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	Titolo	Applied Data Analysis and Modeling for Energy Engineers and Scientists / / by T. Agami Reddy, Gregor P. Henze
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	ISBN	3-031-34869-9
	Edizione	[2nd ed. 2023.]
	Descrizione fisica	1 online resource (622 pages)
	Disciplina	620.00285
	Soggetti	Energy policy
		Energy and state
		Statistics
		Quantitative research
		Electric power production
		Mathematical models
		Energy Policy, Economics and Management
		Statistics in Engineering, Physics, Computer Science, Chemistry and Earth Sciences
		Data Analysis and Big Data
		Electrical Power Engineering
		Mathematical Modeling and Industrial Mathematics
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di bibliografia	Includes bibliographical references and index.
	Nota di contenuto	Mathematical Models and Data Analysis -- Probability Concepts and Probability Distributions -- Data Collection and Preliminary Data Analysis -- Making Statistical Inferences from Samples -- Linear Regression Analysis Using Least Squares -- Design of Physical and Simulation Experiments -- Optimization Methods -- Analysis of Time Series Data -- Parametric and Non-Parametric Regression Methods -- Inverse Methods for Mechanistic Models -- Statistical Learning Through Data Analytics -- Decision-Making and Sustainability Assessments.
	Sommario/riassunto	Now in a thoroughly revised and expanded second edition, this classroom-tested text demonstrates and illustrates how to apply concepts and methods learned in disparate courses such as

mathematical modeling, probability, statistics, experimental design, regression, optimization, parameter estimation, inverse modeling, risk analysis, decision-making, and sustainability assessment methods to energy processes and systems. It provides a formal structure that offers a broad and integrative perspective to enhance knowledge, skills, and confidence to work in applied data analysis and modeling problems. This new edition also reflects recent trends and advances in statistical modeling as applied to energy and building processes and systems. It includes numerous examples from recently published technical papers to nurture and stimulate a more research-focused mindset. How the traditional stochastic data modeling approaches are complemented by data analytic algorithmic models such as machine learning and data mining are also discussed. The important societal issues related to the sustainability of energy systems are presented, and a formal structure is proposed meant to classify the various assessment methods found in the literature. Applied Data Analysis and Modeling for Energy Engineers and Scientists is designed for senior-level undergraduate and graduate instruction in energy engineering and mathematical modeling, for continuing education professional courses, and as a self-study reference book for working professionals. In order for readers to have exposure and proficiency with performing hands-on analysis, the open-source Python and R programming languages have been adopted in the form of Jupyter notebooks and R markdown files, and numerous data sets and sample computer code reflective of real-world problems are available online. Applies statistical and modeling concepts and methods learned in disparate courses to energy processes and systems; Provides a broad and integrative structure meant to enhance knowledge, skills, and confidence to work in applied data analysis and modeling problems; Includes practical examples, end-of-chapter problems, case studies, and RStudio code.