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| **UNIVERSITY OF NIŠ** | | | | | | |
| **Course Unit Descriptor** | | **Faculty** | | | Faculty of Electronic Engineering, Niš | |
| **GENERAL INFORMATION** | | | | | | |
| Study program | | | | Electronics and Microsystems | | |
| Study Module (if applicable) | | | | Electronics | | |
| Course title | | | | Embedded System Design | | |
| Level of study | | | | ☐ Bachelor ☐ Master’s ☐ Doctoral | | |
| Type of course | | | | ☐ Obligatory ☐ Elective | | |
| Semester | | | | ☐ Autumn ☐Spring | | |
| Year of study | | | | I | | |
| Number of ECTS allocated | | | | 6 | | |
| Name of lecturer/lecturers | | | | Đorđević Lj. Goran, Stojcev K. Mile | | |
| Teaching mode | | | | ☐Lectures ☐Group tutorials ☐ Individual tutorials  ☐Laboratory work ☐ Project work ☐ Seminar  ☐Distance learning ☐ Blended learning ☐ Other | | |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** | | | | | | |
| The course objective is to teach students with methods and tools for modeling/specification, exploration, partitioning, synthesis (hardware, software, and interface), validation/verification and design of embedded systems.  After successful completion of this course, students are expected to be able to: a) model and specify embedded systems at high levels of abstraction; b) Analyze hardware/software tradeoffs, algorithms, and architectures to optimize the system based on requirements and implementation constraints. | | | | | | |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** | | | | | | |
| Introduction to embedded system design: application areas and examples, common characteristics, and challenges in embedded systems; traditional design flow, platform-based design. Specifications and modeling: requirements, models of computation, communicating finite state machines, data flow models, process networks, Petri nets, discrete-event based languages, levels of hardware modeling; comparison of models of computation. Introduction to system-level design languages: SpecC, SystemC. Transaction-Level Modeling. Evaluation and validation: performance evaluation, energy and power models, simulation, emulation, formal verification. Application mapping: problem definition, scheduling in real-time systems, hardware/software partitioning, mapping to heterogeneous multi-processors. | | | | | | |
| **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** | **10** | | **Written examination** | | | **30** |
| **Practical teaching** | **10** | | **Oral examination** | | | **20** |
| **Teaching colloquia** | **30** | | **OVERALL SUM** | | | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** | | | | | | |