|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **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** | | | | | | |