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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | Electronic Engineering |
| **GENERAL INFORMATION** |
| Study program  | **Electrical Engineering and Computing** |
| Study Module (if applicable) | Electronic – Circuits and Systems |
| Course title | Advanced Virtual Instruments |
| Level of study | [x] Bachelor [ ]  Master’s [ ]  Doctoral |
| Type of course | [ ]  Obligatory [x]  Elective |
| Semester  |  [ ]  Autumn [x] Spring |
| Year of study  | 4 |
| Number of ECTS allocated | 6 |
| Name of lecturer/lecturers | Dragiša Milovanović, Marko Dimitrijević |
| 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)** |
| *Mastering the knowledge and skills to independently develop advanced virtual instruments using LabVIEW development package, implemented on real-time operating system and FPGA, as well as SCADA systems.* |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| **The concept of event-driven virtual instruments, finite state machine, error control, multithread applications, process and thread synchronization, object oriented models. Virtual instruments for data acquisition and processing in real time. Data processing on FPGA. Distributed virtual instruments. Implementation of multithread virtual instruments (VI). Process and thread synchronization. Heterogeneous code integration (IP cores, DLLs, .NET and ActiveX. Object oriented approach in VI implementation. Distributed VIs implemented using client-server model. Implementation of SCADA.** |
| **LANGUAGE OF INSTRUCTION** |
| [x] Serbian (complete course) [x]  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** | **20** |
| **Practical teaching** | **20** | **Oral examination** | **20** |
| **Teaching colloquia** | **30** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |