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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty** |  |
| **GENERAL INFORMATION** |
| Study program  | **Physics** |
| Study Module (if applicable) | Applied and general physics |
| Course title | Plasma and Laser technology  |
| Level of study | ☐Bachelor ☒ Master’s ☐ Doctoral |
| Type of course | ☐ Obligatory☒ Elective |
| Semester  | ☒ Autumn ☐Spring |
| Year of study  | Second |
| Number of ECTS allocated | 6 |
| Name of lecturer/lecturers | Vidosav Lj. Marković/Marjan Stankov |
| Teaching mode | ☒Lectures ☐Group tutorials ☐ Individual tutorials☒Laboratory work ☐ Project work ☐ Seminar☐Distance learning ☐ Blended learning ☐ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| Student after completion of the course should be familiar with plasma and laser technologies, physical principles of their operation and their applications in various fields of technics and technology. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Plasma cleaning: advantages in relation to the wet processes, cleaning by spraying, etching and heating, types of discharge for plasma cleaning, activation of surface by plasma. Plasma surface treatment: deposition of the protective layers, thermo-chemical treatment of surface, deposition of metallic and non-metallic protective layers by gas discharges, ion implantation of metals and non-metals. Plasma technology in electronics: plasma etching, etching by ions, gas switches, vacuum switches, gas dielectrics, gas detectors for radioactive radiation, gas light sources. Processing of metals and nonmetals: cutting and heating, welding. Plasma generators, plasma reactors for technology processes and plasma technology in the energetic. Control of air pollution, getting industrial gases and processing of waste materials. The production of nitrogen oxides, hydrogen, ozone and preparation of a powder material. Inductively coupled plasma. Rocket engines. Laser technology of materials: laser technology for semiconductors, cutting, welding and drilling, cleaning surfaces, smelting, alloying, deposition of thin films and laser control of environment. |
| **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** | **10** | **Written examination** | **/** |
| **Practical teaching** | **30** | **Oral examination** | **60** |
| **Teaching colloquia** | **/** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |