STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
Programmable logic controllers	**1010311371010321903**

Field of study	Profile of study (general academic, practical)	Year /Semester
Electrical Engineering	**(brak)**	**4 / 7**
Elective path/specialty: **Microprocessor's Control Systems in**	Subject offered in: **Polish**	Course (compulsory, elective): **obligatory**
Cycle of study: **First-cycle studies**	Form of study (full-time,part-time): **full-time**	

No. of hours	No. of credits
Lecture: **15** Classes: **-** Laboratory: **15** Project/seminars: **15**	**5**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
(brak)	**(brak)**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**5 100%**

Responsible for subject / lecturer:

dr inż. Michał Krystkowiak
email: Michal.Krystkowiak@put.poznan.pl
tel. +48616652388
Electrical
Piotrowo 3a, 60-965 Poznan

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	He knows the rules and parameters of programmable logic controllers PLC. He knows the tools and runtime systems selected PLC programming languages??. Basic knowledge of automation.
2	**Skills**	Know how to program and operate at a general level programmable logic controllers.
3	**Social competencies**	He can think and act in an entrepreneurial manner in the design of industrial automation systems

Assumptions and objectives of the course:

Getting familiar with the operation, maintenance and programming of PLCs. Acquisition of the ability to design industrial automation systems.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Should be able to: describe the principles of operation of real-time systems, including systems based on programmable logic controllers PLC and indicate their industrial applications - [-]
2. Should be able to: choose programming languages??, tools, runtime and communication protocols PLC - [-]

Skills:

1. Will be able to: apply knowledge of such industrial automation to develop and implement specific algorithms PLC - [-]
2. Will be able to: apply the selected simulation tools and development environments to support design automation systems - [-]

Social competencies:

1. He can think and act in an entrepreneurial manner in the design of electronic systems-processor - [-]

Assessment methods of study outcomes

Lecture:

? assess the knowledge and skills listed on the written exam with a test and problematic, continuous evaluation for each course (rewarding activity and quality perception)

Design classes and laboratory exercises:

? test and favoring knowledge necessary for the accomplishment of problems in the area of tasks in the laboratory,

? continuous evaluation, rewarding gain skills they met the principles and methods

? assess the knowledge and skills related to the implementation of laboratory exercises, the evaluation report made ??exercise.

Get extra points for the activity in the classroom, and in particular for:

? propose to discuss further aspects of the subject,

? the effectiveness of the application of the knowledge gained during solving the given problem,

? ability to work within a team performing a task specific practice in the laboratory.

Course description

The concepts of real-time system and programmable PLC. Application possibilities PLC systems. Architecture of programmable industrial controllers and their classification. Characteristics of the program cycle, programmable logic controllers. PLC runtime tools - programming languages ??(LAD, STL, FBD). Characteristics of basic PLC expansion modules. Complex systems, programmable logic controllers - communication protocols. Visualization and process control automation from a PC.

Basic bibliography:

1. Kwaśniewski J., Sterowniki PLC w pracy inżynierskiej, PTC, Kraków 2008.
2. Legierski T., Programowanie sterowników PLC, WPKJS, Gliwice 1998.
3. Dokumentacja techniczna sterownika PLC Simatic S7-200 firmy SIEMENS.

Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. Lectures, labs, projects, consultation, examination	48
2. Laboratory classes, design classes, preparation for classes, reports, project	35

Student's workload

Source of workload	hours	ECTS
Total workload	70	5
Contact hours	48	3
Practical activities	35	3