

# Course Manual EMM

Energy Management in Interconnected Systems

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## – General information

<b>Long name</b>	Energy Management in Interconnected Systems
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<b>Approving CModule</b>	<a href="#">EMM_MaET</a>
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<b>Responsible</b>	Prof. Dr. Ingo Stadler Professor Fakultät IME
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<b>Valid from</b>	summer semester 202
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<b>Level</b>	Master
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<b>Semester in the year</b>	winter semester
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<b>Duration</b>	Semester
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<b>Hours in self-study</b>	150
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<b>ECTS</b>	5
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<b>Professors</b>	
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<b>Requirements</b>	None
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<b>Language</b>	German
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<b>Separate final exam</b>	Yes
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### Literature

### Final exam

<b>Details</b>	Oral Examination (50%), Presentation (25%), Paper (25%)
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<b>Minimum standard</b>	Students understand what is necessary to ensure a stable electrical power supply and can apply appropriate methods.
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<b>Exam Type</b>	EN mündliche Prüfung, strukturierte Befragung
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## – Lecture / Exercises

### Learning goals

<b>Goal type</b>	<b>Description</b>
Skills	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>

### Special requirements

none

<b>Accompanying material</b>	undefined
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<b>Separate exam</b>	No
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### Expenditure classroom teaching

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

## – Lecture / Exercises

### Learning goals

Goal type	Description
Skills	Changing current projects are worked on.

### Special requirements

none

### Expenditure classroom teaching

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

**Accompanying material** undefined

**Separate exam** No