

Programming PLC

Course Workload		Assessment form (examination/ graded test/ ungraded test)
ECTS	Hours	
3	108	Graded test

Programmable Logic Controllers (PLCs) are automation devices designed to control various industrial systems and technological processes. In essence, they function as the "brain" of the system: following a loaded program, they collect data from sensors, control actuators, and communicate over a network with other PLCs and higher-level systems. PLC programming differs from conventional desktop application development and requires additional study. The first section of the course covers the hardware and architecture of PLCs. The second section focuses on PLC programming languages, development environments, and debugging methods. The third section is dedicated to communication buses and protocols. The fourth section addresses the integration of PLCs with peripheral devices, including their configuration and wiring schemes.

Course structure:

1. PLC Architecture

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- 1.1. Classification and Structure of PLCs
 - 1.2. Input and Output Interfaces

2. PLC Programming

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- 2.1. Development and Debugging Tools for PLCs
 - 2.2. PLC Programming Languages

3. PLC Communication Interfaces

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- 3.1. Industrial Buses and Protocols
 - 3.2. Modbus Protocol

4. Programming Peripheral Devices for PLCs

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- 4.1. HMI (Human-Machine Interface) Programming for PLCs
 - 4.2. Frequency Converter Programming
 - 4.4. Stability of discrete systems