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| 1. | Course Title | Electric Circuits |
| 2. | Code | F18L2S042 |
| 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 2 / summer / mandatory | 7. ECTS credits 6 |
| 8. | Teacher | full professor Kosta Mitreski |
| 9. | Course enrollment prerequisites | |
| 10. | <p>Course program goals (competencies): Introduction to the basic concepts and phenomena of electric circuits, basic laws and theories in the theory of electric circuits and some methods for analyzing electrical networks with time constant and time-varying currents and voltages. Using the basic laws in electrical engineering in solving specific problems in engineering.</p> | |
| 11. | <p>Course program content: Potential of electric field and electric voltage. Capacities and capacitors. Stationary electrical current (DC) .Electric resistance. Ohm and Jules Law. Electric sources and electromotive force. Electrical networks in DC mode. Methods for solving electric circuits. Superposition. Teven's theorem. Software tools for solving DC-electric circuits. Time constant magnetic field. Vector of magnetic induction. Ampere law. Electromagnetic induction. Principle of operation of electric generator, motor and transformer. Time variables of simple periodic currents and their representation with phases and complex numbers. Analytical methods for solving RLC. Methods for solving complex electrical circuits in AC mode. Model and analysis of simple RLC circuits using a circuit simulator.</p> | |
| 12. | <p>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.</p> | |
| 13. | Total available time | 6 ECTS x 30 hours = 180 hours |
| 14. | Distribution of the available time | 30 + 45 + 15 + 15 + 75 = 180 hours |

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| 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 | д-р Панчо Врангалов | Основи на електротехника 1 | ФЕИТ | 1979 |
| 2 | д-р Леонид Грчев | Основи на електротехника – електростатика и кола со непроменливи и променливи струи | ФЕИТ | 2007 |
| 3 | Don Johnson | Fundamentals of Electrical Engineering 1 | Rice University, Houston, Texas | 2012 |
| 22.2. | Additional course material | | | |
| No. | Author | Title | Publisher | Year |
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