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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | Faculty of Science and Mathematics |
| **GENERAL INFORMATION** |
| Study program  | **Physics** |
| Study Module (if applicable) |  |
| Course title | Modelling of gas discharges |
| Level of study | ☐Bachelor ☐ Master’s ☒ Doctoral |
| Type of course | ☐ Obligatory ☒ Elective |
| Semester  |  ☒ Autumn ☐Spring |
| Year of study  | I |
| Number of ECTS allocated | 15 |
| Name of lecturer/lecturers | Vidosav Lj. Marković |
| Teaching mode |  ☒Lectures ☐Group tutorials ☐ Individual tutorials ☐Laboratory work ☐ Project work ☒ Seminar ☐Distance learning ☐ Blended learning ☐ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| Development of analytical and numerical models for: swarms of particles at low discharge currents, plasma interaction with surfaces, tracking relaxation in gas discharges, different types of gas discharges. Application of existing analytical and numerical models. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Kinetic theory of charged particle transport in gases. Monte Carlo simulations of electron transport. Simulation of kinetics of excited states and radicals. Townsend's model of electrical breakdown. Fluid, hybrid and kinetic models of plasma. Particle In Cell model and Monte Carlo models. Modeling of the stationary glow discharges and transient regimes in gases. Modeling of RF discharges. Modeling of the plasma interaction with surfaces. Modeling of other forms of electrical discharges and breakdown mechanisms. |
| **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** |  | **Written examination** |  |
| **Practical teaching** |  | **Oral examination** | **60** |
| **Teaching colloquia** | **40** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |