Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	Osnove informacijskih sistemov
Course title:	Fundamentals of Information Systems

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	**/**	**3**	**5**
Five-year master's degree program Subject Teacher	**/**		

Vrsta predmeta / Course type Obvezni/ Obligatory

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	**15**		**15**		**30**	**3**

Nosilec predmeta / Lecturer: Krista Rizman Žalik

Jeziki / Languages:	
Predavanja / Lectures:	slovenski/slovenian
Vaje / Tutorial:	slovenski/slovenian

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisits:**
/	/

Vsebina:

Podatek in informacija.
Merilo informacije, enačba informacije, entropija informacije.
Informacijski sistemi in razvojni koraki življenjskega cikla programske opreme.
Uveljavljene in novejše metode in orodja razvoja informacijskih sistemov in programske opreme.
Atributi kakovosti informacijskih sistemov.
Vrste informacijskih sistemov.
Arhitekture informacijskih sistemov: podatkovno usmerjena, pretočna arhitektura, arhitektura z virtualnim strojem, arhitektura klica in vrnitve, aktualne komponente arhitekture.
Varovanje informacijskih sistemov.

Content (Syllabus outline):

Data and information.
Measure of information, equation, entropy of information.
Information systems and development phases of software lifecycle.
Enforced and new methods and tools for software development of information systems development.
Quality attributes: execution and development.
Types of information systems.
Architectures: data centered dataflow architecture, virtual machine architecture, and call and return architecture, actual component architecture.
Security of information systems.

Temeljni literatura in viri / Readings:

E.Turban, R.K. Rainer,R. E.Potter, Introduction to Information Technology, 3rd edition, John Wiley & Sons, New Yourk, 2004.
P. Bilke: Spoznajmo PHP in MySQL, Flamingo, 2002.
U. Mesojedec, Java, programiranje za internet, Pasadena, 1997.
Avison, D. E. in Fitzgerald, G., Information systems development: methodologies, techniques and tools McGraw-Hill, London, 2003.

Cilji in kompetence:

Cilj predmeta je, da študenti razumejo temeljne koncepte delovanja in razvoja informacijskih sistemov in znajo zgraditi informacijske sisteme omejene kompleksnosti.

Objectives and competences:

The objective of this course is for students to be able to demonstrate the understanding of basic concepts of working and development of information systems and to know how to develop information systems of limited complexity.

Predvideni študijski rezultati:

Znanje in razumevanje:

Po zaključku tega predmeta bo študent sposoben:

- razložiti delovanje, koncepte razvoja, vzdrževanja in varovanja informacijskih sistemov.
- načrtovati in izdelati preprost informacijski sistem.

Prenosljive/ključne spretnosti in atributi:

- *Spretnost komuniciranja*: pisanje strokovnega poročila, ustno izražanje pri izpitu.
- *Uporaba informacijske tehnologije*: uporaba programskih jezikov in razvojnih orodij.
- *Reševanje problemov*: načrtovanje in implementacija preprostih informacijskih sistemov.

Intended learning outcomes:

Knowledge and Understanding:

On the completion of this course the student will be able to:

- explain functioning, concepts of development, maintenance and security of information systems.
- develop and implement simple information systems.

Transferable/Key skills and other attributes:

- *Communication skills*: preparation of a report, communication at an examination.
- *Use of information technology*: the use of programming languages and development tools.
- *Problem solving*: designing and implementing simple information systems.

Metode poučevanja in učenja:

Predavanja
Računalniške vaje

Learning and teaching methods:

Lectures
Computer exercises

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Računalniške vaje	30%	Computer exercises,
Seminar	30%	Seminar
Pisni izpit	40%	Written exam
Vsaka izmed naštetih obveznosti mora biti opravljena s pozitivno oceno. Pozitivna ocena pri računalniških vajah in seminarju je pogoj za pristop k izpitu.		Each of the obligations must be carried out with a positive assessment. Positive evaluation of computer exercises and seminar is a prerequisite for the exam**.**

Reference nosilca / Lecturer's references:

1. RIZMAN ŽALIK, Krista, ŽALIK, Borut. Memetic algorithm using node entropy and partition entropy for community detection in networks. *Information sciences*, ISSN 0020-0255. [Print ed.], Jun. 2018, vol. 445/446, str. 38-49.
2. RIZMAN ŽALIK, Krista, ŽALIK, Borut. Node attraction-facilitated evolution algorithm for community detection in networks. *Soft computing*, ISSN 1432-7643. [Print ed.], 2018, str. 1-9.
3. RIZMAN ŽALIK, Krista. Community detection in networks using new update rules for label propagation. *Computing*, ISSN 0010-485X, 2017, vol. 99, iss. 7, str. 679-700.
4. RIZMAN ŽALIK, Krista, ŽALIK, Borut. Multi-objective evolutionary algorithm using problem-specific genetic operators for community detection in networks. *Neural computing & applications*, ISSN 0941-0643, 2017, str.1-14.
5. RIZMAN ŽALIK, Krista. Maximal neighbor similarity reveals real communities in networks. *Scientific reports*, ISSN 2045-2322, 2015, vol. 5, art. no. 18374, str. 1-10.