# Begin

Jukka Kortela

# General info

- Teacher
  - Jukka Kortela
  - Email: [jukka.kortela@aalto.fi](mailto:jukka.kortela@aalto.fi)
  - Phone: +358 - 40- 566 5832
  - Reception: Tue 12 – 13, room E301, Kemistintie 1

# Learning outcomes

- After completing the course, the student

- 1. Understands the structure and requirements for current plant-wide automation systems;

- 2. Is able to configure a small DCS system for lab unit processes using ABB 800xA system and information systems environment;

- 3. Knows the basics in process automation programming languages;

- 4. Understands the benefits, limitations and properties of industrial field buses and can apply this knowledge in the automation system design;

- 5. Understands the meaning of process system interfaces (OPC UA, ODBC).

# Content

- Operation of current plant-wide distributed control system (DCS) and information systems, PLC programming languages (IEC 61131-3), structure and operation of Profibus, Foundation Fieldbus and Profinet field buses.

- Design of user interfaces (HMI): events, alarms and trends.

- History data collection from processes, reporting, software interfaces in process automation (OPC UA, ODBC) and future development of field buses (Ethernet, WLAN, 5G).

- Basics in PLC programming and C# programming, configuration and deployment of traditional I/O, field buses, and information systems.

# Course

- Consists of
  - Theoretical lectures
  - Practical exercises
  - Project work

- Grading
  - Project work (p) graded 0-25p

# Course grading

| Grade | % | Points |
|-------|-----------|---------|
| 5 | 92 - 100 | 23 - 25 |
| 4 | 80 - 92 | 20 - 23 |
| 3 | 68 - 80 | 17 - 20 |
| 2 | 56 - 68 | 14 - 17 |
| 1 | 44 - 56 | 11 - 14 |

Aalto-yliopisto
Teknillinen korkeakoulu