

Module title		Abbreviation
Principles of Energy Technologies		11-ENT-092-m01
Module coordinator		Module offered by
Managing Director of the Institute of Applied Physics		Faculty of Physics and Astronomy
ECTS	Method of grading	Only after succ. compl. of module(s)
6	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew.
Contents		
Physical principles of energy conservation and energy conversion, energy transport and energy storage as well as renewable resources of energy. We also discuss aspects of optimising materials (e.g. nanostructured insulating materials, selective layers, highly activated carbons). The course is especially suitable for teaching degree students. Energy conservation via thermal insulation. Thermodynamic energy efficiency. Fossil fired energy converters. Nuclear power plants. Hydroelectricity. Wind turbines. Photovoltaics. Solar thermal: Heat. Solar thermal: Electricity. Biomass. Geothermal energy. Energy storage. Energy transport		
Intended learning outcomes		
The students know the principles of different methods of energy technology, especially energy conversion, transport and storage. They understand the structures of corresponding installations and are able to compare them.		
Courses (type, number of weekly contact hours, language — if other than German)		
R + V (no information on SWS (weekly contact hours) and course language available)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
a) written examination (approx. 90 minutes) or b) oral examination of one candidate each or oral examination in groups (approx. 30 minutes per candidate, for modules with less than 4 ECTS credits approx. 20 minutes) or c) project report (approx. 8 to 10 pages, time to complete: 1 to 4 weeks) or d) presentation/seminar presentation (approx. 30 minutes) Assessment offered: When and how often assessment will be offered depends on the method of assessment and will be announced in due form under observance of Section 32 Subsection 3 ASPO (general academic and examination regulations) 2009. Language of assessment: German, English		
Allocation of places		
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Additional information		
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Workload		
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Teaching cycle		
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**Referred to in LPO I** (examination regulations for teaching-degree programmes)

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**Module appears in**

Bachelor' degree (1 major) Physics (2010)  
 Bachelor' degree (1 major) Physics (2012)  
 Bachelor' degree (1 major) Nanostructure Technology (2010)  
 Bachelor' degree (1 major) Nanostructure Technology (2012)  
 Master's degree (1 major) Physics (2010)  
 Master's degree (1 major) Physics (2011)  
 Master's degree (1 major) Nanostructure Technology (2011)  
 Master's degree (1 major) Nanostructure Technology (2010)  
 Master's degree (1 major) FOKUS Physics - Nanostructuring Technology (2010)  
 Master's degree (1 major) FOKUS Physics (2010)  
 Master's degree (1 major) FOKUS Physics (2011)  
 Master's degree (1 major) Functional Materials (2012)