Industrial automation

SCHOOL
Polytech Graduate School of Engineering

CAMPUS
Belle-Beille

LEVEL
3rd year Bachelor's degree

OPEN TO EXCHANGE STUDENTS
Yes

SEMESTER
Fall (S1)

- **Degree course:** Graduate School of Engineering - Automation and Computer Engineering
- **Teaching unit:** UE 5.2 Automatique and Automatisation
- **Course language:** English
- **Duration (hours):** 44
- **ECTS:** 3
- **Teacher(s):** Sébastien Lahaye

Assessment:

- [x] Continuous assessment
- [ ] Final exam

Teaching methods:

[x] Lecture course	6	hours	[ ] Case study
[x] Tutorial course	18	hours	[ ] Project
[x] Practical work	20	hours	

COURSE DESCRİPTİON

Automated system: definition, structure and components
- Sequential digital systems
- Formal representation
- Modelling and control synthesis
- Programmable logic controllers
- Hardware structure
- Programs processing - IEC 61131-3 standard: PLC programming
- Projects architecture
- Data structures
- Programming languages: SFC, LD, ST and LIST
- Motion control
- Theoretical and technical aspects (cams, speed profiles, ?)
- Hardware implementation (selection and sizing of components)
- Software implementation
- Safety
- Challenges and issues
- Integration of safety aspects in an automation project -

OBJECTİVES

Prepare students to become a privileged interlocutor, or even a member, of an automation engineering and design office, able to interact with other offices, suppliers and/or customers.

PREREQUİSİTES

Fundamentals of electricity - Number systems - Boolean algebra and simplification techniques - Combinatorial logic - Sequential logic - Basics of programming

SELECTİVE BİBLİOGRAPHY

Programmable Logic Controllers, Franck D. Petruzella, McGraw-Hill Education, 2016 - - Programmable Logic Controllers, W. Bolton, Elsevier, 2015 - - Langages de programmation pour systèmes automatisés : norme CEI 61131-3, Nicolas Jouvray, Techniques de l'ingénieur, 2008