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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | Faculty of Electronic Engineering |
| **GENERAL INFORMATION** |
| Study program  | Electrical Engineering and Computing |
| Study Module (if applicable) | Control Systems |
| Course title | Predictive Control |
| Level of study | ☐Bachelor ☐ Master’s ⊠ Doctoral |
| Type of course | ☐ Obligatory ⊠ Elective |
| Semester  | ⊠ Autumn ⊠ Spring |
| Year of study  | Second |
| Number of ECTS allocated | 10 |
| Name of lecturer/lecturers | Mitić B. Darko |
| Teaching mode |  ⊠Lectures ☐Group tutorials ☐ Individual tutorials ☐Laboratory work ☐ Project work ☐ Seminar ☐Distance learning ☐ Blended learning ⊠ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| The purpose of the course is to provide a comprehensive knowledge of the theory of model predictive control (MPC). |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Robust model predictive control. Types of uncertainty. Feedback versus open-loop control. Nominal robustness. Robust MPC design of nonlinear systems. State estimation. Moving horizon estimation (MHE). Extended Kalman filtering. Particle filtering. Combined MHE/particle filtering. Output MPC. Linear constrained systems. Offset-free MPC. Nonlinear constrained systems. Distributed MPC (DMPC). Introduction and consideration of the existing results. Unconstrained two-player game. Constrained two-player game. Constrained M-player game. Nonlinear DMPC. Explicit control laws for constrained linear systems. |
| **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** | **0** | **Written examination** | **0** |
| **Practical teaching** | **0** | **Oral examination** | **50** |
| **Project** | **50** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |