SEMESTER	*DEPARTMENT*	*COURSE TITLE*
Seventh	*Control Engineering*	*Industrial Automation*
COURSE CODE	*HOURS* 3	*COURSE SPECIFICATIONS*
EC703	*UNITS 3*	*Theoretical Content*

Real factories consist of three main levels: Field level, Control level, and SCADA level.   All these levels were studied individually in the faculty program in different courses such as: Sensors, Control Eng., Mechatronics, PLC, and SCADA. This course (Industrial Automation) gives general integrated overview of the above three levels.
It is highly recommended to build the course contents based on a real system as a case study.

1. *Introduction to Industrial Automation:*

➢ Definition of industrial automation, block diagrams, and some real practical examples.

➢ The main three levels of industrial automation

2. **Field Level***:*

➢ Industrial Sensors, transducers and actuators

➢ Safety terms at Field level
➢ Industrial standards in Field level
➢ Switchgears.
➢ Drive Technology

3. **Communication Networks in Industrial Automation**

➢ Distributed/ Centralized control system structure.

➢ Communication Bus Standards (Fieldbus, Industrial Ethernet, Profibus, ControlBus, etc.)

➢ Wireless connections: Zigbee standard

➢ Security Issues

➢ I/O Link

4. *Control Level:*

➢ Central Control Room
➢ Decentralized I/O
➢ Networked Control Systems
➢ Special Purpose Controllers

5. **SCADA Level**

➢ Introduction.
➢ SCADA System:
  • Design Operation
  • Tracking operations
  • Faults Allocations

6. **Human Machine Interface**

➢ Interfacing standards in Industrial Automation.
➢ Wireless HMI for safety-related applications
➢ Remote Maintenance

7. **Industrial Factory Automation Design Project**

References:

K. Sharma, *Overview of Industrial Process Automation,* ISBN: 0124157793

Terry L.M. Bartelt, *Industrial Control Electronics,* ISBN: 1401862926