

UČNI NAČRT PREDMETA / COURSE SYLLABUS

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|----------------------|--------------------------------|
| Predmet: | Administracija podatkovnih baz |
| Course title: | Database Administration |

| Študijski program in stopnja Study programme and level | Študijska smer Study field | Letnik Academic year | Semester Semester |
|---|-------------------------------|-------------------------|----------------------|
| Računalništvo in spletne tehnologije, visokošolski strokovni študijski program prve stopnje | - | Drugi ali tretji | Četrsti ali šesti |
| Computer Science and Web Technologies, first cycle Professional Study Programme | - | Second or third | Fourth or sixth |

Vrsta predmeta / Course type Izbirni / Elective

Univerzitetna koda predmeta / University course code: 2-RST-VS-IP-APB-2020-05-14

| Predavanja Lectures | Seminar Seminar | Vaje Tutorial | Klinične vaje work | Druge oblike študija | Samost. delo Individ. work | ECTS |
|------------------------|--------------------|------------------|-----------------------|----------------------|-------------------------------|------|
| 30 | - | 45 | - | - | 105 | 6 |

Nosilec predmeta / Lecturer: izr. prof. dr. Blaž Rodič

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

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

Študent/študentka mora pred pristopom k izpitu pripraviti in zagovarjati projekt.

Prerequisites:

The student is obliged to prepare and defend his/her project before the admission to the examination.

Vsebina:

Poglavja predmeta obsegajo naslednje teme:

- Tipi in naloge administratorjev SUPB (sistem za upravljanje podatkovne baze).
- Kreiranje in nadgrajevanje SUPB.
- Načrtovanje podatkovnih baz (modeliranje, normalizacija in denormalizacija).

Content (Syllabus outline):

The course will be covering the following subjects:

- DBMS (Database Management System) administrator types and their tasks.
- DBMS design and upgrading.
- Database planning (modelling, normalization, denormalization).
- Planning physical databases and application requirements.

- Načrtovanje fizične podatkovne baze in aplikativnih zahtev.
- Principi zagotavljanja konsistentnosti podatkov in upravljanja s transakcijami.
- Varnostni vidiki podatkovnih baz (uporabniška varnost, skrb za varnost podatkov).
- Shranjevanje in obnavljanje podatkov.
- Administracija podatkovnih skladišč.

- Principles of ensuring data consistency and transaction management.
- Security aspects of databases (user security, attending to data protection).
- Saving and restoring data.
- Data warehouse administration.

Temeljni literatura in viri / Readings:

- Coronel, C. & Morrison, S. (2014). *Database Systems: Design, Implementation, & Management* (11th ed.). Cengage Learning.
- Mullins, C. S. (2012). *Database Administration. The Complete Guide to Practices and Procedures* (2nd ed.). Addison-Wesley.
- Lemahieu, W., vanden Broucke, S. & Baesens, B. (2018). *Principles of Database Management: The Practical Guide to Storing, Managing and Analyzing Big and Small Data*. Cambridge University Press.

Cilji in kompetence:

Cilj predmeta je študentom predstaviti osnovne principe delovanja in administracije sistemov za upravljanje s podatkovnimi bazami (SUPB) in jih pripraviti na samostojno administracijo manjšega SUPB.

Predmet prispeva k razvoju naslednjih splošnih in predmetno-specifičnih kompetenc:

Splošne kompetence:

- razvoj kritične in samokritične presoje

Predmetno-specifične kompetence:

- sposobnost analitičnega razmisleka in razreševanja kompleksnejših problemov in situacij s področja računalništva in informatike
- sposobnost sistemskega pristopa k problemom s področja računalništva in informatike
- poglobljeno poznavanje modeliranja in administriranja podatkovnih baz

Objectives and competences:

The main goal of the course is to teach students about the principals of database administration (DBA), their usage and performance. After the course the students will be qualified for administration of a small data base system.

