

Course Manual SYE

Systems Engineering for Energy Efficiency

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– General information

Long name Systems Engineering for Energy Efficiency

Approving CModule [SYE_MaET](#)

Responsible Prof. Dr. Johanna May
Professor Fakultät IME

Valid from winter semester
2020/21

Level Master

Semester in the year winter semester

Duration Semester

Hours in self-study 78

ECTS 5

Professors Prof. Dr. Johanna May
Professor Fakultät IME

Requirements Bachelor electrical engineering, renewable energy or comparable

Language German, English if necessary

Separate final exam Yes

Literature

M. Pehnt: Energieeffizienz: Ein Lehr- und Handbuch, Springer, 1. korrigierter Nachdruck 2010, ISBN 9783642142512

M. Günther: Energieeffizienz durch Erneuerbare Energien: Möglichkeiten, Potenziale, Systeme, Springer Fachmedien Wiesbaden, 2015, ISBN 9783658067533

F. Wosnitza, H.G. Hilgers: Energieeffizienz und Energiemanagement: Ein Überblick heutiger Möglichkeiten und Notwendigkeiten, Vieweg + Teubner Verlag, 2012, ISBN 9783834886712

J. Hesselbach: Energie- und klimaeffiziente Produktion: Grundlagen, Leitlinien und Praxisbeispiele, Vieweg + Teubner Verlag, 2012, ISBN 9781280786358

Recherche über scopus, Webinare der EU (leonardo)

Final exam

Details project presentation with background documentation (50%)
oral exam (50%)

Minimum standard

project: at least 50% of
tasks from project task
completed oral exam: at
least 50% of questions
answered correctly

Exam Type

EN andere summarische
Prüfungsform

– Lecture / Exercises

Learning goals

Goal type	Description
Knowledge	electrical power measurements and thermography (lab), analyse load profiles and simulation in python, use relevant standards for evaluation of energy payback time, economic viability and life cycle analysis, overview over most frequenz energy efficiency measures (pressurized air, lighting, heat recovery)
Skills	translate functional requirements on systems and products into technical key parameters and document knowlegde, apply measurements and critically evaluate own and data from literature, find influencing factors, use creativity methods, simulate strong influence factors in functional models and evaluate potentials for improvement quantitatively, evaluate acceptance from different viewpoints

Expenditure classroom teaching

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

Special requirements

none

Accompanying material manuscript, slides

Separate exam No

– Practical training

Learning goals

Goal type	Description
Knowledge	thermography, measurement of electrical energy of more or less energy efficient consumers, measure electrical load profiles (at home), critical evaluation of measurement uncertainty

Special requirements

none

Accompanying material	instructions for lab classes, safety instructions
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Separate exam	No
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Expenditure classroom teaching

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

– Lecture / Exercises

Learning goals

Goal type	Description
Skills	apply methods of lecture to a specific (every semester newly conceived) project topic in the area of energy efficiency, work in a team

Special requirements

none

Accompanying material	project task description
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Separate exam	No
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Expenditure classroom teaching

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