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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | Faculty of Electrical Engineering |
| **GENERAL INFORMATION** |
| Study program  | Electrical Engineering and Computing |
| Study Module (if applicable) | Telecommunications |
| Course title | Antennas and propagation |
| Level of study | [ ] Bachelor [ ]  Master’s [x]  Doctoral |
| Type of course | [ ]  Obligatory [x]  Elective |
| Semester  |  [x]  Autumn [ ] Spring |
| Year of study  | 2 |
| Number of ECTS allocated | 10 |
| Name of lecturer/lecturers | Marković Vera, Dončov S. Nebojša, |
| Teaching mode |  [x] Lectures [ ] Group tutorials [ ]  Individual tutorials [x] Laboratory work [x]  Project work [ ]  Seminar [ ] Distance learning [ ]  Blended learning [ ]  Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| The acquisition of high-level theoretical and practical knowledge of radiation and reception of EM waves using antennas and EM waves propagation radiated by antennas. Independently solving practical problems in the area of the design of antennas and antenna systems. Independently solving practical problems in the area of EM wave propagation modeling in real conditions over the surface of the Earth. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Analysis of antennas and antenna arrays (analytical and numerical methods). Synthesis of antennas and antenna arrays. Software tools for analysis and synthesis of antenna, antenna arrays and antenna systems. The design procedures for different classes of antennas that have practical applications in modern wireless communication systems. Adaptive antenna structure. Advanced techniques in DOA estimation. EM wave propagation modelling. EM field prediction in different local-specific regions for different services. Neural models for electromagnetic field prediction. Numerical, empirical, neural and hybrid methods in EM wave propagation modelling. Implementation of local-specific neural and hybrid empirical-neural (HEN) models with increased prediction efficiency. |
| **LANGUAGE OF INSTRUCTION** |
| [ ] Serbian (complete course) [x]  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** |  | **Written examination** |  |
| **Practical teaching**  |  | **Oral examination** | **50** |
| **Projects** | **50** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |