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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) | Mathematical Models in Physics |
| Course title | Approximation Theory and Quadrature Formulas |
| Level of study | [ ] Bachelor [x]  Master’s [ ]  Doctoral |
| Type of course | [ ]  Obligatory [x]  Elective |
| Semester  |  [ ]  Autumn [x] Spring |
| Year of study  | 1 |
| Number of ECTS allocated | 7.5 |
| Name of lecturer/lecturers | Nebojša Č. Dinčić |
| Teaching mode |  [x] Lectures [ ] Group tutorials [ ]  Individual tutorials [ ] Laboratory work [ ]  Project work [ ]  Seminar [ ] Distance learning [ ]  Blended learning [ ]  Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| Mastering the concepts and motifs to approximate functions.Student is able to successfully works with fundamental concepts of the theory of approximation and quadrature formulas. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| The constructive elements and approaches in approximation theory. The concept of the best approximation and the best approximation by algebraic and trigonometric polynomials in different metrics. Basic theorems for the uniform approximation and generalization0. Weighted polynomial approximations. The concept of the best approximation to the final weight interval on the real line. The presence of isolated singularities of interior.Chebyshev systems and interpolation. The general interpolation problem. The convergence of interpolation processes in various metrics and error analysis. The theory of splines, natural cubic spline. Approximation by rational functions.Numerical differentiation and integration. Quadrature formulas with fixed and/or equidistant nodes. Generalized quadrature formulas. Gaussian quadratures. |
| **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** | **40** |
| **Practical teaching** |  | **Oral examination** |  |
| **Teaching colloquia** | **50** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |