| 1. | Course Title | Database administration |
|---|---|---|
| 2. | Code | F18L3W074 |
| 3. | Study program | Software engineering and information systems |
| 4. | Study Program Organizer | Faculty of Computer Science and Engineering |
| 5. | Degree (first, second, third cycle) | first cycle |
| 6. | Academic year / semester <br> 4 / winter / optional | 7. ECTS credits <br> 6 |
| 8. | Teacher | full professor Goran Velinov, associate professor Boro Jakimovski, assistant professor Vangel Ajanovski |
| 9. | Course enrollment prerequisites | Бази на податоци |

| 10. | Course program goals (competencies): |
|---|---|
| | This course focuses on the state-of-the-art technologies connected to implementation of data bases. Technologies and techniques that are used for implementation of databases will be covered from both user and system administration aspects. From the aspect of system engineering, the course will dive deep into the concepts and algorithms for: transaction processing, concurrency control, representation of log and metadata, security policies in databases, techniques for replication and distribution, backup and restore. |

| 11. | Course program content: |
|---|---|
| | - Hardware requirements and measurement of performance in database systems - File systems and organization of the data - Memory aspects and caching in databases - Regular maintenance of databases - Performance analysis of databases - Profiling and optimization of query execution - Scalability and replication of databases - Partitioning and sharding of databases - Transactions and locking - Backup and restore of databases |

| 12. | Learning methods: |
|---|---|
| | Lectures using presentations, interactive lectures, exercises (using equipment and software packages), teamwork, case studies, invited guest lecturers, independent preparation and defense of a project assignment and seminar work. |

| 13. | Total available time | 6 ECTS x 30 hours = 180 hours |
|---|---|---|
| 14. | Distribution of the available time | 30 + 45 + 15 + 15 + 75 = 180 hours |
| 15. | Teaching activity forms | 15.1. | Lectures – theoretical teaching | 30 hours |

| | | 15.2. | Exercises (laboratory, auditory), seminar papers, teamwork | 45 hours |
|---|---|---|---|---|
| 16. | Other activity forms | 16.1. | Project Tasks | 15 hours |
| | | 16.2. | Independent Learning Tasks | 15 hours |
| | | 16.3. | Home learning | 75 hours |

| 17. | Assessment methodology | | |
|---|---|---|---|
| | 17.1. | Tests | 10 points |
| | 17.2. | Seminar paper/project (presentation: written and oral) | 10 points |
| | 17.3. | Activity and learning | 10 points |
| | 17.4. | Final exam | 70 points |

| 18. | Assessment criteria (points/grade) | up to 50 points | 5 (five) (F) |
|---|---|---|---|
| | | 51 to 60 points | 6 (six) (E) |
| | | 61 to 70 points | 7 (seven) (D) |
| | | 71 to 80 points | 8 (eight) (C) |
| | | 81 to 90 points | 9 (nine) (B) |
| | | 91 to 100 points | 10 (ten) (A) |

| 19. | Course completion and final exam requirements | Realized activities 15.1 and 15.2 |
|---|---|---|
| 20. | Teaching Language | Macedonian and English |
| 21. | Teaching quality evaluation method | Internal evaluation mechanisms and questionnaires |

| 22. | Course Material | | | | |
|---|---|---|---|---|---|
| | 22.1. | Mandatory course material | | | |

| No. | Author | Title | Publisher | Year |
|---|---|---|---|---|
| 1 | Ibrar Ahmed and Gregory Smith | PostgreSQL 9.6 High Performance | Packt Publishing Limited | 2017 |
| 2 | Hans-Jürgen Schönig | Mastering PostgreSQL 9.6 | Packt Publishing Limited | 2017 |

| | 22.2. | Additional course material | | | |
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| No. | Author | Title | Publisher | Year |
|---|---|---|---|---|
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