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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) | | | |  | | |
| Course title | | | | **Mathematical physics** | | |
| Level of study | | | | Bachelor  Master’s  Doctoral | | |
| Type of course | | | | Obligatory  Elective | | |
| Semester | | | | Autumn Spring | | |
| Year of study | | | | Second | | |
| Number of ECTS allocated | | | | 5 | | |
| Name of lecturer/lecturers | | | | Ivan Mančev | | |
| Teaching mode | | | | Lectures Group tutorials  Individual tutorials  Laboratory work  Project work  Seminar  Distance learning  Blended learning  Other | | |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** | | | | | | |
| To provide knowledge which is necessary for subjects from theoretical physics. Development of skills for solving theoretical problems. | | | | | | |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** | | | | | | |
| **1. Tensor theory:** Contravariant and covariant tensors, algebra of tensors, Tne fundamental and associated tensors, Cristoffel’s symbols, covariant differentiation of tensors. **2. Fourier transformation:** Dirac delta function. Properties of Fourier transformation. Bethe integral. Bessel's Inequality and Parseval's Formula. Application of the Fourier transformation. Introduction to Laplace transform.**3. Special functions:** Gamma and beta functions.Oorthogonal polynomials (Legendre, Laguerre, Hermite polynomials), Bessel functions, hypergeometric functions.  **4**. **Partial Differential Equations of Mathematical Physics:** Classification of Partial Differential Equations. Evaluations of the Hyperbolic Type. Equations of the Parabolic Type. Equations of Elliptic Type. Wave Propagation in Space. Heat Conduction in Space. Equations of Elliptic Type. | | | | | | |
| **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** | **10** | | **Written examination** | | | **30** |
| **Practical teaching** |  | | **Oral examination** | | | **40** |
| **Teaching colloquia** | **20** | | **OVERALL SUM** | | | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** | | | | | | |