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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 | Fixed point theory and applications |
| Level of study | ☐Bachelor x ☐ Master’s ☐ Doctoral |
| Type of course | ☐ Obligatory x☐ Elective |
| Semester  | x☐ Autumn ☐Spring |
| Year of study  | 1 |
| Number of ECTS allocated | 7.5 |
| Name of lecturer/lecturers | Dejan Ilić / Marija S. Cvetković |
| 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 and concepts of Fixed point theory, as well as enabling students to successfully apply it when needed in other courses.* |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| **Contractive mappings on metric spaces**The fixed point theorems of Banach, Kannan, Chatterjee and Zamfirecsu; the Meir-Keeler theorem, generalized contractions of Ćirić, Reich's theorem, results of Hardy and Rogers, Ćirić's quasicontraction, the theorem of Jungck, the results of Das and Naik, a theorem of Sesse, a theorem of Fisher.**Contractive mappings of local type at a point**The theorem of Sehgal, results of Guseman, results of Ćirić, the theorem of Ray and Roades, the theorem of Matkowski.**Applications of fixed point theory**Existence of solutions of ordinary equations and systems of linear equations in several unknowns, applications in the theory of differential and integral equations. |
| **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** | **30** |
| **Practical teaching** | **0** | **Oral examination** | **30** |
| **Teaching colloquia** | **40** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |