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| **UNIVERSITY OF NIŠ** | | | | | | |
| **Course Unit Descriptor** | | **Faculty** | | | Faculty of Science and Mathematics | |
| **GENERAL INFORMATION** | | | | | | |
| Study program | | | | **Mathematics** | | |
| Study Module (if applicable) | | | | Module in physics | | |
| Course title | | | | Integral equations and special functions | | |
| Level of study | | | | Bachelor x Master’s ☐ Doctoral | | |
| Type of course | | | | ☐ Obligatory x Elective | | |
| Semester | | | | x Autumn ☐Spring | | |
| Year of study | | | | The second year | | |
| Number of ECTS allocated | | | | 7.5 | | |
| Name of lecturer/lecturers | | | | Dijana V. Mosić | | |
| Teaching mode | | | | xLectures ☐Group tutorials ☐ Individual tutorials  ☐Laboratory work ☐ Project work ☐ Seminar  ☐Distance learning ☐ Blended learning ☐ Other | | |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** | | | | | | |
| *The students will master the techniques of solving integral equations and using special functions for solving various theoretical and practical problems.* | | | | | | |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** | | | | | | |
| **Integral equations: Basic types of linear integral equations – Volterra and Fredholm integral equations. Existence of solution. Fredholm alternative.**  **Solving and application of integral equations: Method of successive approximations. Меthod of iterated kernel - resolvent. Fredholm integral equation with degenerate kernel. Some applications of integral equations.**  **Solving integral equations applying Laplace transform.**  **Gamma and Beta functions.**  **Orthogonal polynomials: Оrthogonality, complete orthogonal system, integral representation, Rodrigues’ formula, recurrence formulae, norms and differential equations.**  **Classical orthogonal polynomials: Legendre, Chebyshev, Jacobi, Lager, Hermite polynomials, generalized polinomials.**  **Bessel functions, hypergeoremtic functions.** | | | | | | |
| **LANGUAGE OF INSTRUCTION** | | | | | | |
| xSerbian (complete course) ☐ English (complete course) ☐ Other \_\_\_\_\_\_\_\_\_\_\_\_\_ (complete course)  ☐Serbian with English mentoring ☐Serbian with other mentoring \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | |
| **ćASSESSMENT METHODS AND CRITERIA** | | | | | | |
| **Pre exam duties** | **Points** | | **Final exam** | | | **points** |
| **Activity during lectures** |  | | **Written examination** | | | **40** |
| **Practical teaching** | **10** | | **Oral examination** | | |  |
| **Teaching colloquia** | **50** | | **OVERALL SUM** | | | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** | | | | | | |