UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Uvod v programiranje
Course title:	Introduction to Programming

Izobraževalni program in stopnja Educational programme and level	Študijska smer Study field	Akademsko leto Academic year
NOO projekt piloti: Naprednejša računalniška znanja (nivo: visokošolski strokovni študijski program)	Programiranje in razvoj aplikacij	2023/2024
RRP pilot project: Advanced computer skills (level: first cycle professional study programme)	Programming and application development	2023/2024

Vrsta predmeta / Course type   Obvezni / Obligatory

Univerzitetna koda predmeta / University course code: NOO-PRA-VS-UP-2023-24

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. Borut Lužar

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

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites:**
Pogoj za vključitev v delo je opravljen predmet Uvod v algoritme.	A student is required to pass Introduction to algorithms to enroll to this subject.

Vsebina:	**Content (syllabus outline):**
• Program, izvorna koda in strojni jezik. • Delo z integriranim razvojnim okoljem. • Spremenljivke in podatkovni tipi, prireditveni stavek, izrazi, operatorji. • Krmilni stavki in zanke. • Metode, preobložitev metod. • Tabele in seznami. • Delo z nizi in datotekami.	• Program, source code, and machine language. • Working with IDE. • Variables and data types, assignments, expressions, operators. • Conditionals and loops. • Methods and overloading. • Working with strings and files. • Classes, objects, basic class elements.

- Razredi, objekti, osnovni elementi razredov.
- Dedovanje in abstrakcija.
- Uporaba podatkovnih struktur v programiranju.
- Paralelizacija kode.

- Inheritance and abstraction.
- Using data structures in programming.
- Code parallelization.

Temeljni literatura in viri / Readings:

- Gradiva s predavanj in vaj.
- C# Documentation (27. 11. 2022). https://learn.microsoft.com/en-us/dotnet/csharp/
- C# Fundamentals for Absolute Beginners (27. 11. 2022). https://learn.microsoft.com/en-us/shows/csharp-fundamentals-for-absolute-beginners/
- Nakov et al. (2013). Fundamentals of Computer Programming with C#. E-knjiga (http://www.introprogramming.info/).

Cilji in kompetence:

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

Splošne kompetence:
- poznavanje osnov računalništva in informacijskih tehnologij
- usposobljenost za izvajanje vseh faz razvoja računalniških aplikacij: načrtovanje, razvoj, zagon, prodaja, vzdrževanje.

Predmetno-specifične kompetence:
- poznavanje osnovnih pojmov računalniškega programiranja
- poznavanje osnov programskega jezika Java
- zmožnost zapisati problem v obliki algoritma in pretvorba algoritma v računalniški program z uporabo sodobnih programskih orodij
- sposobnost samostojnega reševanja realnih problemov s pomočjo računalniškega programiranja

Objectives and competences:

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

General competencies:
- familiarity with the basics of computer science and information technology
- competence to carry out all phases in the development of computer applications: planning, development, start-up, sales, and maintenance.

Subject-specific competences:
- knowledge of basic principles of computer programming
- basic knowledge of Java programming language
- ability to write a problem in the form of an algorithm and its conversion into a computer program with the use of modern programming tools
- ability to autonomously solve real-life problems with computer programming

Fakulteta za informacijske študije
Faculty of information studies

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MINISTRSTVO ZA VISOKO ŠOLSTVO,
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Predvideni študijski rezultati:

Znanje in razumevanje:

Študent/študentka:
- razvije zmožnost logičnega razmišljanja in sposobnost načrtovanja programov
- razume pomen načrtovanja in testiranja programske opreme
- zna razbiti večji problem na več manjših in lažje obvladljivih
- zna programirati v programskem jeziku C#

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 C#

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

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

Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt):	Delež (v %) / Weight (in %)	Assessment: Type (examination, oral, coursework, project):
• pisni izpit	100	• written exam

Reference nosilca / Lecturer's references:

- H. La, B. Lužar, K. Štorgel: Further extensions of the Grötzsch Theorem, Discrete Math. 345 (2022), 112849.
- B. Lužar, E. Máčajová, M. Škoviera, R. Soták: Strong edge colorings of graphs and the covers of Kneser graphs, J. Graph Theory (2022) 100(4) (2022), 686-697.
- K. Rojko, B. Lužar: Scientific performance across research disciplines: Trends and differences in the case of Slovenia, J. Informetrics 16(2) (2022), 101261.
- N. Gusmeroli, T. Hrga, B. Lužar, J. Povh, M. Siebenhofer, A. Wiegele: BiqBin: A Parallel Branch-and-bound Solver for Binary Quadratic Problems with Linear Constraints, ACM Transactions on Mathematical Software 48 (2022), #15.
- P. Holub, B. Lužar, E. Mihaliková, M. Mockovčiaková, R. Soták: Star edge-coloring of square grids, Appl. Math. Comput. 392 (2021), 125741.
- K. Rojko, B. Bratić, B. Lužar: The Bologna reform's impacts on the scientific publication performance of Ph.D. graduates - the case of Slovenia, Scientometrics 124 (2020), 329-356.
- M. Šurimová, B. Lužar, T. Madaras: Adynamic coloring of graphs, Discrete Appl. Math. 284 (2020), 224-233.

- B. Lužar, M. Mockovčiaková, P. Ochem, A. Pinlou, R. Soták: On non-repetitive sequences of arithmetic progressions: the cases k ∈ {4,5,6,7,8}, Discrete Appl. Math. 279 (2020), 106-117.
- F. Dross, B. Lužar, M. Maceková, R. Soták: Note on 3-choosability of planar graphs with maximum degree 4, Discrete Math. 342(11) (2019), 3123-3129.
- B. Lužar, M. Mockovčiaková, R. Soták: Note on list star edge-coloring of subcubic graphs, J. Graph Theory 90(3) (2019), 304-310.