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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 | [x] Bachelor [ ]  Master’s [ ]  Doctoral |
| Type of course | [x]  Obligatory [ ]  Elective |
| Semester  |  [ ]  Autumn [x] Spring |
| Year of study  | Second  |
| Number of ECTS allocated | 5 |
| Name of lecturer/lecturers | Ivan Mančev |
| Teaching mode |  [x] 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** |
| [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** | **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** |