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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) | Applied Mathematics |
| Course title | Mathematical Models in Industry |
| Level of study | ☐Bachelor ☐ Master’s ⊠ Doctoral |
| Type of course | ☐ Obligatory ⊠ Elective |
| Semester  | ⊠ Autumn ⊠Spring |
| Year of study  | Second |
| Number of ECTS allocated | 10 |
| Name of lecturer/lecturers | Antić S. Dragan, Milojković T. Marko |
| Teaching mode |  ⊠Lectures ☐Group tutorials ☐ Individual tutorials ☐Laboratory work ☐ Project work ☐ Seminar ☐Distance learning ☐ Blended learning ⊠ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| Students should gain the ability to meet the growing needs of modern industry for the abstract models and prediction not only during the research phase but in the production process itself. Gaining knowledge of the mathematical models in the industry, their designing and applications as well as possibilities for the use of sophisticated mathematical methods to solve practical problems of the modeling in the modern industry. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Models of dynamical systems and their classification. Principles and types of mathematical modeling. The mathematical modeling of technical systems. Simplification of mathematical models. Mathematical modeling of disturbance. Modelling of industrial systems. Modeling of complex systems. Current trends in modeling of industrial systems. Modeling using orthogonal functions. Applications of genetic algorithms, fuzzy logic and neural network in the mathematical modeling in the industry. Commercial software for the modeling of industrial systems. |
| **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** | **0** | **Written examination** | **0** |
| **Practical teaching** | **0** | **Oral examination** | **50** |
| **Project** | **50** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |