

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet: Uvod v programiranje
Course title: Introduction to Programming

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-UP-2020-05-14

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	-	45	-	-	135	7

Nosilec predmeta / Lecturer:

doc. dr. Bernard Ženko

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 vključitev v delo je vpis v 1. letnik študija. Pogoj za pristop k izpitu so opravljene vse obveznosti na vajah.

Prerequisites:

Enrolment into the first year of the study. Student has to pass all requirements given at the exercises before examination.

Vsebina:

- Uvod: programiranje kot reševanje problemov, kratka zgodovina programiranja.
- Algoritem in program: diagrami poteka.
- Strukturirano in objektno usmerjeno programiranje: ključni koncepti objektno usmerjenega programiranja.
- Programski jezik Java: javanski virtualni računalnik.
- Osnovni podatkovni tipi.
- Deklaracije konstant in spremenljivk.
- Prireditveni stavek, izrazi, operatorji.

Content (Syllabus outline):

- Introduction: programming as problem solving, brief history of programming.
- Algorithm and program: flowcharts.
- Structured and object oriented programming: key concepts of object oriented programming.
- Java programming language: Java virtual machine.
- Basic data types.
- Declaring constants and variables.
- Assignments, expressions, operators.
- Control flow statements.

- Krmilni stavki.
- Tabele, nizi.
- Metode, razredi in objekti, konstruktorji, dedovanje.
- Podprogrami, dogodki, izjeme.
- Napotki za dobro programiranje.

- Arrays, strings.
- Methods, classes and objects, constructors, inheritance.
- Subroutines, events, exceptions. Good programming practices.

Temeljni literatura in viri / Readings:

- Gradiva s predavanj in vaj.
- Mesojedec, U. & Fabjan, B. (2004). *Java2: temelji programiranja*. Ljubljana: Pasadena.
- Eck, D. J. (2019). *Introduction to Programming Using Java* (8th ed.). Pridobljeno iz <http://math.hws.edu/javanotes/>.
- Eckel, B. (2006). *Thinking in Java* (4th ed.). Pearson Education.
- Bloch, J. (2008). *Effective Java* (2nd ed.). Pearson Education.

Cilji in kompetence:

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

- usposobljenost za samostojno in avtonomno uporabo, nadzor in vzdrževanje informacijsko komunikacijske tehnologije v organizaciji
- poznavanje tehnologij za spletno programiranje na strani klienta in strežnika ter razvoj aplikacij
- sposobnost zapisati problem v obliki algoritma in pretvorba algoritma v računalniški program z uporabo sodobnih programskih orodij
- razumevanje in uporaba računalniških sistemov in arhitektur

Objectives and competences:

The module contributes to the following general and subject-specific competences:

- competence for independent and autonomous use, monitoring and maintenance of information communication technology in an institution
- knowledge of client and server side web programming technologies and applications development
- the ability to write the problem in the form of an algorithm and converting the algorithm into a computer program using modern programming tools
- understanding and use of computer systems and architectures

Predvideni študijski rezultati:

Znanje in razumevanje:

Študent/študentka:

- razvije zmožnost logičnega razmišljanja in sposobnost načrtovanja programov
- razume pomen načrtovanja in testiranja programske opreme
- zmore dekompozicijo večjega problema na več manjših in lažje obvladljivih
- zna programirati v programskem jeziku Java

Intended learning outcomes:

Knowledge and understanding:

The student:

- develops the ability of logical thinking and designing computer programs
- understands the importance of software design and testing
- is able to decompose a bigger problem into a set of smaller ones that are easier to handle
- knows how to program in Java

Metode poučevanja in učenja:

- predavanja z aktivno udeležbo študentov (razlaga, diskusija, vprašanja, primeri, reševanje problemov)
- laboratorijske vaje, kjer bodo študentje na konkretnih problemih ponovili, utrdili in dodatno osvetlili pojme in metode, spoznane na predavanjih
- kolokviji: z njimi bodo študentje stimulirani, da sproti študirajo snov, ki bo obravnavana na predavanjih in vajah
- seminarska naloga bo študente naučila samostojnega reševanja praktičnih problemov v programiranju

Learning and teaching methods:

