Course: Industrial Robotics and Automation — credits: 5

Course code	ELVH19GIRA
Name	Industrial Robotics and Automation
Study year	2022-2023
ECTS credits	5
Language	English
Coordinator	J.A. Kortendijk
Modes of delivery	Project-based learning
Assessments	Industrial Robotics and Automation - Assignment

Learning outcomes

1. Student configures the parameters of an industrial robot (like TCP position and orientation, tool mass, speed, acceleration, etc.) according to its tool and application;
2. Student programs an industrial robot to perform pick-and-place activities;
3. Student programs an industrial robot to perform more complex task, like force-control and/or collaboration with a person or another robot.
4. Student recognizes Robot degrees of freedom;
5. Student understands the kinematic model of an industrial manipulator using modelling software;
6. Student identifies factors which should be considered when selecting an Industrial Robot for specific industrial applications;
7. Student differentiates between teach pendant and offline programming for industrial robots;
8. Student implements communication between two PLC’s and between industrial robot and PLC via I/Os and field buses like Ethercat, Profinet etc.;
9. Student controls pneumatic actuators and conveyor belts from a PLC and from an industrial robot;
10. Student connects different industrial sensors and is able to use their measurements in the programs of PLC and industrial robot.
11. Student implements a monitoring and control system using SCADA architecture.

Content

This course deals with industrial robotics, automation and industrial communication networks. Students will learn about programming robot manipulators to work on automated industrial setting, specification and application of different networks for transferring data in an industrial environment, and PLCs.

Included in programme(s)

Minor Industrial Automation
Exchange Industrial Automation (spring)

School(s)

Institute of Engineering

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