

Module number: M3

Name of the module: Industrial Communications

Responsible: P11-KMUTNB (P8-BUU, P9 to P13)

ID	Didactic modules (Teaching materials)	Comments	THEO (D3.4)	PRAC (D3.5)	THEO hours	PRAC hours	Total of Hours	LEADER	Contributor	Interested
M3	Industrial communications	Modbus, Ethernet/IP, Profinet, IO Link, Wi-Fi, Cyber security	6	10				P11-KMUTNB	P8 BUU	P9 to P13

Total number of hours: 16h (Theory: 6h, Practice: 10h)

Aims:

The goal of the module is to give theoretical and practical information about principle, architecture, protocols, and implementations of standard industrial communication networks. The students also will have the chance to program simple control exercises with the ETAT Smart Lab.

Programme:

Lecture:

- (2h) Principle and architecture of communication networks system
- (2h) Protocols of Ethernet-based networks e.g., Modbus/TCP, Profibus/Profinet, Ethernet/IP
- (2h) Protocols of other industrial networks e.g., IO-links and wireless networks system

Practice:

- (2h) Modbus (TCP/RTU) on case study with ETAT Smart Lab
- (2h) Profibus/Profinet on case study with ETAT Smart Lab
- (2h) Ethernet/IP on case study with ETAT Smart Lab
- (1h) IO-link on case study with ETAT Smart Lab
- (3h) Wireless networks communication (near-field and far-field) with ETAT Smart Lab

Assessment method:

- Questionnaire for learning contents and using ETAT Smart Labs
- Results of theoretical pre-/post test
- Results of practical work

Prerequisites:

- Fundamentals of electric circuits
- Fundamentals of computer programming

Expected Learning Outcomes (ELOs):

- Knowing standardized industrial networks technology

- Selecting and using standardized industrial networks correctly
- Design and implementation of real-world practice