



# UNIVERSITY OF NIŠ

**Course Unit Descriptor**

**Faculty**

## GENERAL INFORMATION

Study program	Mechanical Engineering
Study Module (if applicable)	
Course title	D.2.3-1.3.18 DIGITAL AND ANALOG INFORMATION PROCESSING IN MECHATRONIC SYSTEMS
Level of study	<input type="checkbox"/> Bachelor <input type="checkbox"/> Master's <input checked="" type="checkbox"/> Doctoral
Type of course	<input type="checkbox"/> Obligatory <input checked="" type="checkbox"/> Elective
Semester	<input type="checkbox"/> Autumn <input checked="" type="checkbox"/> Spring
Year of study	I
Number of ECTS allocated	10
Name of lecturer/lecturers	Aca D. Micic
Teaching mode	<input checked="" type="checkbox"/> Lectures <input type="checkbox"/> Group tutorials <input type="checkbox"/> Individual tutorials <input type="checkbox"/> Laboratory work <input type="checkbox"/> Project work <input type="checkbox"/> Seminar <input type="checkbox"/> Distance learning <input type="checkbox"/> Blended learning <input type="checkbox"/> Other

## PURPOSE AND OVERVIEW (max. 5 sentences)

Introduce students to the various techniques of digital and analog information processing to digital control of mechatronic systems. 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)

- Introduction to operational amplifiers .
- Basic circuits with operational amplifiers .
- Active filters .
- Oscillators and timers.
- Voltage regulators .
- Amplifiers for special purposes .
- Analog switches .
- Measurement and control circuits .
- Fundamentals of digital signal processing.
- Continuous signals .

- Discrete signals .
- AD and DA converters.
- Continuous transformations of discrete signals.
- Hardware for digital signal processing .
- Design of digital filters .
- IIR filter .
- FIR filter .
- Examples of digital filters .
- Examples of digital control of mechatronic systems.

#### 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