|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **UNIVERSITY OF NIŠ** | | | | | | |
| **Course Unit Descriptor** | | **Faculty** | | | Pedagogical Faculty in Vranje | |
| **GENERAL INFORMATION** | | | | | | |
| Study program | | | | Technical Education and Informatics | | |
| Study Module (if applicable) | | | | / | | |
| Course title | | | | Electrical engineering and electronics | | |
| Level of study | | | | ☐Bachelor ☒ Master’s ☐ Doctoral | | |
| Type of course | | | | ☒ Obligatory ☐ Elective | | |
| Semester | | | | ☒ Autumn ☐Spring | | |
| Year of study | | | | Second | | |
| Number of ECTS allocated | | | | 7 | | |
| Name of lecturer/lecturers | | | | Prof.drNebojša Raičević | | |
| Teaching mode | | | | ☒Lectures ☐Group tutorials ☐ Individual tutorials  ☐Laboratory work ☐ Project work ☐ Seminar  ☐Distance learning ☐ Blended learning ☐ Other | | |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** | | | | | | |
| *The purpose of the course is that students gain knowledge of the basic physical laws of electrostatics and to familiarize them with fundamentals of kinetics of time-constant electric currents, to familiarize students with the basic physical laws of electromagnetism and to solve AC (alternating current) circuits. Those knowledgecan be applied on semiconductor electronic components analysing and understand AD and DA converters.* | | | | | | |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** | | | | | | |
| ***Electrostatics*** *(Charges and their distribution. Coulomb's law. Vector of the electric field intensity. Gauss's law. Electric potential and voltage. Conductors in the electrostatic field. Capacitance and capacitors. Dielectrics in the electrostatic field.).*  ***Electrokinetics*** *(Current density vector and current intensity. Ohm's law and resistors. Joule's law. Kirchhoff's laws. Generators. Maximum power transfer theorem. Methods for solving electrical circuits.).*  ***Electromagnetism*** *(Magnetic flux density vector. Biot-Savart law. Magnetic flux. Ampère's law. Electromagnetic induction. Faraday's law. Lenz's law. Eddy currents. Self and mutual inductances.).*  ***Alternating currents*** *(Sinusoidal mode. Impedance. Circuit solving in the time domain. Circuit solving in the complex domain. Complex power. Inductively coupled circuits. Simple resonant circuits.).*  ***Electronics*** *(Semiconductors, Energy levels and zones, PN and NP s.c. connections. Discharges on PN connections. Diodes. Transistors (bipolar, FET, MOSFET). AD and DA converters.)* | | | | | | |
| **LANGUAGE OF INSTRUCTION** | | | | | | |
| ☒Serbian (complete course) ☐ English (complete course) ☐ Other \_\_\_\_\_\_\_\_\_\_\_\_\_ (complete course)  ☐Serbian with English mentoring ☐Serbian with other mentoring \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | |
| **ASSESSMENT METHODS AND CRITERIA** | | | | | | |
| **Pre exam duties** | **Points** | | **Final exam** | | | **points** |
| **Activity during lectures** | 20 | | **Written examination** | | | 30 |
| **Practical teaching** | 10 | | **Oral examination** | | | 30 |
| **Teaching colloquia** | **10** | | **OVERALL SUM** | | | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** | | | | | | |