

SYLLABUS

1. Course title:

Distributed Automation Systems

2. Code:

AR305

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course: Mandatory Elective**6. Prerequisites:**

[AR207] Design of Microprocessor Based Systems

7. Class restrictions:**8. Duration / semester:**

1

7

9. Weekly contact hours:

9.1. Lectures:

3

9.2. Seminars:

0

9.3. Laboratory/Practice classes:

2

10. Faculty:

Faculty of Electrical Engineering

11. Department/study program:

Electrical Engineering and Computer Science

12. Lecturer:

Ph.D. Naser Prljača, full professor

13. Lecturer's e-mail:

naser.prljaca@untz.ba

14. Web site:

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15. Course aims:

The course aims at presenting modern distributed automation systems and principles of their design, as well as achieving a fundamental understanding of the importance of integration of autonomous computer control systems.

16. Learning outcomes:

The student will master capabilities of modern distributed automation systems. The student should be capable of conceptual development, design and implementation of DAS of moderate complexity.

17. Course content:

A hierarchical concept of process and manufacturing automation. The concept of distributed computer control systems, horizontal and vertical integration of control systems. Open communication protocols for control and sensor networks. ISO / OSI seven-layer reference model of communication, reduced the ISO / OSI layers. UDP / TCP / IP protocol stack. Socket API. Industrial wired and wireless networks and protocols (PROFIBUS, PROFINET, CAN, LIN, LonWorks, WiFi, ZigBee). The choice of networks for specific applications (field level, cell level, plant level). Architecture of modern distributed automation systems. PLC (programmable logic controllers) based automation systems. Hardware modules, system software and application software. IEC 61131 and IEC 61449 standards. The development of control applications. SCADA/HMI systems. Other distributed computer control systems and control software development. Concepts IoT (Internet of Things) and CPS (Cyber Physical Systems).

18. Learning methods:

Empty box for learning methods.

19. Assessment methods:

Empty box for assessment methods.

