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	Semester Semester
Računalništvo in spletne tehnologije, visokošolski strokovni študijski program prve stopnje	-	Prvi	Prvi
Computer Science and Web Technologies, first cycle Professional Study Programme	-	First	First

Vrsta predmeta / Course type	Obvezni / Obligatory
Univerzitetna koda predmeta / University course code:	2-RST-VS-UVI-2020-05-14

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	-	45	-	-	105	6

Nosilec predmeta / Lecturer:	izr. prof. dr. Blaž Rodič

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

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	Prerequisits:
Študent/študentka mora pred pristopom k izpitu pripraviti in zagovarjati empirično seminarsko nalogo in opraviti obveznosti iz vaj.	The student is obliged to prepare and defend his/her empirical seminar paper and complete lab work assignments before the admission to the exam.

Vsebina:	Content (Syllabus outline):
• Uvod v predmet. Povezanost predmeta z drugimi predmeti, vsebina predmeta, študijska literatura. • Uvod v informatiko. Teoretična in praktična znanstvena disciplina, Zgodovinski razvoj. Koncept informacijske družbe in pomen informatike. Ključni trendi na področju informatike. Pojav odprte kode.	• Introduction to the course. Links with other courses, course content, study literature. • 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.

• Pomen in vloga informacijske tehnologije v razvoju informatike. Vpliv informacijske tehnologije na družbo. • Matematične osnove računalništva, digitalni zapis podatkov, teorija informacije, redundanca, kompresija, dvojiški številčni sistem, Boolova algebra. • 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. • Osnove algoritmov in programski jeziki. • 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, varnostni standardi in zakonodaja. • Podatkovni tipi, predstavljanje in organiziranje podatkov. Modeliranje in modeli podatkov. Relacijske baze podatkov.	• 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, information theory, redundancy of data, data compression, binary system, Boole algebra. • 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. • Algorithm fundamentals and programming languages. • 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, information security standards and legislation. • Data types, presentation and organization of data. Modelling and data models. Relational databases.

Temeljni literatura in viri / Readings:

- Šuhel, P., Paulin, A. & Šuhel, P. (2011). *Uvod v informatiko*. Samozaložba.
- Gradišar, M. (2003). *Uvod v informatiko*. Ljubljana: Ekonomska fakulteta.
- 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 groženj varnosti in uporaba praktičnih postopkov za zagotavljanje varnosti informacijskega sistema.
- razumevanje zmogljivosti komponent računalniškega sistema in omrežnih naprav.
- komuniciranje s strokovnjaki v informacijski dejavnosti z uporabo ustrezne terminologije.
- poznavanje etičnih dilem uporabe informacijskih rešitev in temeljne zakonodaje na tem področju.

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 the use of practical procedures ensuring information system security.
- understanding capabilities of computer system components and network devices.
- communication with information technology experts using appropriate terminology.
- familiarity with ethical dilemmas relating to the use of information solutions, as well as knowledge with regard to the field-specific legislation.

Predvideni študijski rezultati:

Znanje in razumevanje:

Študent/študentka:

- spozna temeljne definicije in ideje ter terminologijo v računalništvu in informatiki, kar mu/ji omogoči

Intended learning outcomes:

Knowledge and understanding:

The student:

- learns about the basic definitions and terminology and ideas in computer science and informatics, allowing them

komuniciranje z drugimi strokovnjaki na področju računalništva in informatike • se seznani z zgradbo in strukturnimi elementi informacijskih sistemov • obvlada osnovna pisarniška orodja, • razume in uporablja praktične postopke za zagotavljanje varnosti informacijskega sistema • spozna temeljno zakonodajo, relevantno za področje računalništva in informatike ter etične dileme razvoja in uporabe informacijskih sistemov	to communicate with other professionals in the field of computer science • is acquainted with the structure and structural elements of information systems • gains command of basic office tools • understands and can apply practical methods for ensuring information system security • gains an understanding of fundamental legislation, relevant to the field of computer science and the ethical dilemmas of development and use of information systems

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	50	• written exam
• empirična seminarska naloga s poročili seminarskega dela in eksperimentalnih vaj ter predstavitev naloge	50	• empirical seminar report on project work and laboratory work and the presentation

Reference nosilca / Lecturer's references:

- RODIČ, Blaž. Industry 4.0 and the new simulation modelling paradigm. Organizacija : revija za management, informatiko in kadre, ISSN 1318-5454. [Tiskana izd.], aug. 2017, vol. 50, no. 3, str. 193-207, ilustr., doi: 10.1515/orga-2017-0017
- BRELIH, Marjan, RAJKOVIČ, Uroš, RUŽIČ, Tomaž, RODIČ, Blaž, KOZELJ, Daniel. Modelling decision knowledge for the evaluation of water management investment projects. Central European Journal of Operations Research, ISSN 1435-246X, 2018, vol. , iss. , str. https://link.springer.com/content/pdf/10.1007%2Fs10100-018-0600-5.pdf, doi: 10.1007/s10100-018-0600-5.
- KANDUČ, Tadej, RODIČ, Blaž. Optimisation of machine layout using a force generated graph algorithm and simulated annealing. International journal of simulation modelling, ISSN 1726-4529, 2016, vol. 15, no. 2, str. 275-287.
- RODIČ, Blaž, BAGGIA, Alenka. Dynamic airport ground crew scheduling using a heuristic scheduling algorithm. International journal of applied mathematics and informatics, ISSN 2074-1278, 2013, vol. 7, iss. 4, str. 153-163.

- RODIČ, Blaž. Mobile agents for distributed decision support systems. The International Scientific Journal of Management Information Systems, ISSN 1452-774X, 2011, vol. 6, no. 1, str. 20-27.
- RODIČ, Blaž, KLJAJIĆ, Miroljub. Accessing distributed data sources with mobile agents and XML. V: JAŠKOVÁ, Mária (ur.). ECON '05 : [selected research papers], (Research works proceedings, ISSN 0862-7908, Vol. 12, 2005). Ostrava: Technical University of Ostrava, Faculty of Economics. 2005, str. 280-287.
- RODIČ, Blaž, KLJAJIĆ, Miroljub. Integracija simulacijskih orodij v e-poslovni informacijski sistem. V: GRIČAR, Jože (ur.). Izboljšanje konkurenčnosti regije z e-poslovanjem, (Organizacija, ISSN 1318-5454, Letn. 37, 2004, št. 3). Kranj: Moderna organizacija. 2004, str. 162-167.
- ŠKRABA, Andrej, BAGGIA, Alenka, RODIČ, Blaž. Application of a group decision support system in the reform of study programmes. V: DONDON, Philippe (ur.). Recent advances in education and modern educational technologies, (Educational technologies series, 9). [S. l.: s. n.]. 2013, str. 128-134.
- RODIČ, Blaž. Issues of e-collaboration and knowledge management in media industries. V: LUGMAYR, Artur (ur.), et al. Information systems and management in media and entertainment industries, (International series on computer entertainment and media technology (Online), ISSN 2364-9488). Cham: Springer. cop. 2016.