

# Reconfigurable embedded logic controllers - course description

General information	
Course name	Reconfigurable embedded logic controllers
Course ID	06.0-WE-AutD-RELC-Er
Faculty	<a href="#">Faculty of Computer Science, Electrical Engineering and Automatics</a>
Field of study	Automatic Control and Robotics / Computer Control Systems
Education profile	academic
Level of studies	Second-cycle Erasmus programme
Beginning semester	winter term 2022/2023

Course information	
Semester	2
ECTS credits to win	2
Course type	optional
Teaching language	english
Author of syllabus	<ul style="list-style-type: none"><li>dr inż. Małgorzata Mazurkiewicz</li></ul>

Classes forms					
The class form	Hours per semester (full-time)	Hours per week (full-time)	Hours per semester (part-time)	Hours per week (part-time)	Form of assignment
Lecture	15	1	-	-	Credit with grade
Laboratory	15	1	-	-	Credit with grade

## Aim of the course

To develop skills in design and programming of reconfigurable logic controllers.

## Prerequisites

## Scope

Introduction. The structure of a modular, reconfigurable, built-in logic microcontroller. Basics of embedded controller design. Programming and configuring the logic microcontroller.

Control system response times. Configuring controller functional blocks in accordance with international IEC standards. Secure system logic controller. Microprogrammed controllers in reactive systems with increased security.

## Teaching methods

Lecture, laboratory exercises.

## Learning outcomes and methods of theirs verification

Outcome description	Outcome symbols	Methods of verification	The class form
Is able to use extended knowledge in the field of analysis and synthesis of complex control systems to design efficient systems regulation and test such systems.		<ul style="list-style-type: none"><li>carrying out laboratory reports</li></ul>	<ul style="list-style-type: none"><li>Laboratory</li></ul>
Can creatively use properly selected programming environments, simulators and computer aided design tools for simulation, design and integration of simple robotics and automation systems.		<ul style="list-style-type: none"><li>an ongoing monitoring during classes</li></ul>	<ul style="list-style-type: none"><li>Laboratory</li></ul>
Has systematic and theoretically founded knowledge necessary to describe the methods and techniques of programming control systems based on programmable logic controllers and reconfigurable built-in logic controllers.		<ul style="list-style-type: none"><li>a test</li></ul>	<ul style="list-style-type: none"><li>Lecture</li></ul>
Has specialist knowledge regarding existing solutions and development trends in the field of digital control systems.		<ul style="list-style-type: none"><li>a test</li></ul>	<ul style="list-style-type: none"><li>Lecture</li></ul>

## Assignment conditions

- Lecture – the passing condition is to obtain a positive mark from the test.
- Laboratory – the passing condition is to obtain positive marks from laboratory exercises to be planned during the semester.

## Recommended reading

- L. A. Bryan, E. A. Bryan: Programmable controllers. Theory and Implementation, Amber Technical Pub, 2003.
- K. Collins: PLC Programming for Industrial Automation, Exposure Publishing, 2006.
- F. Bonifatti, P. Monari, U. Samperi, IEC 1131-3 Programming Methodology. Software engineering methods for industrial automated systems, CJ International, Seyssins,

## Further reading

## Notes

Modified by dr hab. inż. Wojciech Paszke, prof. UZ (last modification: 11-04-2022 09:05)

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