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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | Faculty of Science and Mathematics |
| **GENERAL INFORMATION** |
| Study program  | **Mathematics** |
| Study Module (if applicable) |  |
| Course title | Introduction to Ordinary Differential Equations |
| Level of study | ☒Bachelor ☐ Master’s ☐ Doctoral |
| Type of course | ☒ Obligatory ☐ Elective |
| Semester  |  ☐ Autumn ☒Spring |
| Year of study  | III |
| Number of ECTS allocated | 7.5 |
| Name of lecturer/lecturers | Jelena V. Manojlović |
| Teaching mode |  ☒Lectures ☐Group tutorials ☐ Individual tutorials ☐Laboratory work ☐ Project work ☐ Seminar ☐Distance learning ☐ Blended learning ☐ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| *Introduce students to the basics of theory of first order and higher order ordinary differential equations as well as to analytical methods of solving different types of first order differential equations and linear differential equations of order n.*  |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| **First order differential equations** – Lipschitz Condition and Picard existence and uniqueness theorem, the Ascoli-Arzela Theorem, Peano existence theorem, Extendability of solutions; linear DE, separable DE, homogeneous DE, Bernoulli DE, Riccati DE, exact DE and integration factor; Implicit DE; applications of first order DE**Linear differential equations of order *n –*** existence and uniqueness theorem, fundamental system of solutions and general solution, constant coefficients homogeneous equation, Cauchy-Euler DE, homogenous and nonhomogeneous second order linear DE, power series solutions, reduction of order, variation of parameters |
| **LANGUAGE OF INSTRUCTION** |
| ☒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** | **10** | **Written examination** |  |
| **Practical teaching** |  | **Oral examination** | **45** |
| **Teaching colloquia** | **45**  | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |