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Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (XVII, 562 p. 23 illus.)
Collana	Industrial and Applied Mathematics, , 2364-6837
Disciplina	515.7
Soggetti	Functional analysis Mathematical models Mathematical optimization Operator theory Differential equations, Partial Algorithms Functional Analysis Mathematical Modeling and Industrial Mathematics Optimization Operator Theory Partial Differential Equations
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references & index.
Nota di contenuto	Metric Spaces and Banach Fixed Point Theorem -- Banach Spaces -- Hilbert Space -- Fundamental Theorems -- Differential and Integral Calculus in Banach Spaces -- Optimisation Problems -- Operator Equations and Variational Methods -- Finite Element and Boundary Element Methods -- Variational Inequalities and Applications -- Spectral Theory with Application -- Frame and Basis Theory in Hilbert Spaces -- Wavelet Theory -- Wavelet Method for Partial Dierential Equations and Image Processing -- Wavelet Frames -- Gabor Analysis.
Sommario/riassunto	This self-contained textbook discusses all major topics in functional analysis. Combining classical materials with new methods, it supplies numerous relevant solved examples and problems and discusses the applications of functional analysis in diverse fields. The book is unique in its scope, and a variety of applications of functional analysis and

operator-theoretic methods are devoted to each area of application. Each chapter includes a set of problems, some of which are routine and elementary, and some of which are more advanced. The book is primarily intended as a textbook for graduate and advanced undergraduate students in applied mathematics and engineering. It offers several attractive features making it ideally suited for courses on functional analysis intended to provide a basic introduction to the subject and the impact of functional analysis on applied and computational mathematics, nonlinear functional analysis and optimization. It introduces emerging topics like wavelets, Gabor system, inverse problems and application to signal and image processing.