



# UNIVERSITY OF NIŠ

**Course Unit Descriptor**

**Faculty**

Faculty of Mechanical Engineering

## GENERAL INFORMATION

Study program	<b>Mechanical Engineering</b>
Study Module (if applicable)	-
Course title	Б.8.3-И.17-10- Intelligent control
Level of study	<input checked="" type="checkbox"/> Bachelor <input type="checkbox"/> Master's <input 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	IV
Number of ECTS allocated	5
Name of lecturer/lecturers	Vlastimir D. Nikolić
Teaching mode	<input checked="" type="checkbox"/> Lectures <input type="checkbox"/> Group tutorials <input type="checkbox"/> Individual tutorials <input checked="" type="checkbox"/> Laboratory work <input checked="" type="checkbox"/> Project work <input checked="" 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 basic techniques which are implemented in the design of the intelligent control systems, especially fuzzy logic, neural networks, genetic algorithms and the other techniques of the computational intelligence as well as conventional adaptive control systems. The course is targeting the acquiring basic skills in the application of the computational intelligence and the theory of adaptive systems in designing of the control for intelligent technical systems with special emphasis on the efficient use of computer tools applicable to solving such tasks.*

## SYLLABUS (brief outline and summary of topics, max. 10 sentences)

1) Introduction of intelligent control. Conventional or intelligent control. 2) Adaptive control systems. 3) Recursive algorithms for estimation of parameters of models in the open loop (gain distribution), an adaptation in closed loop (the systems with a reference model and self-tuning controllers). 4) Kalman filters. 5) Fuzzy control. 6) Neural networks. 7) Genetic algorithms. 8) Simulation and physical implementation of intelligent control in 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**

<b>Pre exam duties</b>	<b>Points</b>	<b>Final exam</b>	<b>points</b>
<b>Activity during lectures</b>	<b>10</b>	<b>Written examination</b>	<b>25</b>
<b>Practical teaching</b>	<b>10</b>	<b>Oral examination</b>	<b>25</b>
<b>Teaching colloquia</b>	<b>30</b>	<b>OVERALL SUM</b>	<b>100</b>

**\*Final examination mark is formed in accordance with the Institutional documents**