### Electrical and Automation Engineering, 8 - 16, module map, academic year 2016 - 2017

#### 1. period
- **Fundamentals of Automation Engineering, 15 cr**
  - Fundamentals of Automation Engineering and Logic Programming
  - Working English 1
  - Mathematics 1
  - Physics 1
  - Theoretical Electrical Engineering – DC
  - Study Skills and Introduction to Work Safety
  - Engineering Project and CAD

#### 2. period
- **Practical Automation Applications, 15 cr**
  - Automation Engineering Laboratory Works
  - Practical Finnish 1 (intl students)
  - Mathematics 2
  - Physics 2
  - Theoretical Electrical Engineering – AC
  - Engineering Project and Innovation

- **Application Software, 15 cr**
  - Programmable Logic Controller
  - Programming
  - Practical Finnish 1 (intl students)
  - Viestintä (Finns)
  - Information Security
  - Scientific Phenomena

#### 3. period
- **ICT in Automation, 15 cr**
  - Logic Programming, Programming Languages and Human Machine Interface
  - Mathematics 3
  - Physics 3
  - Telecommunication and Information Security

- **Process Automation, 15 cr**
  - Fieldbuses
  - Process Technology
  - Professional English
  - Instrumentation
  - Process Automation Mathematics

#### 4. period
- **Applied Metrology, 15 cr**
  - Metrology
  - Practical Finnish 2 (intl students)
  - Asiantuntijaviestintä 1 (Finns)
  - Working English 2
  - Mathematics 4
  - Metrology Laboratory Works
  - Electronics

- **Embedded Systems, 15 cr**
  - Microcontroller
  - CAD and Technical Documentation
  - Career Guidance
  - Application Development Environment

- **Automation and Control, 15 cr**
  - Control Engineering
  - Hydraulics and Pneumatic Systems
  - Application Development Environment and Practical Applications for PLC Programming

- **Maintenance, 15 cr**
  - Maintenance Economics
  - Reliability Centered Maintenance
  - Maintenance Information System
  - Applying Maintenance

### Notes
- **Compulsory module**
- **Profile module**