Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	Izobraževalni programski jeziki
Course title:	Educational programming languages

Študijski program in stopnja **Study programme and level**	**Študijska smer** **Study field**	**Letnik** **Academic year**	**Semester** **Semester**
Enovit magistrski študijski program druge stopnje Predmetni učitelj	**/**	5.	9.
Five-year master's degree program Subject Teacher	**/**		

Vrsta predmeta / Course type	Izbirni / Elective
Univerzitetna koda predmeta / University course code:	

Predavanja **Lectures**	**Seminar** **Seminar**	**Sem. vaje** **Tutorial**	**Lab. vaje** **Laboratory work**	**Teren. vaje** **Field work**	**Samost. delo** **Individ. work**	**ECTS**
30			30		120	6

Nosilec predmeta / Lecturer:	Red. prof. dr. Aleksander Vesel

Jeziki / Languages:	**Predavanja / Lectures:**	Slovenski/Slovenian
	Vaje / Tutorial:	Slovenski/Slovenian

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisits:**
Vsaka izmed naštetih obveznosti v načinih ocenjevanja mora biti opravljena s pozitivno oceno. Pozitivne ocene pri sprotnih nalogah in seminarski nalogi so pogoj za pristop k izpitu.	Each of the mentioned assessments must be assessed with a passing grade. Passing grades for coursework and seminar paper are required for taking the exam.

Vsebina:	Content (Syllabus outline):
Osnovnih elementi in koncepti programskih jezikov. Zgodnje učenje programskih jezikov. Programski jeziki glede na starostna obdobja, stopnjo razvoja in predznanje. Koncepti postopnega nadgrajevanja izobraževalnih programskih jezikov. Različni primeri postopnega nadgrajevanja: Java, SmallTalk, Lisp. Izobraževalni programski jeziki in programski vzorci. Primeri izobraževalnih programskih jezikov.	Basic programming languages' elements and concepts. Early learning of programming languages. Programming languages by age, stage of developments and background knowledge. Koncepts with sequences of programming languages where a student takes a course from easy to understand to complex environment. Various examples: Java, SmallTalk, Lisp. Educational programming languages and prograing paradigms. Examples of educational programming languages.

Temeljni literatura in viri / Readings:

Sonja Lajovic, Scratch, Pasadena, 2011.
Jerry L. Ford, Scratch programming for teens, Course technology, 2009.

Dodatna literatura / Additional Readings:
Matija Lokar, Osnove programiranja : programiranje - zakaj in vsaj kaj, Ministrstvo za šolstvo in šport, 2005.
Charles W. Herbert, An introduction to programming using Alice, Thomson Course Technology, 2007.
Jay Newman, Linux robotics : programming smarter robots, McGraw-Hill, 2006.

Cilji in kompetence:	Objectives and competences:
• spoznati koncepte izobraževalnih programskih jezikov • spoznati primere izobraževalnih programskih jezikov	• to know concepts from educational programming languages • to know examples of educational programming languages

Predvideni študijski rezultati:	Intended learning outcomes:

Znanje in razumevanje: • Poznavanje elementov programskih jezikov. • Razmevanje pomena zgodnjega učenja programskih jezikov • Poznavanje konceptov postopnega nadgrajevanja Prenesljive/ključne spretnosti in drugi atributi: • Prenos znanja na druga področja izobraževanja (naravoslovje, tehnika, matematika,...)	Knowledge and understanding: • Knowing programming languages' elements. • Understanding the importance of early learning of programming languages. • Knowing concepts of learning paths for educational programming languages. Transferable/Key Skills and other attributes: • Transfer of knowledge to other areas education (science, technology, mathematics, , ...)

Metode poučevanja in učenja:	**Learning and teaching methods:**
• Predavanja • Računalniške in teoretične vaje	• Lectures • Computer and theoretical exercises

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
sprotne naloge ustna predstavitev	50% 50%	coursework oral presentation

Reference nosilca / Lecturer's references:

1. KORŽE, Danilo, VESEL, Aleksander. Variety of mutual-visibility problems in hypercubes. *Applied mathematics and computation*. 15 April 2025, vol. 491, [article no.] 129218, 10 str.
2. VESEL, Aleksander. Binary coding of resonance graphs of catacondensed polyhexes. *Match : communications in mathematical and in computer chemistry*. 2023, vol. 90, no. 2, str. 429-452.
3. KORŽE, Danilo, VESEL, Aleksander. General Position Sets in Two Families of Cartesian Product Graphs. *Mediterranean journal of mathematics*. 2023, vol. 20, [article no.] 203, 12 str.
4. DENG, Fei, SHAO, Zehui, VESEL, Aleksander. On the packing coloring of base-3 Sierpiński graphs and H-graphs. *Aequationes mathematicae*. 2021, vol. 95, iss. 2, str. 329-341.
5. VESEL, Aleksander. Efficient proper embedding of a daisy cube. *Ars mathematica contemporanea*. [Tiskana izd.]. 2021, vol. 21, no. 2, str. 271-282.