Industrial networks

SCHOOL
Polytech Graduate School of Engineering

CAMPUS
Belle-Beille

LEVEL
Engineering 4th year

OPEN TO EXCHANGE STUDENTS
Yes

SEMESTER
Fall (S1)

- **Degree course:** Graduate School of Engineering - Automation and Computer Engineering
- **Teaching unit:** UE 7.3 Automatique and automatisation
- **Course language:** English
- **Duration (hours):** 32
- **ECTS:** 3
- **Teacher(s):** Rémy Guyonneau

Assessment:

- [x] Continuous assessment
- [ ] Final exam

Teaching methods:

[x] Lecture course	6	hours	[ ] Case study
[ ] Tutorial course		hours	[ ] Project
[x] Practical work	26	hours	

COURSE DESCRİPTİON

General introduction to networks and industrial networks (efficiency, logical and physical topologies, OSI model),

- Semaphore principle (synchonization of PLCs),
- Profinet Network (Configuration of a network between three PLCs and remote I/O with TIP Portal software),
- CAN Bus (Serial Bus widely used, in the car industry for instance), reading and processing frames with an oscilloscope,
- Modbus TCP/IP protocol (Master/Slaves mode, SCADA systems, TCP/IP, ?).

OBJECTİVES

To present concepts and standards for industrial networks. First general theoretical notions are presented. Then, three examples are detailed: the Profinet network and the CAN and ModBus buses. Several practical works enable the students to use those networks. The documents of this course are available here: https://gitlab.u-angers.fr/cours/industrial_network_student.

PREREQUİSİTES

PLC programming, Norm for state functional charts (Grafcet)