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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  |  |
| **GENERAL INFORMATION** |
| Study program  | **Computer Science** |
| Study Module (if applicable) |  |
| Course title | Computational Intelligence |
| Level of study | [ ] Bachelor [x]  Master’s [ ]  Doctoral |
| Type of course | [x]  Obligatory [ ]  Elective |
| Semester  |  [x]  Autumn [ ] Spring |
| Year of study  | 2 |
| Number of ECTS allocated | 8 |
| Name of lecturer/lecturers | Branimir Todorovic, Aleksandar Trokicic |
| Teaching mode |  [x] Lectures [ ] Group tutorials [ ]  Individual tutorials [x] Laboratory work [ ]  Project work [ ]  Seminar [ ] Distance learning [ ]  Blended learning [ ]  Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| *Introduction to basic models and algorithms of machine learning and computational intelligence* |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| **Estimators and their properties (least squares, maximum likelihood and Bayesian estimation). Bias variance dilemma. Linear deterministic classification: perceptron and support vector machine. Probabilistic generative and discriminative classifiers (binary and multinomial logistic regression). Artificial neural networks: feedforward and recurrent. Hidden Markov models. Sequential Bayesian estimation. Extended Kalman filter as neural networks training algorithm. Independent and principal component analysis. Clustering. Reinforcement learning.** |
| **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** | **20** | **Oral examination** | **30** |
| **Teaching colloquia** | **25** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |