COURSE DESCRIPTION CARD - SYLLABUS

Course name
Control Engineering and computing science in industry [S1Eltech1>B-AiIwP]

Course

Field of study	Year/Semester
Electrical Engineering	3/6
Area of study (specialization)	Profile of study
–	general academic
Level of study	Course offered in
first-cycle	polish
Form of study	Requirements
full-time	elective

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
30	30	0
Tutorials	Projects/seminars	
0	0	

Number of credit points

3,00

Coordinators	Lecturers
dr inż. Jerzy Frąckowiak jerzy.frackowiak@put.poznan.pl	

Prerequisites

Knowledge of Boolean algebra, minimization of logic functions, basics of microcontrollers and programming.

Course objective

Synthesis of selected industrial control systems, development of algorithms and control programs for PLC controllers, their activation and testing.

Course-related learning outcomes

Knowledge:
Architecture, instruction list, timers, counters, S7-1200 PLC interrupts, selected PLC programming languages.

Skills:
Is able to formulate a control algorithm for combinational systems and the SFC method, uses programming languages and appropriate IT tools used in electrical engineering.

Social competences:

Is aware of the importance of own work and compliance with professional ethics, is ready to comply with the principles of team work and take responsibility for jointly performed tasks.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:
Lecture - 90 minutes final test.
Laboratory - development of the control algorithm; writing, launching and presenting the control program of an example control system.

Programme content

PLC programmable controllers: their architecture, interrupts, timers, fast counters, PTO and PWM generators, instruction list; PLC programming languages; synthesis of control systems in the traditional and SFC approach, control algorithms of sample industrial systems, their SFC diagrams and control programs.

Teaching methods

Lecture: multimedia presentation illustrated with examples given on a blackboard.
Laboratory exercises: multimedia presentation, presentation illustrated with examples given on a blackboard, and performance of tasks given by the teacher - practical exercises.

Bibliography

Basic
Seta Z. , Wprowadzenie do zagadnień sterowania, Wydawnictwo Mikom, Warszawa 2002.
Kamiński K., Programowanie w Step 7 Microwin, GRYF, Warszawa 2006.
Dokumentacja sterownika S7-1200 firmy Siemens.
Additional

Breakdown of average student's workload

	Hours	ECTS
Total workload	90	3,00
Classes requiring direct contact with the teacher	60	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00