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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 | | | | Stability Theory of Stochastic Differential Equations | | |
| Level of study | | | | ☐Bachelor ☐ Master’s x Doctoral | | |
| Type of course | | | | ☐ Obligatory x Elective | | |
| Semester | | | | x Autumn ☐Spring | | |
| Year of study | | | | II | | |
| Number of ECTS allocated | | | | 12 | | |
| Name of lecturer/lecturers | | | | Prof. dr Miljana Jovanović | | |
| Teaching mode | | | | xLectures ☐Group tutorials ☐ Individual tutorials  ☐Laboratory work ☐ Project work ☐ Seminar  ☐Distance learning ☐ Blended learning ☐ Other | | |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** | | | | | | |
| *Fundamental knowledge in stability of stochastic differential equations, stochastic functional differential equations, stochastic delay differential equations and neutral stochastic functional differential equations. Students are prepared to investigate a current theory of stability of various stochastic differential equations and to apply it in some other disciplines.* | | | | | | |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** | | | | | | |
| • Stability of stochastic differential equations in probability and the almost sure stability.  • The stochastic version of the Lyapunov's approach. Lyapunov's functionals.  • The exponentional stability: almost sure stability and moment exponential stability.  • Stochastic stabilization and destabilization.  • Stability of stochastic functional differential equations.  • Stability of stochastic differential delay equations.  • Stability of neutral stochastic functional differential equations. | | | | | | |
| **LANGUAGE OF INSTRUCTION** | | | | | | |
| xSerbian (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** |  | | **Written examination** | | | **35** |
| **Practical teaching** |  | | **Oral examination** | | | **35** |
| **Teaching colloquia** | **30** | | **OVERALL SUM** | | | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** | | | | | | |