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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 | Fundamentals of Microwaves |
| Level of study | [x] Bachelor [ ]  Master’s [ ]  Doctoral |
| Type of course | [x]  Obligatory [ ]  Elective |
| Semester  |  [x]  Autumn [ ] Spring |
| Year of study  | 3 |
| Number of ECTS allocated | 6 |
| Name of lecturer/lecturers | Marković V. Vera, Maleš-Ilić P. Nataša |
| Teaching mode |  [x] Lectures [ ] Group tutorials [ ]  Individual tutorials [ ] Laboratory work [ ]  Project work [ ]  Seminar [ ] Distance learning [ ]  Blended learning [ ]  Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| Acquire knowledge of the theory of EM wave propagation by transmission lines, Ability to use Smith chart in analysis / design of microwave circuits, Acquire knowledge of the wave parameters and ability to use them in the analysis and design of microwave circuits, Understand the most important structures for guiding microwaves. Ability to analyse, synthesize, and implement transmission lines in microwave devices. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Introduction. Characteristics of microwaves. Propagation by transmission lines. The characteristic parameters of transmission lines. Smith chart and its application in the analysis of microwave circuits. Techniques for impedance matching of microwave circuits. Wire conductors. Coaxial cable - characteristics, types, applications. Planar transmission lines - general characteristics and types. Microstrip lines (construction, basic principles, characteristics, types, discontinuities, analysis and synthesis). Coupled microstrip lines. Waveguides. Wave matrix. EM radiation. Application examples of microwaves.Auditory exercises. Practical work in laboratory. |
| **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** | **5** | **Written examination** | **20** |
| **Practical teaching** | **15** | **Oral examination** | **20** |
| **Teaching colloquia** | **40** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |