UNIVERSITY OF NIŠ

Course Unit Descriptor	Faculty	Faculty of Mechanical Engineering

GENERAL INFORMATION	
Study program	Mechatronics and Control
Study Module (if applicable)	-
Course title	Advanced control systems
Level of study	☐Bachelor ☒ Master's ☐ Doctoral
Type of course	☐ Obligatory☒ Elective
Semester	☐ Autumn ☒Spring
Year of study	I
Number of ECTS allocated	6
Name of lecturer/lecturers	Vlastimir D. Nikolić
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 basics of the analysis and design of the complex contemporary control systems, especially nonlinear and optimal control systems.
The course is targeting the solving problems in the domain of the development of the complex control systems.

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

1) Nonlinear automatic control systems. 2) Methods for analysis of nonlinear automatic control systems. 3) Lyapunov methods. 4) Popov's frequency method. 5) Harmonic linearization. 6) A *natural nonlinearity systems, deliberately introduced nonlinearity systems (relay systems; variable structure systems). 7) Optimal control systems. 8) Method of dynamic programming. 9) Continuous linear square optimal regulators. 10) Projecting of the observer.*

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**	**25**
Practical teaching	**10**	**Oral examination**	**25**
Teaching colloquia	**30**	**OVERALL SUM**	**100**
***Final examination mark is formed in accordance with the Institutional documents**			