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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty** | **Faculty of Electronic Engineering** |
| **GENERAL INFORMATION** |
| Study program  | Electrical Power Engineering |
| Study Module (if applicable) |  |
| Course title | Computer Based Industrial Measurement Systems |
| Level of study |   Bachelor **X** ☐ Master’s ☐ Doctoral |
| Type of course |  Obligatory ☐**X** Elective |
| Semester  |  **X** Autumn ☐Spring |
| Year of study  | **First** |
| Number of ECTS allocated | **5** |
| Name of lecturer/lecturers | **Dragan B. Denic, Radenkovic N. Dragan** |
| Teaching mode | **X** Lectures **X** Group tutorials **X**  Individual tutorials**X** Laboratory work ☐ Project work ☐ Seminar**X** Distance learning ☐ Blended learning ☐ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| The goal of the course is introduction with modern industrial computer based systems. Also, covering of needed knowledge about connection methods of classical and intelligent sensors with computer, and the realisation of virtual instruments and possibility of connection of such measurement systems to the Internet. The student will be trained to realize and apply electronic circuits for measurement signal processing and sensors connection to the computer. Based on learning of programming language LabVIEW basics, the student will be trained to connect sensors using modern interface circuits and to realize some simpler examples of virtual instruments. The student will be capable to define basic characteristics and to work with modern industrial computer based measurement systems. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Introduction to computer based measurement systems; basic block diagrams of one- and multichannel measurement systems; measurements signals multiplexing; transducers and sensors in modern industrial measurement systems; development trends of sensors; integrated and smart sensors; intelligent measurement modules; measurement signal and data transmission; measurement signal conditioning circuits; two-wire transmitters; methods and systems for signal-to-noise ratio improvement; standard communication interfaces; explosion-proof instruments; grounding and shielding in automotive measurement systems, distributed measurement systems and connection to the Internet; automotive applications of telemetry systems; virtual instrumentation and LabVIEW software; industrial telemetry systems. |
| **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 65** | **Final exam**  | **Points 35** |
| **Activity during lectures** | **5** | **Written examination**  | **20** |
| **Practical teaching** | **20** | **Oral examination**  | **15** |
| **Teaching colloquia** | **40** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |