|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **UNIVERSITY OF NIŠ** | | | | | | |
| **Course Unit Descriptor** | | **Faculty** | | |  | |
| **GENERAL INFORMATION** | | | | | | |
| Study program | | | | **Physics** | | |
| Study Module (if applicable) | | | | General physics | | |
| Course title | | | | Physics of ionized gases | | |
| Level of study | | | | ☐Bachelor ☒ Master’s ☐ Doctoral | | |
| Type of course | | | | ☒ Obligatory☐ Elective | | |
| Semester | | | | ☐ Autumn ☒Spring | | |
| Year of study | | | | First | | |
| 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)** | | | | | | |
| The main goal of this course is to introduce students with the physical processes in ionized gases, gas discharges, experimental methods and applications of ionized gases. | | | | | | |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** | | | | | | |
| Ionized gases in nature and in laboratory. Elastic and inelastic collisions. The most important processes of formation and decay of charged particles and emission processes on surfaces. Transport processes: drift, mobility, diffusion and thermal conductivity. Non self-sustained discharge: electrical breakdown of gases, Paschen law. Townsend and streamer breakdown. Self-sustained discharge: glow discharge, corona, arc discharge,  spark, atmospheric, vhf discharges. Basic features of plasma: oscillations, waves and radiation of plasma. Experimental methods of physics of ionized gases: current and voltage measurements, plasma probe, methods based on statistics, refractive methods, interferometry, spectroscopic diagnostics, laser absorption and induced fluorescence, microwave diagnostics, mass spectrometry. Applications of ionized gases: the gas light sources, gas lasers, gas tubes, material processing (plasma metallurgy), interaction with surfaces and applications in microelectronics and nanotechnology. | | | | | | |
| **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** | **5** | | **Written examination** | | | **/** |
| **Practical teaching** | **20** | | **Oral examination** | | | **60** |
| **Teaching colloquia** | **15** | | **OVERALL SUM** | | | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** | | | | | | |