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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | Faculty of Electronic Engineering |
| **GENERAL INFORMATION** |
| Study program  | Computing and Informatics |
| Study Module (if applicable) | Computer Engineering |
| Course title | Computational neuroscience |
| 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 | 4 |
| Name of lecturer/lecturers | Stankovic Vladimir |
| Teaching mode |  [x] Lectures [x] Group tutorials [x]  Individual tutorials [x] Laboratory work [x]  Project work [x]  Seminar [ ] Distance learning [ ]  Blended learning [ ]  Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| The students will get to know the basics of computational neuroscience and obtain the needed knowledge for application and system development which may be applied in the contemporary neuroscience. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| What is Neuroscience. What is a model. A computational theory of the brain. Neuron. Neural networks. Plasticity and learning. Associative memory. Classical conditioning. Reinforcement. Accurate Reconstruction of Neuronal Morphology. Modeling Dendritic Geometry and the Development of Nerve Connections. Modeling Simple and Complex Active Neurons. Realistic Modeling of Small Neuronal Circuits. Modeling of Large Networks. Modeling of Interaction Between Neural Networks and Musculoskeletal systems. Observation of brain activity (fMRI, EEG, TMS). Brainwaves. Brainwave states. Influencing the brainwave states. |
| **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** |  |
| **Practical teaching** | **50** | **Oral examination** | **50** |
| **Teaching colloquia** |  | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |