

Module title		Abbreviation
Energy Informatics 1		10-I=El1-232-m01
Module coordinator		Module offered by
holder of the Chair of Computer Science III		Institute of Computer Science
ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
Fundamentals of physical units; Fundamentals of the structure of energy systems and their components; Modeling of energy systems; Energy markets; Components of intelligent power grids and smart grids; Demand side management and flexible consumers; Virtual power plants; Sector coupling; Current research topics		
Intended learning outcomes		
Students understand the basic structure of energy systems and their components (wind and PV plants, power plants, electricity grids, consumers, storage technologies and markets). They can use modeling, simulation and optimization methods for the analysis of sustainable energy systems and are able to model energy systems with modern software tools. In addition, they are able to interpret and evaluate concepts for intelligent power grids (smart grids) as well as for the integration of renewable energies, energy storage, electric vehicles, heat pumps and other flexible loads. They will also be able to identify opportunities, risks and challenges of the energy transition as well as the role of informatics in this context.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (2) + Ü (2) Module taught in: German and/or English		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
written examination (approx. 60 to 120 minutes) If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate). Language of assessment: German and/or English creditable for bonus		
Allocation of places		
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Additional information		
Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): IN		
Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
§ 22 II Nr. 3 b)		
Module appears in		
Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Computational Mathematics (2024) Master's degree (1 major) Mathematics (2024) Master's degree (1 major) Computer Science (2025)		

