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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) | Theoretical Electrical Engineering |
| Course title | Electromagnetics |
| Level of study | [ ] Bachelor [ ]  Master’s [x]  Doctoral |
| Type of course | [x]  Obligatory [ ]  Elective |
| Semester  |  [x]  Autumn [x] Spring |
| Year of study  | The first |
| Number of ECTS allocated | 10 |
| Name of lecturer/lecturers | Nebojša B. Raičević |
| 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 subject is that the student upgrades his/her knowledge of electrostatics and magnetism, learns to apply the most commonly used analytical and numerical methods for calculation of EM fields, as well as to get familiar with existing software packages for solving practical problems in the field of his/her PhD studies and become capable of doing the PhD thesis.* |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| *Electrostatics. Stationary and time-varying electromagnetic field. Integral and differential form of Maxwell's equations. Maxwell's equations in the complex domain. Electromagnetic properties of the medium. Boundary conditions. Electromagnetic field potentials in the homogenous media. Painting's theorem. Analytical methods for calculation of the electromagnetic fields - method of separation of variables, application of the complex variable functions (conformal mapping). Numerical methods for calculation of electromagnetic fields - finite different method, finite element method (FEM), finite difference time domain method (FDTD), equivalent electrode method (EEM), hybrid boundary element method (HBEM). Plane-wave propagation (in vacuum, dielectrics, imperfect conductors, ferrites and layered media). Wave polarization. Propagation of electromagnetic waves. Fresnel's coefficients. TEM, TE and TM guided waves. Electromagnetic radiation and antennas.* |
| **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** | 20 | **Written examination** | 20 |
| **Practical teaching** |  | **Oral examination** | 60 |
| **Teaching colloquia** | **20** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |