|  |
| --- |
|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | Faculty of Sciences and Mathematics |
| **GENERAL INFORMATION** |
| Study program  | Computer Science |
| Study Module (if applicable) |  |
| Course title | Numerical Optimization |
| Level of study | [ ] Bachelor [x]  Master’s [ ]  Doctoral |
| Type of course | [ ]  Obligatory [x]  Elective |
| Semester  |  [ ]  Autumn [x] Spring |
| Year of study  | 1st |
| Number of ECTS allocated | 7 |
| Name of lecturer/lecturers | Marko Miladinovic |
| Teaching mode |  [x] Lectures [ ] Group tutorials [ ]  Individual tutorials [x] Laboratory work [x]  Project work [ ]  Seminar [ ] Distance learning [ ]  Blended learning [ ]  Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| *The purpose of this course is to learn basic techniques in numerical optimization. After attending this course student should be able to solve some unconstrained nonlinear optimization problem by using some optimization technique such as gradient descent method, Newton method, quasi Newton method as well as conjugate gradient methods.*  |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| **In this course Unconstrained optimization techniques will be studied. These methods can be divided in several groups such as Line search methods (gradient descent, Newton method), Quasi Newton methods, Newton like methods as well as Conjugate gradient methods. Concerning line search methods several known techniques for step size estimation will be considered. Also, Constrained optimization will be studied as well, with special attention to Lagrange multipliers, first order necessary and sufficient conditions for having solution. Codes will be written in MATLAB programming package.**  |
| **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** |  | **Written examination** | **25** |
| **Practical teaching** | **10** | **Oral examination** | **40** |
| **Teaching colloquia** | **25** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |