POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

pl. M. Skłodowskiej-Curie 5, 60-965 Poznań

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Networks and Vizualization in Automation

Course

Field of study	Year/Semester
Mechatronics	1/2
Area of study (specialization)	Profile of study
Mechatronic design	practical
Level of study	Course offered in
Second-cycle studies	polish
Form of study	Requirements
full-time	elective

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
15	15	0
Tutorials	Projects/seminars	
0	0	

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

dr inż. D. Sędziak

e-mail: dariusz.sedziak@put.poznan.pl

tel. 61 665 22 55

Wydział Inżynierii Mechanicznej

ul. Piotrowo 3, 60-965 Poznań

tel.: 061 665 23 62

Responsible for the course/lecturer:

Prerequisites

The student learned the basics of electronics, basics of automation, elements of mechatronics, drives and sensors, automation and supervision of machines

Course objective

To learn the technique of PLC work in industrial networks, the basics of design and application of visualization interfaces on HMI panels and computer systems.

Course-related learning outcomes

Knowledge

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The student has expanded knowledge about the construction of PLC controllers and controllers based on PCs and knowledge of the rules for connecting these controllers. He learns how to create visualizations and supervise an industrial process.

Skills

The student is able to visualize for a given technological process. Can connect process controller with visualization. He knows the basic ways of cooperation of industrial devices in the network, can configure the selected connection.

Social competences

The student understands the need for lifelong learning; can inspire and organize the learning process of others. Is aware of the role of automation in modern economy and its importance for society and the environment. Is able to set priorities for the implementation of a specific task.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Credit based on a written exam consisting of 3-4 general questions in the subject (<50% - ndst, 50-60%: dst 60-70% -dst +, 70-80: db, 80-90: db +, > 90% - very good)

Laboratory: Assessment based on oral or written answers from the content of the exercise and the assessment of passing reports on each exercise. Passing from the laboratory is done after meeting both criteria.

Programme content

Fundamentals and standards of data exchange between PLCs and external devices - hardware and software layer. Overview of industrial networks (e.g. CAN, ProfiBus, Modbus) and the principles of connecting and configuring network components. Serial communication standards (RS 232 and 485, USB, Ethernet and Internet) and elements of wireless communication (e.g. GPRS, modems and radiomodems, Bluetooth). Introduction to visualization techniques, creating and managing user windows, creating and managing variables. User interface objects. Work with alarms and events. Current and historical trends. Networking.

Teaching methods

Lecture: multimedia presentation illustrated with examples

Laboratory: Topics implemented in groups in teaching positions,

Bibliography

Basic

1.   Sterowniki PLC w praktyce inżynierskiej, Kwaśniewski J., BTC, Legionowo, 2008

2.   Wonderware Intouch- Podręcznik użytkownika, Praca zbiorowa, Invensys systems

3. Pierwsze kroki z Simatic S7-1200, Wydawnictwo Siemens, 2014

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Additional

1. Materiały dodatkowe, udostępniane przez producentów (Siemens, Omron)

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	20	1,0

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[1] delete or add other activities as appropriate