DOI: 10.1016/j.cose.2023.103467. [COBISS.SI-ID 163668739],

- LENZ, Julia, BOZAKOV, Zdravko, WENDZEL, Steffen, VRHOVEC, Simon. Why people replace their aging smart devices : a push–pull–mooring perspective. Computers & Security. [Online ed.]. Jul. 2023, vol. 130, 103258, 22 str., ilustr. ISSN 1872-6208. https://www.sciencedirect.com/science/article/pii/S0167404823001682?via%3Dihub, DOI: 10.1016/j.cose.2023.103258. [COBISS.SI-ID 150304515]