



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Osnove podatkovnih baz
Course title:	Fundamentals of Databases

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	/	2	zimski
Five-year master's degree program Subject Teacher	/	2	winter

Vrsta predmeta / Course type

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		90	5

Nosilec predmeta / Lecturer:

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

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Prerequisites:

Vsebina:

Content (Syllabus outline):

Osnovni koncepti: definicije podatkovne baze, vrste podatkovnih baz, baza kot model realnosti-entitete, razmerja, atributi, tri-nivojska arhitektura podatkovne baze, sistemi za upravljanje podatkovnih baz.

Relacijske podatkovne baze: relacijski podatkovni model, SQL.

Nivoji abstrakcije in podatkovna neodvisnost.

Elementi logičnega in fizičnega podatkovnega modela: indeksi, omejitve integritete, pogledi, transakcije, prožilci.

Sistemi za upravljanje z bazami podatkov:

Izvajanje povpraševanj. Varovanje v podatkovnih bazah. Podatkovne nesreče in obnavljanje.

Upravljanje transakcij. Kontrola vzporednosti.

Optimizacija povpraševanj.

Basic concepts: definitions of databases, types of databases, database as model of reality-entities, relations, attributes, three tier database architecture, database management systems.

Relational databases: the relational data model, SQL.

Data abstraction levels and independence.

Elements of logical and physical data model: indexes, integrity constraints, views, transactions, triggers.

Database management systems: Query processing.

Database security. Data crash and recovery.

Transaction management. Concurrency control.

Query optimization.

Temeljni literatura in viri / Readings:

T. Mohorič, Podatkovne baze, Založba Bi-TIM, 2002.

M.L. Gillerson, Fundamentals of database management systems, Wiley & Sons, 2005.

R. Ramakrishna, J.Gehrke, Database management systems, McGraw-Hill, 2003.

Cilji in kompetence:

Cilj predmeta je, da študenti razumejo delovanje sistemov za upravljanje s podatkovnimi bazami in znajo zgraditi in uporabiti podatkovno bazo omejene kompleksnosti.

Objectives and competences:

The objective of this course is for students to be able to demonstrate the understanding of operation of database management systems and to create database of limited complexity.

Predvideni študijski rezultati:

Znanje in razumevanje:

Po zaključku tega predmeta bo študent sposoben:

- razložiti delovanja sistemov podatkovnih baz,
- načrtovati in izdelati podatkovne baze in povpraševanja s programskim jezikom SQL.

Prenesljive/ključne spretnosti in drugi atributi:

- Spretnosti komuniciranja: pisanje strokovnega poročila, ustno izražanje pri izpitu.
- Uporaba informacijske tehnologije: uporaba programskih jezikov in tehnologije svetovnega spleta.
- Reševanje problemov: načrtovanje in implementacija podatkovnih baz e omejene kompleksnosti.

Intended learning outcomes:

Knowledge and Understanding:

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

- explain how database management systems work,
- create databases and queries with programming language SQL.

Transferable/Key skills and other attributes:

- Communication skills: preparation of a report, al communication at an examination.
- Use of information technology: the use of programming languages and internet technology.
- Problem solving: creating databases of limited complexity.

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.		Each of the obligations must be carried out with a positive assessment.
Pozitivna ocena pri računalniških vajah in seminarju je pogoj za pristop k izpitu.		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.