

**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
Informatika v sodobni družbi, visokošolski strokovni študijski program prve stopnje	-	Prvi	Prvi
Informatics in Contemporary Society, first cycle Professional Study Programme	-	First	First

**Vrsta predmeta / Course type**

Obvezni / Obligatory

**Univerzitetna koda predmeta / University course code:**

1-ISD-VS-UVI-2025-12-04

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:**

Študent/študentka mora pred pristopom k izpitu opraviti morebitne obveznosti iz vaj.

**Prerequisites:**

The student is obliged to complete potential lab work assignments before the admission to the exam.

**Vsebina:**

- 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.
- Pomen in vloga informacijske tehnologije v razvoju informatike. Vpliv informacijske tehnologije na družbo.

**Content (Syllabus outline):**

- 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.
- The importance and role of information technology in the development of

- 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.

- 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: virtualization, levels virtualization, 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 ponujajo spletne tehnologije
- 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 analyze and synthesize them as well as select solutions and predict their consequences
- ability to recognize and seize opportunities offered by web technologies
- 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

<p>komuniciranje z drugimi strokovnjaki na področju računalništva in informatike</p> <ul style="list-style-type: none"> <li>• se seznani z zgradbo in strukturnimi elementi informacijskih sistemov</li> <li>• obvlada osnovna pisarniška orodja,</li> <li>• razume in uporablja praktične postopke za zagotavljanje varnosti informacijskega sistema</li> <li>• spozna temeljno zakonodajo, relevantno za področje računalništva in informatike ter etične dileme razvoja in uporabe informacijskih sistemov</li> </ul>	<p>to communicate with other professionals in the field of computer science</p> <ul style="list-style-type: none"> <li>• is acquainted with the structure and structural elements of information systems</li> <li>• gains command of basic office tools</li> <li>• understands and can apply practical methods for ensuring information system security</li> <li>• gains an understanding of fundamental legislation, relevant to the field of computer science and the ethical dilemmas of development and use of information systems</li> </ul>
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**Metode poučevanja in učenja:**

- *predavanja* z aktivno udeležbo študentov (razlaga, diskusija, vprašanja, primeri, reševanje problemov)
- *laboratorijske vaje* (delo na osebni računalniku, spoznavanje opreme, omrežij, operacijskih sistemov, baz podatkov, iskanje sekundarnih podatkov, internetnih virov ipd.)

**Learning and teaching methods:**

- *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.)

Delež (v %) /

Weight (in %) **Assessment:**

<p><b>Načini ocenjevanja:</b></p> <p>Način (pisni izpit, ustno izpraševanje, naloge, projekt):</p> <ul style="list-style-type: none"> <li>• pisni izpit</li> </ul>	<p>100</p>	<p>Type (examination, oral, coursework, project):</p> <ul style="list-style-type: none"> <li>• written exam</li> </ul>
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**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, Mirosljub. 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, Mirosljub. 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.