Technology
Arts Sciences
TH Köln

Course
BE - Operational energy management

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General information

Long name	Operational energy management
Approving CModule	BE_BaET
Responsible	Prof. Dr. Markus Stockmann Professor Fakultät IME
Level	Bachelor
Semester in the year	summer semester
Duration	Semester
Hours in self-study	60
ECTS	5
Professors	Prof. Dr. Markus Stockmann Professor Fakultät IME
Requirements	Basics of mathematic Basics of physics Basic of electrical engineering / control theory
Language	German
Separate final exam	Yes

Final exam

Details

Students will take a group examination. The examination consists of three parts:

1. Repeating and understanding: In this part the students will be asked to reproduce several contents of the lecture, regarding LO1 and LO2

2. Excercising and analyzing: In this part the students will be asked to apply the new knowledge to a new situation. Therefore, the correct approach has to be chosen. In addition in this part the students have to critically evaluate several topics from the lecture.

3. Questions regarding the project: The requirement for the examination is a not-graded practical project to achieve LO3 and LO4. Part 3 of the examination consists questions regarding the methodic approach for finding these project results and asks for evaluation of alternative project results.

Minimum standard

The students know the technical terms in the context of energy management and they use them correctly. In addition, they are able to describe the process of an energy management system and they know the basics of the standard ISO5000X. They also know the most important processes for energy transformation, their (dis)advantages and their field of application. The students are able to describe verbally the approach for energy optimisation and they are able, based on the recent state of the art, to see and describe the differences between efficient and non-efficient techniques

Exam Type

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Lecture

Learning goals

Knowledge

- Repetition of the important physical basics (energy, heat)
- Sustainability and ressource-efficiency
- Energy efficiency in privat and industrial environment
- Legal basics for the necessity of energy management
- Energy management vs. energy management systems
- ISO 5000x (eg. "Dos and Don'ts")
- Energy conversion techniques (solar, geothermal, nuclear, combined cycle plant, ...)
- BDAT in energy efficiency techniques
- Techniques for process integration (pinch analysis)
- Basics in project-work (economic efficiency calculation, ..)

Skills

- Techniques for energy optimisation / benchmarking

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Lecture	4
Tutorial (voluntary)	0

Separate exam

none

Project

Learning goals

Skills

- Working in a group project (time management, ressource management, cost estimate, research, ...)

Expenditure classroom teaching

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

Separate exam

none