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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty** |  |
| **GENERAL INFORMATION** |
| Study program  | **Physics** |
| Study Module (if applicable) | **Physics and informatics** |
| Course title | **Quantum information** |
| Level of study | ☐Bachelor **X** Master’s ☐ Doctoral |
| Type of course | ☐ Obligatory **X** Elective |
| Semester  | **X** Autumn ☐Spring |
| Year of study  | **II** |
| Number of ECTS allocated | **6** |
| Name of lecturer/lecturers | **Jasmina Jeknić-Dugić** |
| Teaching mode | **X** Lectures ☐Group tutorials ☐ Individual tutorials☐Laboratory work ☐ Project work **X** Seminar☐Distance learning ☐ Blended learning **X** Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| **Introduction to basic concepts, methods and the state of the art in quantum information science. Prepare the students for independent and critical thinking.** |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| **Quantum states and ensembles. Interactions in composite systems; the Schmidt canonical form for a bipartite system. Quantum measurement and state preparation, classical information. Quantum measurement problem. Quantum indeterminism, quantum non-separability and quantum non-locality. No-cloning theorem. Generalized quantum measurements. Quantum vs. Classical information. Basic quantum algorithms. Basic quantum information processing.** |
| **LANGUAGE OF INSTRUCTION** |
| **X** 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** | **35** |
| **Practical teaching** | **10** | **Oral examination** | **35** |
| **Seminar** | **20** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |