

Modulbezeichnung	Regenerative Energien 1	
Semester (Häufigkeit)	4 (jedes Sommersemester)	
ECTS-Punkte (Dauer)	7 (1 Semester)	
Art	Pflichtmodul Energieeffizienz und Vertiefung Umwelttechnik, Wahlpflichtfach Chemietechnik	
Studentische Arbeitsbelastung	90 h Kontaktzeit + 120 h Selbststudium	
Voraussetzungen (laut BPO)		
Empf. Voraussetzungen		
Verwendbarkeit	BCTUT	
Prüfungsform und -dauer	Klausur 2h oder mündliche Prüfung oder mündliche Präsentation und schriftliche Dokumentation	
Lehr- und Lernmethoden	Vorlesung	
Modulverantwortliche(r)	I. Herraez	
Qualifikationsziele		
<p>The students understand the physical and working principles of wind energy, solar thermal as well as photovoltaic energy systems. They can estimate the potential of a given site for both wind energy and solar energy applications. They are familiar with the main components of wind turbines, photovoltaics and solar thermal installations and are capable to perform a basic design of all three types of systems. They are also able to design efficient hybrid energy systems combining different technologies and energy sources. The lectures will be held in English in order to promote the skills required to work in an international environment.</p>		
Lehrinhalte		
<p>Solar and wind resource, thermal and electrical energy demand, components of wind, solar thermal and photovoltaic energy systems, physics of wind and solar energy utilization, performance analysis, efficiency of wind turbines and solar collectors and photovoltaic cells, design and sizing of wind energy, solar thermal and photovoltaic systems.</p>		
Literatur		
<ul style="list-style-type: none"> • Hau, E.: Wind turbines, Springer, 2013. • Gash, R. and Twele, J.: Wind power plants, Springer, 2012 • Eicker, U.: Energy Efficient Buildings with Solar and Geothermal Resources, Wiley, 2014. • Arno Smets, Klaus Jager, Olindo Isabella. Solar Energy: The Physics and Engineering of Photovoltaic Conversion, Technologies and Systems, UIT Cambridge LTD, 2016 		
Lehrveranstaltungen		
Dozenten/-innen	Titel der Lehrveranstaltung	SWS
I. Herraez	Solar thermal energy	2
I. Herraez	Wind turbines	2
I. Herraez	Photovoltaics	2