

Module: Renewable Energy

Level	Bachelor	Short Name	REN
Responsible Lecturers	Töbermann, J.-Christian, Prof. Dr.-Ing		
Department, Facility	Electrical Engineering and Computer Science		
Course of Studies	Elektrotechnik - Kommunikationssysteme, Bachelor		
Compulsory/elective	Compulsory	ECTS Credit Points	5
Semester of Studies	6	Semester Hours per Week	4
Length (semesters)	1	Workload (hours)	150
Frequency	SuSe	Presence Hours	60
Teaching Language	English	Self-Study Hours	90

The following section is filled only if there is **exactly one** module-concluding exam.

Exam Type	Written Exam	Exam Language	English
Exam Length (minutes)	120	Exam Grading System	One-third Grades

Learning Outcomes	<p>Students:</p> <ul style="list-style-type: none"> • know fundamentals of the energy industry, the electrical energy system, the electrical grid, and the energy transition. • can explain and evaluate selected technologies of renewable energy generation. • can analyze and assess specific renewable energy generation installations, with focus on photovoltaics systems and wind turbines. • know definitions and concepts of smart grids and sector coupling • analyze and evaluate challenges and opportunities arising from the energy transition and sector coupling on structures and business processes in the energy industry and on the electrical grid. • apply methods and procedures for the integration of renewable generation plants into the electrical power grid and the electrical power system in a purposeful manner.
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Participation Prerequisites	
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The previous section is filled only if there is **exactly one** module-concluding exam.

Consideration of Gender and Diversity Issues	<ul style="list-style-type: none"> ✓ Use of gender-neutral language (THL standard) ✓ Target group specific adjustment of didactic methods ✗ Making subject diversity visible (female researchers, cultures etc.)
Applicability	
Remarks	

Module Course: Renewable Energy (Lecture)

(of Module: Renewable Energy)

Course Type	Lecture	Form of Learning	Presence
Mandatory Attendance	no	ECTS Credit Points	4
Participation Limit		Semester Hours per Week	3
Group Size		Workload (hours)	120
Teaching Language	English	Presence Hours	45
Study Achievements ("Studienleistung", SL)		Self-Study Hours	75
SL Length (minutes)		SL Grading System	

The following section is filled only if there is a course-specific exam.

Exam Type		Exam Language	
Exam Length (minutes)		Exam Grading System	
Learning Outcomes			
Participation Prerequisites			

The previous section is filled only if there is a course-specific exam.

Contents	<ul style="list-style-type: none"> • Energy industry, electrical energy system and electrical grid • Climate Change and energy transition • Solar Radiation • Photovoltaic • Solar thermal and concentrated solar • Wind turbines • Hydro power • Prognosis of renewable energy • Grid and system integration of renewable energy • Fundamentals of sector coupling
Literature	<p>V. Quaschnig: „Renewable Energy and Climate Change“ (most recent edition)</p> <p>Further literature will be announced in the lecture.</p>
Remarks	

Module Course: Renewable Energy (Practical Training)

(of Module: Renewable Energy)

Course Type	Practical Training	Form of Learning	Presence
Mandatory Attendance	yes	ECTS Credit Points	1
Participation Limit		Semester Hours per Week	1
Group Size	12	Workload (hours)	30
Teaching Language	English	Presence Hours	15
Study Achievements ("Studienleistung", SL)	Practical Training	Self-Study Hours	15
SL Length (minutes)		SL Grading System	Pass

The following section is filled only if there is a course-specific exam.

Exam Type		Exam Language	
Exam Length (minutes)		Exam Grading System	
Learning Outcomes			
Participation Prerequisites			

The previous section is filled only if there is a course-specific exam.

Contents	During the practical trainings, students apply what they have learned in the lecture to selected tasks and application scenarios, e.g. analyzing the behavior of photovoltaic systems and wind turbines, performing a grid integration study
Literature	See lecture.
Remarks	