



UNIVERSITY OF NIŠ

Course Unit Descriptor

Faculty

Faculty of Mechanical Engineering

GENERAL INFORMATION

Study Program	Mechanical Engineering		
Study Module (if applicable)	-		
Course Title	Computer Aided Analysis and Design of Control Systems		
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 checked="" type="checkbox"/> Autumn	<input type="checkbox"/> Spring	
Year of Study	III		
Number of ECTS Allocated	6		
Name of Lecturer/Lecturers	Žarko Čojbašić		
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 basics of digital systems and signals, basics of computer technology, software support for analysis and design of control systems as well as with application of control computers in industry and technical systems. Provide students with knowledge about structure, principles of analysis and synthesis of digital systems, computer hardware and its application in control systems, as well as application of computers for analysis and design of control systems and at different levels of production automatization (CAD, CAM, CAE, and other concepts) and building of complex distributed computer systems (SCADA and DCS systems).

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

Theoretical lectures * Computer aided analysis and design of control systems. Specialized software packages. Development of control systems by “rapid prototyping” techniques. * Matlab and its toolboxes for control systems analysis and design. * Basics of LabView package and its application in analysis, design and implementation of control systems. * Problems of control of complex technological processes. Role of computers in process control. * Centralized control. Distributed control. Hierarchical control. * Choice of computers for real time control. Input output devices. Software support for real time control. Coupling of computers with technological processes. * Application of PLC controllers in process control. Application of computers in process industry, in modern CNC systems and in control of communal systems. Control systems based on PC hardware. Industrial PCs. Architectures of programmable industrial controllers and PLCs. Software support for PLC and PAC controllers based control.

Practice * Computer aided analysis and design of control systems. * Individual development of simple control systems by application rapid control prototyping.

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