MM3451

Study program / course: Mechanical Engineering

Type and level of study: Master academic studies

Course: Industrial computer systems

Lecturers: Milan S. Matijevic, Jasna J. Radulovic, Milan D. Eric, Miladin Z. Stefanovic, Petar M. Todorovic

Status of course: Elective for modules M5 and M7, III semester

Number of ECTS: 6

Prerequisite: none

The course objective: Understanding of implementation of modern computer technologies in modern industrial systems, starting from structure and implementation of process computers and microcontrollers in measurement systems and control, their networking and communication, up to concept of computer integrated manufacturing and usage of computer systems in planning and monitoring of production.

The course outcome: Course combines general theory of process computers and building skills of their usage and system integration. The main accent is on implementation and programming of programmable logical controllers, (frequent regulators), human machine interfaces and industrial computers network. Course gives detailed overview of concepts, structure and usage of: SCADA systems, CAD, CAM, CAE, and CIM systems.

Syllabus:

Theory:

1. Introduction 2. Overview of general concepts of digital computers, 3. Introduction in architecture of micro computers 4. Intel x86. 5. Connection of computers with external devices, 6. Connection of micro computers with industrial processes 7. Microcontrollers, 8. Introduction to systems for operation in real time 9. Introduction in computer networks, 10. Industrial computers system for sequential control 11. Industrial computes and systems for motion control 12. SCADA systems, 13. Flexible automatic systems, 14. Computers in production – CAD, CAM, CAE concepts, 15. CIM systems.

Practice:

Theoretical classes will be followed by auditoria lecturing and laboratory exercises. In the research study, students will be trained for general research in the field of the course.

Recommended reading:

1. Matijevic M., Jakupovic G. Car J.: Computer added measurement and control, Faculty of Mechanical Engineering, Kragujevac, 2005

The number of hours of active teaching:				Other classes:
Theory: 3	Practical classes: 1.4	Other forms of teaching: 0.6	Research study: 0	1

Methods of teaching

Classical, frontal lecturing combined with individual and group approach using modern education equipment. Evaluation of knowledge: tests and seminars.

Evaluation of knowledge (maximal 100 points)

Pre-final exam obligations	**Points**	**Final exam**	**Points**
Activities during the classes	5	Final exam	50
Activities during the exercises	-		
Tests:		.....	
Seminars:	45		