

Course

PLTS - Process Control Technology Systems

Version: 1 | Last Change: 28.09.2019 20:55 | Draft: 0 | Status: vom verantwortlichen Dozent freigegeben

^ General information

Long name	Process Control Technology Systems
Approving CModule	PLTS_BaET
Responsible	Prof. Dr. Norbert Große Professor Fakultät IME
Level	Bachelor
Semester in the year	summer semester
Duration	Semester
Hours in self-study	78
ECTS	5
Professors	Prof. Dr. Norbert Große Professor Fakultät IME
Requirements	Process Control Planning
Language	German
Separate final exam	Yes

Final exam

Details

The students work together as project teams. Each team works independently under supervision a subject area. Here, the team gains knowledge about the theory, about the practical configuration and the use of devices in the automation of a large plant, especially for the planned SLIM plant in PLT planning.

The topics are drawn for the teams.

Each team will have a laboratory session in which every single student will get familiar with the equipment and systems related to his topic in the lab

in order to be able to demonstrate them practically and to explain their function, operation and purpose.

Datasheets, company information and helpful links to the topics are available and can be accessed. Of course, students can also do their own research.

The explanation of the devices and systems and the handling are part of an examination in the laboratory. This presentation is graded. If this does not have to be taken as passed, the advance payment for the later module examination in the form of an exam is not provided! The team also formulates technical questions for companies that use such devices and systems. Each team member contributes at least one question. The questions are evaluated.

The team then visits a user industry company and discuss the planning and deployment of their own equipment and systems.

Each student should then give their own lecture (10 min + discussion) from the topic area to inform the other listeners (specialization topic). The topics are part of the technical realization of the planned SLIM plant in PLT Planning; the reference to the system should always be established. In a topic area, it makes sense that the first lecture gives an overview and the following lectures deepen the technical details. Each lecture will then be put up for discussion. In the discussion, the clarified questions from the company are also discussed. The questions of the audience are evaluated.

At the lecture date, the slides are to be handed over as PowerPoint files. Each slide requires text formulated as a note. After all, your fellow students should be able to prepare themselves for inquiries with the help of slides and the text. The PowerPoint file with the notes is included in the assessment.

At the end of the semester, there will be an exam, which recapitulates the material of the lecture and the material of the student lectures. It will give relatively simple questions about measurement principles and the basics that have been taught. For the 33 questions there are 60 minutes of time available, documents may not be taken.

Summary of the rating and shares of the overall grade for PLT systems:

Laboratory test 33%

Lecture with

lecture,

films,

accompanying text,

Answers to questions: 33%

Questions to the lecturer

Exam 33%

Minimum standard

Passed laboratory test, lecture held and passed exam

Exam Type

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Laboratory test 33%

Lecture with

lecture,

films,

accompanying text,

Answers to questions: 33%

Questions to the lecturer

Exam 33%

^ Lecture / Exercises

Learning goals

Knowledge

Process Measurement

Structural construction

Characteristics and communication

Temperature measurement, principles by application

Pressure measurement, principles by application

Speed measuring technology, principles according to application areas

Flow measurement technology, principles according to application areas

Level measurement technology, principles according to application areas

Process control technology

Resistance and source control

electrical, hydraulic and pneumatic auxiliary energy

Construction of fittings

Lay out characteristic curves

Signals

continuous-time and discrete-time signals

Scaling for automation

Design filter

Practical control technology
Determine empirically controlled systems
Empirically designing the controller
Controller Device Technology

Programmable control technology
Specify controls using GRAFCET
Programming languages according to DIN EN 61131-3
Decision tables according to DIN 66241
States and operating modes of controllers
Control device technology

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Lecture	2
Exercises (whole course)	1
Exercises (shared course)	0
Tutorial (voluntary)	0

Separate exam

Exam Type

undefined

Details

Lecture in the lecture hall

Exam at the end of the lecture period

Minimum standard

Lecture with at least 4 ratings

In the exam at least half of the achievable points received

^ Practical training

Learning goals

Knowledge

make concepts for explosion protection

use Field device communication via HART

use Field device communication via PROFIBUS

use Field device communication via Foundation Fieldbus

Skills

using FDT/DTM via Pactware

measure parameter on Fieldbus

operate on distributed control systems

configure distributed control systems

Teamwork for the coordination of main topics of the subject areas

Show competence in dealing with technical systems in the laboratory

Prepare presentations and hold these

represent a technical subject

Represent the procedure of detailed planning

Represent advantages and disadvantages of the technology

Establish reference to sample plant from module PLTP

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Practical training	1
Tutorial (voluntary)	0

Separate exam

Exam Type

working on projects assignment with your team e.g. in a lab)

Details

Laboratory examination of the assigned subject area

Minimum standard

passed laboratory tests at least rating 4

