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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | Faculty of Electronic Engineering |
| **GENERAL INFORMATION** |
| Study program  | Electrical Engineering and Computing |
| Study Module (if applicable) | Еlectronics |
| Course title | Applied electromagnetics |
| Level of study | [x] Bachelor [ ]  Master’s [ ]  Doctoral |
| Type of course | [ ]  Obligatory [x]  Elective |
| Semester  |  [x]  Autumn [ ] Spring |
| Year of study  | The third |
| Number of ECTS allocated | 5 |
| Name of lecturer/lecturers | Nebojša B. Raičević, Nenad N. Cvetković |
| Teaching mode |  [x] Lectures [ ] Group tutorials [ ]  Individual tutorials [ ] Laboratory work [ ]  Project work [ ]  Seminar [ ] Distance learning [ ]  Blended learning [ ]  Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| *The aim of the course is that students learn to use the most commonly applied methods for calculation of electromagnetic fields, and to become familiar with current regulations and standards in the field of electromagnetic reliability of electronic devices.* |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| *Electric and magnetic field. Static and dynamic fields. Traveling waves. Sinusoidal waves in a lossless medium. Transmission Lines: Transmission line equations. Wave propagation on a transmission line. The lossless transmission line. Voltage reflection coefficient. Standing waves.**Electrostatics: Maxwell’s equations. Coulomb’s law. Electric scalar potential. Poisson’s equation. Dielectric boundary conditions. Image method. Magnetostatics: Magnetic forces and torques. The Biot—Savart law. Magnetic field due to surface and volume current distributions. Maxwell’s magnetostatic equations. Gauss’s law for magnetism. Ampere’s law. Magnetic vector potential. Magnetic properties of materials. Magnetic permeability. Magnetic boundary conditions.**Plane-Wave Propagation: Definition of plane wave. Dispersity equation. Polarization of plane wave. Phase and group velocity. Snell’s laws. Fresnel refraction and diffraction coefficients. Bruster’s angle. Metamaterials. Radiation and Antennas: The short dipole. Far-field approximation. Power density. Antenna radiation characteristics. Antenna pattern. Antenna directivity. Antenna gain. Radiation resistance. Еlectromagnetic Compatibility: Conductive and radiation interferences. Interferences caused by analogue and digital signals. Signal distortion. Screening. Grounding.* |
| **LANGUAGE OF INSTRUCTION** |
| [x] 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** | 30 | **Written examination** | 10 |
| **Practical teaching** | 20 | **Oral examination** | 10 |
| **Teaching colloquia** | **30** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |