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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty** |  |
| **GENERAL INFORMATION** |
| Study program  | Mechanical Engineering |
| Study Module (if applicable) |  |
| Course title | D.3.2 I.4.25 system design for digital image processing in Mechatronics |
| Level of study | ☐Bachelor ☐ Master’s ☑ Doctoral |
| Type of course | ☐ Obligatory☑ Elective |
| Semester  | ☑ Autumn ☐ Spring |
| Year of study  | II |
| Number of ECTS allocated | 10 |
| Name of lecturer/lecturers | Aca D. Micic |
| Teaching mode | ☑Lectures ☐Group tutorials ☐ Individual tutorials☐Laboratory work ☐ Project work ☐ Seminar☐Distance learning ☐ Blended learning ☐ Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| Introduce students to the various techniques of analysis and design of modern systems for digital image processing in mechatronics. Training for the dimensioning and design of hardware for digital signal processing and digital filters to digital control of mechatronic systems. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| * System components for image processing.
* Creation and presentation of images.
* Three-dimensional images, stereo images, image formats.
* Transform images.
* Improvements and restoration of images.
* Spatial image processing techniques.
* Frequency domain methods.
* Types of noise in the image and their characteristics.
* Restoration of blurred images.
* Edge detection.
* Analysis of texture and shape of the image.
* Analysis of dynamic scenes: Detection and tracking of moving objects.
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| **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** |  | **Written examination** |  |
| **Practical teaching** |  | **Oral examination** | **100** |
| **Teaching colloquia** |  | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |