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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 | | | | Biomedical signal processing | | |
| Level of study | | | | ☐Bachelor ☐ Master’s ☐ Doctoral | | |
| Type of course | | | | ☐ Obligatory ☐ Elective | | |
| Semester | | | | ☐ Autumn ☐Spring | | |
| Year of study | | | | I | | |
| Number of ECTS allocated | | | | 5 | | |
| Name of lecturer/lecturers | | | | Stojčev K. Mile, Nikolić R. Tatjana | | |
| Teaching mode | | | | ☐Lectures ☐Group tutorials ☐ Individual tutorials  ☐Laboratory work ☐ Project work ☐ Seminar  ☐Distance learning ☐ Blended learning ☐ Other | | |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** | | | | | | |
| This course introduces students to the basic physical principles of biomedical signal processing, signal generating concepts and tools, and methods of usage the obtained results for diagnosis, treatment and surgery.  Students will acquire basic knowledge of the physiological systems, modern technologies for biomedical signal processing, signal detectors implementation, software and hardware complexity of systems for biomedical signal processing. | | | | | | |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** | | | | | | |
| Introduction to physical systems. Structure and function of the cardiovascular system, endocrine system, nervous system, vision system, hearing system, gastrointestinal system, respiratory system. Introducing the one-dimensional and multidimensional signals. Digital image signal presentation, quality evaluation, basic operation and signal detectors in: 1) radiograph, 2) X-ray computer tomography, 3) magnetic resonance, 4) nuclear medicine, 5) ultrasonic signals processing. Medical image analysis, image reconstruction, image fusion, image details enhancement, restoring image. Visualization for diagnosis and therapy. The complexity of hardware and software resources for biomedical signal processing.  Elaboration of standards for digital storage of biomedical signals. Biomedical image signal filtering. Recovery and details enhancement of biomedical signals. | | | | | | |
| **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** | | | **20** |
| **Practical teaching** | **20** | | **Oral examination** | | | **20** |
| **Teaching colloquia** | **30** | | **OVERALL SUM** | | | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** | | | | | | |