- lectures with active student participation (explanation, discussion, questions, examples, problem solving)
- lab work, during which the students will use practical problems to repeat and strengthen the topics and methods presented at the lectures
- midterm exams will stimulate the students to study concurrently with lectures and lab work
- student project will prepare the students to autonomously solve practical programming problems

Delež (v %) /

Weight (in %)

Načini ocenjevanja:**Assessment:**

Način (pisni izpit, ustno izpraševanje, naloge, projekt):	Delež (v %) / Weight (in %)	Type (examination, oral, coursework, project):
<ul style="list-style-type: none"> • pisni izpit 	100	<ul style="list-style-type: none"> • written exam

Reference nosilca / Lecturer's references:

- GRAU LEGUIA, MARC, LEVNAJIĆ, ZORAN, TODOROVSKI, LJUPČO, ŽENKO, BERNARD. Reconstructing dynamical networks via feature ranking. *Chaos*, ISSN 1054-1500, 2019, vol. 29, no. 9, str. 09310-1-093107-15, doi: 10.1063/1.5092170.
- PETKOVIĆ, MATEJ, BOUMGHAR, REDOUANE, BRESKVAR, MARTIN, DŽEROSKI, SAŠO, KOCEV, DRAGI, BOUMGHAR, REDOUANE, LEVATIĆ, JURICA, LUCAS, LUKE, OSOJNIK, ALJAŽ, ŽENKO, BERNARD, SIMIDJIEVSKI, NIKOLA. Machine learning for predicting thermal power consumption of the Mars Express spacecraft. *IEEE aerospace and electronic systems magazine*, ISSN 0885-8985, 2019, vol. 34, no. 7, str. 46-60, doi: 10.1109/MAES.2019.2915456.
- SIMIDJIEVSKI, NIKOLA, TANEVSKI, JOVAN, ŽENKO, BERNARD, LEVNAJIĆ, ZORAN, TODOROVSKI, LJUPČO, DŽEROSKI, SAŠO. Decoupling approximation robustly reconstructs directed dynamical networks. *New journal of physics*, ISSN 1367-2630, 2018, 29 str., doi: 10.1088/1367-2630/aae941.
- TUŠAR, TEA, GANTAR, KLEMEN, KOBLAR, VALENTIN, ŽENKO, BERNARD, FILIPIČ, BOGDAN. A study of overfitting in optimization of a manufacturing quality control procedure. *Applied soft computing*, ISSN 1568-4946, 2017, vol. 59, str. 77-87, doi: 10.1016/j.asoc.2017.05.027.
- GAMBERGER, DRAGAN, ŽENKO, BERNARD, MITELPUNKT, ALEXIS, SHACHAR, NETTA, LAVRAČ, NADA. Clusters of male and female Alzheimer's disease patients in the Alzheimer's Disease Neuroimaging Initiative (ADNI) database: Dragan Gamberger ... [et al.]. *Brain informatics*, ISSN 2198-4026, 2016, vol. 3, no. 3, str. 169-179, doi: 10.1007/s40708-016-0035-5.
- DEBELJAK, MARKO, POLJANEC, ALEŠ, in ŽENKO, BERNARD (2014) Modelling forest growing stock from inventory data: a data mining approach. *Ecological indicators*, 41, str. 30-39.
- ŠKRABAN, JURE, DŽEROSKI, SAŠO, ŽENKO, BERNARD, MONGUS, DOMEN, GANGL, SIMON in RUPNIK, MAJA (2013) Gut microbiota patterns associated with colonization of different clostridium difficile ribotypes. *PloS ONE*, 8(2), str. e58005-1-e58005-13.

- CAROTENUTO, MARIANEVE, DŽEROSKI, SAŠO, ŽENKO, BERNARD, SLAVKOV, IVICA, et al. (2013) Neuroblastoma tumorigenesis is regulated through the Nm23-H1/h-Prune C-terminal interaction. *Scientific reports*, 3, str. 1351-1-1351-11.
- AHO, TIMO, ŽENKO, BERNARD, DŽEROSKI, SAŠO in ELOMAA, TAPIO (2012) Multi-target regression with rule ensembles. *Journal of machine learning research*, 13, str. 2367-2407.
- DŽEROSKI, SAŠO in ŽENKO, BERNARD (2004) Is combining classifiers with stacking better than selecting the best one? *Machine learning*, 54, str. 255-273.