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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** | | | | | | |