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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** | | | | | | |