

Industrial Internet

Basic information of the minor

Code: ENG3058

Extent: 25 cr

Language: English

Teacher in charge: Petri Kuosmanen

Target Group: Industrial Internet -minor is suitable to all Aalto Master's degree students, but is primarily targeted to ENG, ELEC, CHEM and SCI school students.

Application procedure: To be submitted to the teacher in charge.

Quotas and restrictions: Maximum of 25 students.

Prerequisites: The applicant must have Bachelor degree in a relevant engineering program. The students are required to check that they fulfil the prerequisites for each course.

Content and structure of the minor

Background:

The concept of "Industrial Internet" has recently emerged as a topic of considerable attention in the industry both internationally and in Finland. While covering other well-known themes such as "Internet of Things" and "Cyber-Physical Systems", the level of ambition of the concept has been raised to no less than changing profoundly how the manufacturing industries base their operations to ICT by exploiting novel technologies such as sensors, actuators, wireless networks, clouds, computational modeling and simulation, and mobile user interfaces - in short, bringing manufacturing industries and their ecosystems truly to Internet age.

Industrial internet encompasses the application of information and communications technology in industry and within society for improving the efficiency of operations and the creation of new added value for customers and users. Internet and mobile technologies have changed to become generally and easily available tools with which it is ever simpler and cheaper to develop applications. Through their use, the industrial internet enables new industrial and service businesses by linking intelligent devices, and the people that use them, to analysis and decision making.

Learning outcome:

Having completed the Industrial Internet minor the student understands utilization of data as a source of innovation for added value. The student understands the business potential associated with the collected information as well as risks and responsibilities. The student is able to define Industrial Internet as part of the organizational strategy and is able to recognize the required competencies. The student understands the possibilities Industrial Internet creates for productivity improvement. In addition the student is able to operate effectively in a rapidly changing environment.

Content:

The minor is provided as joint activity of ENG, ELEC and SCI -schools. Each school offers courses of their special competence areas within the multidisciplinary scope of Industrial Internet.

Further information is available from Professor Petri Kuosmanen (petri.kuosmanen@aalto.fi)

Structure of the minor

| Code | Name | Credits |
|---|---|---------|
| Student selects 20 – 30 credits of the following courses: | | |
| CS-E5340 | Introduction to Industrial Internet | 5 |
| CS-E5360 | Systems of Systems | 5 |
| CSE-E5650 | Seminar on Enterprise Information Systems | 5 |
| CS-E5460 | Project in Embedded Systems | 5-10 |
| CS-E4000 | Seminar in Computer Science | 3-10 |
| MEC-E5002 | Mechatronics project | 10 |
| ELEC-E8001 | Embedded Real-Time Systems | 5 |

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|-------------------|-------------------------------------|----------|
| ELEC-E8408 | Embedded Systems Development | 5 |
| ELEC-A7100 | C-ohjelmoinnin peruskurssi | 5 |
| ELEC-A7150 | C++ Programming | 5 |
| ELEC-C7241 | Tietokoneverkot | 5 |
| ELEC-E7470 | Cybersecurity L | 5 |
| ELEC-E3530 | Integrated Analog Systems L | 5 |