The instructional unit contributes to the development of the following general and subject-specific competences:

General competences:

- development of critical and self-critical judgement

Subject-specific competences:

- *ability to think analytically and resolve more complex problems and situations related to the fields of computer and information science*
- *ability to apply a system approach to problems related to computer and information science*
- *in-depth familiarity with modelling and administrating of data bases*

Predvideni študijski rezultati:

Znanje in razumevanje:

Študent/študentka:

- se seznanj s postopki administracije podatkovnih baz
- razume principe, na katerih temeljijo postopki za zagotavljanje konsistentnosti in varnosti podatkov v podatkovnih bazah
- se nauči uporabljati nekaj aktualnih programskih orodij za administracijo podatkovnih baz

Intended learning outcomes:

Knowledge and understanding:

The student will:

- become familiar with database administration procedures
- understand principles, which serve as a foundation for procedures ensuring data consistency and safety within databases
- learn to use some contemporary software types for database administration

Metode poučevanja in učenja:

- *predavanja* z aktivno udeležbo študentov (razlaga, diskusija, vprašanja, primeri, reševanje problemov)
- *vaje v računalniški učilnici*: pri teh vajah bodo študentje spoznali aktualna programska orodja za administracijo podatkovnih baz in jih uporabili za reševanje konkretnih problemov. Vaje bodo potekale v manjših skupinah, tako da bo imel vsak študent na razpolago en računalnik
- *projekt*, ki ga bodo študentje pripravili v manjših skupinah. Vključeval bo konkreten SUPB, ki ga bodo morali študentje v celoti instalirati ter administrirati

Learning and teaching methods:

- *lectures* with active student participation (explanation, discussion, questions, examples, problem solving)
- *tutorials in computer science classroom*: they shall allow the students to get to know contemporary software types used for database administration and use them for solving concrete problems. The mentioned tutorials shall be performed in small groups, allowing each student to have access to one computer
- *a project* prepared by students during work in small groups. It will include a concrete DBMS, which will have to be installed and administrated by the students

Delež (v %) /

Weight (in %)

Načini ocenjevanja:**Assessment:**

Način (pisni izpit, ustno izpraševanje, naloge, projekt):

Type (examination, oral, coursework, project):

- pisni izpit
- projekt

50
50

- written exam
- project

Reference nosilca / Lecturer's references:

- RODIČ, Blaž. Industry 4.0 and the new simulation modelling paradigm. Organizacija : revija za management, informatiko in kadre, ISSN 1318-5454. [Tiskana izd.], aug. 2017, vol. 50, no. 3, str. 193-207, ilustr., doi: 10.1515/orga-2017-0017
- BRELIH, Marjan, RAJKOVIČ, Uroš, RUŽIČ, Tomaž, RODIČ, Blaž, KOZELJ, Daniel. Modelling decision knowledge for the evaluation of water management investment projects. Central European Journal of Operations Research, ISSN 1435-246X, 2018, vol. , iss. , str. <https://link.springer.com/content/pdf/10.1007%2Fs10100-018-0600-5.pdf>, doi: 10.1007/s10100-018-0600-5.

- KANDUČ, Tadej, RODIČ, Blaž. Optimisation of machine layout using a force generated graph algorithm and simulated annealing. *International journal of simulation modelling*, ISSN 1726-4529, 2016, vol. 15, no. 2, str. 275-287.
- RODIČ, Blaž, BAGGIA, Alenka. Dynamic airport ground crew scheduling using a heuristic scheduling algorithm. *International journal of applied mathematics and informatics*, ISSN 2074-1278, 2013, vol. 7, iss. 4, str. 153-163.
- RODIČ, Blaž. Mobile agents for distributed decision support systems. *The International Scientific Journal of Management Information Systems*, ISSN 1452-774X, 2011, vol. 6, no. 1, str. 20-27.
- RODIČ, Blaž, KLJAJIĆ, Mirosljub. Accessing distributed data sources with mobile agents and XML. V: JAŠKOVÁ, Mária (ur.). *ECON '05 : [selected research papers]*, (Research works proceedings, ISSN 0862-7908, Vol. 12, 2005). Ostrava: Technical University of Ostrava, Faculty of Economics. 2005, str. 280-287.
- RODIČ, Blaž, KLJAJIĆ, Mirosljub. Integracija simulacijskih orodij v e-poslovni informacijski sistem. V: GRIČAR, Jože (ur.). *Izboljšanje konkurenčnosti regije z e-poslovanjem*, (Organizacija, ISSN 1318-5454, Letn. 37, 2004, št. 3). Kranj: Moderna organizacija. 2004, str. 162-167.
- ŠKRABA, Andrej, BAGGIA, Alenka, RODIČ, Blaž. Application of a group decision support system in the reform of study programmes. V: DONDON, Philippe (ur.). *Recent advances in education and modern educational technologies*, (Educational technologies series, 9). [S. l.: s. n.]. 2013, str. 128-134.
- RODIČ, Blaž. Issues of e-collaboration and knowledge management in media industries. V: LUGMAYR, Artur (ur.), et al. *Information systems and management in media and entertainment industries*, (International series on computer entertainment and media technology (Online), ISSN 2364-9488). Cham: Springer. cop. 2016.