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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) |  |
| Course title | Mathematical analysis 1 |
| Level of study | x☐Bachelor ☐ Master’s ☐ Doctoral |
| Type of course | x☐ Obligatory ☐ Elective |
| Semester  |  x☐ Autumn ☐Spring |
| Year of study  | 1 |
| Number of ECTS allocated | 8 |
| Name of lecturer/lecturers | Snežana Živković-Zlatanović |
| 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 basic knowledge and concepts of mathematical analysis as well as enabling students to successfully apply it in other courses.* |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Relations and functions. The field of real numbers: axioms of a field, ordered field and the completeness axiom—axioms of real numbers; inductive sets, natural numbers and principle of induction; the field of rational numbers; certain corollaries of axioms of ordered field; certain corollaries and equivalences of the completeness axiom.Real sequences: the concept of limit point of a sequence and properties; monotonic sequences; the number e; the Bolzano-Weirstrass theorem; Caushy criterion of convergence; subsequences; accumulation points, limit superior and limit inferior; the Stolz theorem. Real Functions: concept and properties of limits of functions; Caushy criterion of existence of limits; limits of monotonic functions; continuity; unifrorm continuity; the Weirstrass theorem; the Bolzano- Caushy theorem; monotonic functions and continuity; continuity of inverse functions; continuity of elementary functions; asymptotic behaviour of functions.  |
| **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** | **0** |
| **Practical teaching** | **0** | **Oral examination** | **50** |
| **Teaching colloquia** | **50** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |