Technology
Arts Sciences
TH Köln

Course
EMM - Energy Management in Interconnected Systems

Version: 1 | Last Change: 07.04.2021 11:03 | Draft: 0 | Status: vom verantwortlichen Dozent freigegeben

General information

Long name	Energy Management in Interconnected Systems
Approving CModule	EMM_MaET
Responsible	Prof. Dr. Ingo Stadler Professor Fakultät IME
Level	Master
Semester in the year	winter semester
Duration	Semester
Hours in self-study	150
ECTS	5
Professors	Prof. Dr. Ingo Stadler Professor Fakultät IME
Requirements	None
Language	German
Separate final exam	Yes

Final exam

Details

Oral Examination (50%), Presentation (25%), Paper (25%)

Minimum standard

Students understand what is necessary to ensure a stable electrical power supply and can apply appropriate methods.

Exam Type

Oral Examination (50%), Presentation (25%), Paper (25%)

Lecture

Learning goals

Skills

The students analyse the mechanisms and prerequisites for guaranteeing the stability of interconnected electrical systems by knowing the criteria influencing frequency and voltage stability in order to later be able to develop new measures in a changed energy system based on renewable energies to guarantee stability.
The students analyse the control mechanisms of today's interconnected systems by understanding the terminology, the mode of operation and the organisation of different levels of control power and control energy in order to be able to assess future measures and alternatives for their provision and develop them themselves.
The students know possibilities for sector coupling and can evaluate their use for demand response by creating and solving differential equations for solving balance problems, creating and applying numerical methods for solving non-stationary changes in storage systems in order to evaluate solutions in different time and power ranges of demand response.
Students will know and be able to evaluate energy storage technologies in a wide range of time, energy and power domains by knowing the relevant characteristics and economics to assess their use for different applications.
The students are able to name and analyse the various possibilities for establishing the reactive power balance in interconnected systems by applying the line equations for network analysis in order to be able to guarantee the voltage quality with various measures.

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Lecture	3

Separate exam

none

Project

Learning goals

Skills

Changing current projects are worked on.

Expenditure classroom teaching

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

Separate exam

none