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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | Faculty of sciences and mathematics |
| **GENERAL INFORMATION** |
| Study program  | **Mathematics** |
| Study Module (if applicable) | Algebras of operators in quantum mechanics |
| Course title | Methods of mathematics in physics |
| Level of study | ☐Bachelor x ☐ Master’s ☐ Doctoral |
| Type of course | ☐ Obligatory x☐ Elective |
| Semester  |  Autumn x ☐Spring |
| Year of study  | 2 |
| Number of ECTS allocated | 7.5 |
| Name of lecturer/lecturers | Dragan S. Đorđević |
| Teaching mode |  x☐Lectures ☐Group tutorials ☐ Individual tutorials ☐Laboratory work ☐ Project work ☐ Seminar ☐Distance learning ☐ Blended learning ☐ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| *Students will master conformal mapping, analytic continuation, approximation theorems and harmonic functions.* |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| **C\*-algebras, spectrum and resolvent, positive, selfadjoint and normal elements. States. Commutative C\*-algebras****W\*-algebras, norm convergence, weak and strong convergence in the algebra of bounded operators on Hilbert spaces. Normal states and preduals.****Application: Continuous quantum systems, Fock space, relations in continuous quatum systems, Bogolubov transformation, C\*- and W\*- dynamical systems.** |
| **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** | **0** | **Written examination** | **0** |
| **Practical teaching** | **0** | **Oral examination** | **60** |
| **Teaching colloquia** | **40** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |