**DESCRIPTION OF A STUDY COURSE – SYLLABUS**

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| **Title of a course** | **Electrotechnics** | | | | |
| **Study programme** | **Professional undergraduate study Occupational Safety** | | | | |
| **Status of a course** | Obligatory | | | | |
| **Year of study** | 1. | **Semester** | W | **ECTS credits** | 6 |
| **Teaching plan**  **(L + E + S+ Pr)** | 2+2+0+0 | | | | |
| **Goals of a course** | | | | | |
| Introduce students to the physical basics, explanations and approaches for analyzing the electrical and magnetic effects of electrical circuits, and the use and application of direct current and alternating current circuits and electronic circuits. To enable students to independently analyze and determine basic electrical quantities in circuits from real drive cases. Prepare students to independently identify and analyze sources of electrical circuit hazards. | | | | | |
| **Conditions for enrolling course** | | | | | |
| No conditions | | | | | |
| **Expected learning outcomes on a level of a course** | | | | | |
| 1. Pravilno tumačiti i koristiti temeljne pojmove te primijeniti osnovne zakone elektrostatskih polja oko električki nabijenih tijela 2. Izračunati osnovne električne veličine strujnih krugova istosmjerne struje primjenom temeljnih zakona i metoda 3. Primijeniti osnovne zakone elektromagnetskih polja u strujnim krugovima na tumačenje i primjenu magnetskih učinaka 4. Izračunati osnovne električne veličine strujnih krugova izmjenične struje primjenom temeljnih zakona i metoda 5. Izračunati osnovne električne veličine strujnih krugova trofaznog sustava izmjenične struje primjenom temeljnih zakona i metoda 6. Odabrati i dimenzionirati standardna tehnička rješenja sustava za proizvodnju, prijenos, distribuciju, razvođenje i potrošnju električne energije u izvedbi trofaznih sustava 7. Koristiti napredne elemente, sklopove i sustave primijenjene elektronike 8. Analyse electrical conditions around electrically charged bodies. 9. Define the elements and calculate the basic electrical quantities of DC circuits. 10. Explain the electrical conditions inside and around charged metal conductors and the basic magnetic effects. 11. Define the elements and calculate the basic electrical quantities of AC circuits. 12. Define the elements and calculate the basic electrical quantities of a three-phase AC system. 13. Select standard technical solutions of systems for the production, transmission, distribution and consumption of electricity in the design of three-phase systems.   Describe the use of modern elements and circuits of applied electronics | | | | | |
| **Content of a course** | | | | | |
| Electrostatics: Electric charge, force, field, influence. Potential electric energy. Electric potential. Tension. Electric capacity. Condensers. Electric energy: The power of electric energy, density, resistance. Activity and force of electric energy. Magnetic field: Magnetic field of electric energy, induction, magnetic flow. Permeability of the inductor through which electric energy flows within the magnetic field. Act of energy on engines. Electromagnetic induction: Induced tension. Inter-induction. Magnetic field energy. Alternating current: The real value of alternating current. Electrical circuits. Reactive resistance. Power and energy. Three-phase current transformers. Electric machines: Electric engines, generators. Safety of an electrical system: grounding of electricity. Tension of the step and tension of the touch. Fundamentals of electrotechnics: PN diode, rectifiers, regulators of tension. Transistors. Linear integrated circuits and their function. | | | | | |
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