Course Unit Descriptor

Study Programme: Computing and Control Engineering

Course Unit Title: Distributed Control Systems

Course Unit Code: AU502

Name of Lecturer(s): Čapko Darko

Type and Level of Studies: Master Academic Degree

Course Status (compulsory/elective): compulsory

Semester (winter/summer): winter

Language of instruction:english

Mode of course unit delivery (face-to-face/distance learning): face-to-face

Number of ECTS Allocated:6

Prerequisites: none

Course Aims:

Students get theoretical and practical knowledge about distributed control systems.

Learning Outcomes:

Outcomes are the knowledge, skills and abilities necessary for an understanding of the complexity of distributed systems, with emphasis on automatic control systems, real-time systems and critical infrastructural systems. Students will learn the paradigms and principles of such systems and they will be able to solve engineering problems, use existing distributed systems, as well as to participate in the development of new applications for distributed systems.

Syllabus:

Introduction to distributed control systems – DCS (definitions, characteristics, architecture). Communication subsystem (function, communication networks, protocols, realization). DCS in the automation of processes and plants (hierarchical levels, data bases, DCS realization, human machine interface, supervisory control and data acquisition systems – SCADA). Communications in industry and characteristics of industrial communication networks. Operation of DCS in real time. Closed loop control over communication network. open DCS and subsystem integration.

Required Reading: Relevant literature in English TBD

Weekly Contact Hours:2	**Lectures:2**	**Practical work:0**

Teaching Methods:

Lectures, computer and laboratory practice, consultations. The theoretical part of the course is examined orally by students` answering problem questions. The oral part is worth 30 points and is based on a set of exam questions. The practical part of the exam is taken in the computer laboratory (colloquium) and through homework assignments. The final grade is formed on the basis of the results of the colloquium and the programming tasks, the quality of the homework and the oral part of the exam.

Knowledge Assessment (maximum of 100 points):100

Pre-exam obligations	points	**Final exam**	points
Group Assignment		Examination Assignment	
Exercises			
Test			
Test			

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam,

project presentation, seminars, etc.