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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) | General mathematics |
| Course title | Mathematical analysis 3 |
| Level of study | x☐Bachelor ☐ Master’s ☐ Doctoral |
| Type of course | x☐ Obligatory ☐ Elective |
| Semester  |  x☐ Autumn ☐Spring |
| Year of study  | 2 |
| Number of ECTS allocated | 8 |
| Name of lecturer/lecturers | Dragana Cvetković-Ilić / Jovana Milošević |
| Teaching mode |  x☐Lectures ☐Group tutorials ☐ Individual tutorials ☐Laboratory work ☐ Project work ☐ Seminar ☐Distance learning ☐ Blended learning ☐ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| *Acquiring general knowledge in as well as enabling students to successfully apply it when needed in other courses.* |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| **Structure of the set Rn:** Euclidian n dimensional space. Sequences in Rn. Sets in Rn. Compact set in Rn .**Limit value and continuity of the function:** Function. Limit value of the function. Repeated limit value. Continuity of the functions. Continuity of the composition of the functions. Continuity of the composition of the continuous function. Continuity of the function on the set. Uniform continuity.**Differential function:** Differential of the function. Differential of the function by the direction. Partial differential. Differentiability of the function. Differential of the compound function. Invariant form of the differential. Differential of the higher order. Teylor formula. **Extreme value of the function:** Necessary conditions for the extreme value of the function. Sufficient conditions for the extreme value of the function**Vector function:** Continuity of the vector function. Banach theorem of fixed point. Linear mapping. Differentiability of the mapping. **Implicit function**: Definition of the implicit function. Implicit function with real value. Implicit function with vector value. Inverse mapping theorem. Rang mapping theorem. Dependent of the function. Conditional extremum. **Furier sequences:** Periodical functions. Orthogonal system. Furier coefficients. Trigonometrical Furier sequences. Convergence of Furier sequences. Criteria’s for the convergence of Furier sequences. Approximation of the continuous function by the polynoms. Bessel and Parseval inequalities. Differentiability and integrability of Furier sequences.  |
| **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** | **20** |
| **Practical teaching** | **0** | **Oral examination** | **20** |
| **Teaching colloquia** | **60** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |