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Titolo	Numerical Methods and Optimization : A Consumer Guide // by Éric Walter
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Edizione	[1st ed. 2014.]
Descrizione fisica	1 online resource (485 p.)
Disciplina	004.0151 501.511 515.64 518
Soggetti	Applied mathematics Engineering mathematics Computer science—Mathematics Calculus of variations Numerical analysis Mathematical and Computational Engineering Math Applications in Computer Science Calculus of Variations and Optimal Control; Optimization Numerical Analysis
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	From Calculus to Computation -- Notation and Norms -- Solving Systems of Linear Equations -- Solving Other Problems in Linear Algebra -- Interpolation and Extrapolation -- Integrating and Differentiating Functions -- Solving Systems of Nonlinear Equations -- Introduction to Optimization -- Optimizing Without Constraint -- Optimizing Under Constraints -- Combinatorial Optimization -- Solving Ordinary Differential Equations -- Solving Partial Differential Equations -- Assessing Numerical Errors -- WEB Resources to go Further -- Problems.

Initial training in pure and applied sciences tends to present problem-solving as the process of elaborating explicit closed-form solutions from basic principles, and then using these solutions in numerical applications. This approach is only applicable to very limited classes of problems that are simple enough for such closed-form solutions to exist. Unfortunately, most real-life problems are too complex to be amenable to this type of treatment. Numerical Methods and Optimization – A Consumer Guide presents methods for dealing with them. Shifting the paradigm from formal calculus to numerical computation, the text makes it possible for the reader to

- discover how to escape the dictatorship of those particular cases that are simple enough to receive a closed-form solution, and thus gain the ability to solve complex, real-life problems;
- understand the principles behind recognized algorithms used in state-of-the-art numerical software;
- learn the advantages and limitations of these algorithms, to facilitate the choice of which pre-existing bricks to assemble for solving a given problem; and
- acquire methods that allow a critical assessment of numerical results.

Numerical Methods and Optimization – A Consumer Guide will be of interest to engineers and researchers who solve problems numerically with computers or supervise people doing so, and to students of both engineering and applied mathematics.
