

Elective Module

Data Analysis in Energy Economics

Module Title		Data Analysis in Energy Economics			
Module Title in English		Data Analysis in Energy Economics			
Module Leader		Prof. Dr. Michael Römmich			
Teaching Staff		Prof. Dr. Michael Römmich			
Courselanguage		English / German			
Code	Workload	Credits	Semester	Semester Offered	Duration
		6	5th semester	Winter semester	1 semester
1	Type of Course Lecture including Exercise: 4h/ week	Scheduled Learning	Independent Study	Approx. Number of Participants	
2	Learning Outcomes / Competences By the end of this module, students will <ul style="list-style-type: none"> • have a basic knowledge and understanding of Excel and Python based data analysis, • be able to solve practical problems/case studies in the context of energy economics and related fields of economics, and be able to visualize data, present and defend their analysis results to a wider audience in English / German.				
3	Contents <ul style="list-style-type: none"> • Introduction to Excel and the Python environment including NumPy, Pandas, Matplotlib, etc. • Introduction to the Data Framework: Problem - Plan - Data - Analysis - Conclusion (PPDAC Cycle) • Data analysis - Case studies based on meteorological data, historical wholesale energy market price data retrieved via market information systems like Bloomberg, Montel etc. • Output based approach with focus on: statistical measures (mean, variance, correlation), regression analysis, seasonality, LCoE (levelized cost of energy), etc. Skills transfer for answering questions at the interface between the energy industry and computer science: Students learn and deepen their knowledge of Excel and Python and apply these tools for data analysis to energy industry issues.				
4	Teaching Methods <ul style="list-style-type: none"> • “seminar-style teaching” • group work 				
5	Content-Related Module Prerequisites				
6	Formal Module Prerequisites				

	<p>Prerequisites for participation must be described for each module. Which module must already have been successfully completed?</p> <ul style="list-style-type: none"> • For modules from the 5th semester onwards, the following applies: Students can only take the examinations in the Bachelor's degree program from the fifth semester (in the dual study form from the seventh semester) if they have passed all module examinations of the first and second (in the dual study form of the first to fourth) semester or if they have received appropriate credit. • The minimum number of participants is 5. •
7	<p>Type of Exam</p> <p>Processing of [4] case studies including presentation (portfolio examination) Each 25% Exam languages: English / German</p>
8	<p>Prerequisite for the Granting of Credits</p> <p>Successful completion of the case studies including presentation and passing the module examination.</p>
9	<p>This Module Appears in:</p>
10	<p>Weighting of Grade in Relationship to Final Grade</p> <p>Weighting equals the proportion of module credits in relationship to the total number of grade-relevant credits.</p>
11	<p>Additional Information / Literature</p> <p>Stuckenholz: Basiswissen Energieinformatik, Springer Vieweg, 2020.</p>