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
Visualization of production processes

Course

Field of study
Construction and operation of means of transport

Year/Semester
3/6

Area of study (specialization)
Industrial Mechatronics

Profile of study
general academic

Level of study
First-cycle studies

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
30	30	0

Tutorials	Projects/seminars	
0	0	

Number of credit points

3

Lecturers

Responsible for the course/lecturer:

Ph.D Eng. Jan Górecki

email: jan.gorecki@put.poznan.pl

Tel. 61-665 2053

Faculty of Mechanical Egineering

Responsible for the course/lecturer:

Prerequisites

KNOWLEDGE: Knowledge of the use of PLC controllers in thought and methods of their programming acquired during previous classes as part of the specialization, Basic knowledge of electronics, automation and information technology gained during the first degree studies

SKILLS: Basic programming of PLC controllers, Operation of PC computers; use of the English language sufficient to understand technical texts; obtaining information from literature, the Internet, databases and other sources; can search in catalogs and on the websites of manufacturers of ready-made machine components to be used in their own projects.

SOCIAL COMPETENCE:

He understands the need and knows the possibilities of continuous training

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Is aware of the importance and understands the non-technical aspects and effects of a mechanical engineer's activity and its impact on the environment and responsibility for decisions

Is aware of the importance of professional behavior, adherence to the principles of professional ethics and respect for cultural diversity

Is aware of responsibility for their own work and is ready to comply with the rules of teamwork and responsibility for jointly performed tasks.

Course objective

During the course, the student becomes acquainted with the techniques of configuration and programming of HMI displays. He will acquire the ability to use them in his own machine while using PLC drivers.

Course-related learning outcomes

Knowledge

Has an elementary knowledge of automation systems, control algorithms, automatic machines and programming of industrial machines

Skills

He can search in catalogs and on manufacturers' websites ready-made machine components to be used in his own projects

He can design systems to control industrial devices with the use of HMI screens and PLC controllers. Can configure communication between elementary devices used in industrial systems using the ModBus / RS485 protocol

He can write basic programs in LAD

Profi design the basic automation system of an industrial device using PLCs

Social competences

Can think and act in an entrepreneurial way, incl. finding commercial applications for the created system, taking into account not only business benefits, but also social benefits of the conducted activity

Correctly identifies and resolves dilemmas related to the profession of an engineer

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

EXAM: Passed on the basis of an examination consisting of 10 single-choice general questions (for a correct answer to each question? 1 point

Grading scale:

- 0 ÷ 4 points - N / A,

- 5 - dst,

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- 6 points - dst +,

- 7 points - db,

- 8 points - db +,

- 9 ÷ 10 points - very good.

Project: Credit on the basis of the group project submitted at the end of the class, which is assessed on the basis of the evaluation sheet provided by the teacher.

Programme content

1. Types of HMI screens and methods of their operation,

2. Selection of HMI screens,

3. Data representation methods,

4. Possibilities of configuration of objects,

5. Communication methods in industrial networks,

6. Types of communication protocols,

7. Examples of the practical use of the acquired knowledge

Teaching methods

1. During lectures, a multimedia presentation is used to support the case study method, during which a problem is presented that a group of students is solving together with the support of the tutor and information provided during the lecture

2. Project - problem method: a group of 2 students solves a given problem or a problem chosen by group members. Based on the knowledge and skills acquired during studies and lectures in the subject, students prepare a project on their own during project classes.

Bibliography

Basic

1. Mikulczyński T., Automatyzacja procesów produkcyjnych, Wyd. Naukowo Techniczne, 2006

2. Kasprzyk J., Programowanie sterowników przemysłowych, Wyd. Naukowo Techniczne, 2006

3. Jakuszewski R. Programowanie Systemów SCADA, Wyd. Pracowni Komputerowej J. Skalmierskiego, 2006

Additional

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Breakdown of average student's workload

	Hours	ECTS
Total workload	87	3,0
Classes requiring direct contact with the teacher	45	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	27	1,0

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[1] delete or add other activities as appropriate