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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | Faculty of Sciences and Mathematics |
| **GENERAL INFORMATION** |
| Study program  | **Physics** |
| Study Module (if applicable) | General Physics, Physics-Informatics |
| Course title | Field Theory |
| Level of study | ☐Bachelor ☒ Master’s ☐ Doctoral |
| Type of course | ☐ Obligatory ☒ Elective |
| Semester  |  ☐ Autumn ☒Spring |
| Year of study  | 2 |
| Number of ECTS allocated | 6 |
| Name of lecturer/lecturers | Dragoljub D. Dimitrijevic |
| Teaching mode |  ☒Lectures ☐Group tutorials ☐ Individual tutorials ☐Laboratory work ☐ Project work ☐ Seminar ☐Distance learning ☐ Blended learning ☐ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| *The purpose of the course is to familiarize the students with the basics of classical field theory and the method of their canonical quantization. After completing this course, students should have acquired knowledge of classical fields and canonical quantization method, as well as to understand the importance of group theory in the study of interacting and noninteracting systems which are described by the fields.* |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| **Relativistic quantum mechanics. Fields and Lagrangians. Symmetry groups. Space-time and internal symmetries of the fields. Noether theorem and charges. Global symmetries and conservation laws. Local symmetries. Jang-Mills theory. Spontaneous symmetry breaking and Higgs mechanism. Canonical quantisation of the fields. Fundamental interactions. Basics of quantum electrodynamics and Feynman diagrams. Basics of the standard model of particle physics and beyond.** |
| **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** | **30** |
| **Practical teaching** | **15** | **Oral examination** | **30** |
| **Teaching colloquia** | **20** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |