

2.7.1 Focal Subjects 3

Focal Subjects 3

Module Summary
Module code: EEIB710
Module coordinator: NN.
Credits (ECTS): 8 Points
Semester: 7. Semester
Pre-requisites with regard to content: None
Pre-requisites according to the examination regulations: Regarding to the examination regulations no pre-requisites are required
Competencies: In the focal Subjects, the students choose from the available elective subjects. The competencies result from these. It is also possible to choose from the german-language elective subjects of the EITB course.
Assessment: Results from chosen subjects

Course: Focal Subjects 3
Module code: EEIB711
Lecturer:
Scope of weekly semester hours (SWS): 8
Semester of delivery: Winter semester
Type/mode: Lecture, Elective subject
Language of instruction:
Content:
Recommended reading:

2.7.1.1. Focal Subjects 3: Industrial Internet of Things

Industrial Internet of Things

Module overview
EDP designation: EITB710A
Module Responsible(s): Prof. Dr. Philipp Nenninger
Module scope (ECTS): 5 points
Classification (semester): 7th semester
Content Requirements: Control engineering and automation technology; mathematics, fundamentals of electrical engineering, digital signal processing
Prerequisites as per SPO: According to SPO, no formal requirements are necessary.
Competencies: Participants master the basics of a process control system by <ul style="list-style-type: none"> a) Understand the mapping of continuous production processes into control systems b) Be able to integrate process components in control systems c) Be able to combine process components into a complete system to be able to design and commission complex process automation plants. Participants will be able to process analog signals in digital systems by <ul style="list-style-type: none"> d) Master the basics of signal sampling and signal processing e) Be able to apply techniques for coupling real-time and non-real-time systems. f) Understand methods for data analysis using artificial intelligence to be able to implement the entire information chain from data acquisition to real-time processing and process data evaluation in real automation systems.
Examination Credits: The students' theoretical knowledge of the lecture Digital Transformation of Automation Technology will be assessed in a written exam (duration 90 min). The students' written reports on the laboratory experiments will be assessed.
Usability: In contrast to the control technology and automation technology modules, the focus here is on the view of holistic management of production processes. Compared to the module Theory of Digital Systems, the algorithms are extended to multidimensional signals.

Course: Industrial Internet of Things
EDP designation: EIT711A
Lecturer(s): Prof. Dr. Philipp Nenninger
Scope (SWS): 2
Cycle: Winter semester
Type, mode: lecture, compulsory subject, block course
Teaching language: English
Contents: <ul style="list-style-type: none"> • Programming of non-real-time systems (tools, development processes) • Data storage (databases, cloud computing) • Integration of automation systems (MQTT, OPC, OPC UA) • Artificial intelligence methods
Recommended reading: <ul style="list-style-type: none"> • Mahnke, Leitner, Damm: OPC Unified Architecture • Beaulieu: Learning SQL

Course: Process Control Systems
EDP designation: EIT712A
Lecturer(s): Prof. Dr. Philipp Nenninger
Scope (SWS): 2
Cycle: Winter semester
Type, mode: lecture with integrated laboratory, compulsory subject, block course
Teaching language: English
Contents: Lecture process control engineering <ul style="list-style-type: none"> • Basics of process control engineering • Manufacturing Execution Systems (MES) and Supervisory Control and Data Acquisition System (SCADA) • Flow processes and recipe operation • Process management • Process control systems In the Process Control Laboratory, students complete experiment to: <ul style="list-style-type: none"> • Process modeling • Process control systems
Recommended reading: <ul style="list-style-type: none"> • Früh, Maier, Schaudel: Handbook of Process Automation, Oldenbourg, 2009 • Schuler, Hans: Litigation, Oldenbourg, 2000
Notes: In contrast to automation technology, process control technology deals with a complex multidimensional flow process.