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	Edizione	[1st ed. 2017.]
	Descrizione fisica	1 online resource (XXV, 592 p. 42 illus., 40 illus. in color.)
	Collana	Texts in Computational Science and Engineering, , 1611-0994 ; ; 20
	Disciplina	511.4
	Soggetti	Computer science - Mathematics
		Differential equations
		Mathematical optimization
		Computational Mathematics and Numerical Analysis
		Ordinary Differential Equations
		Optimization
	Lingua di pubblicazione	Inglese
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	Nota di bibliografia	Includes bibliographical references and indexes.
	Nota di contenuto	1. Interpolation and Approximation -- Differentiation and Integration -- Initial Value Problems -- Boundary Value Problems -- References -- Author Index.
	Sommario/riassunto	This is the third of three volumes providing a comprehensive presentation of the fundamentals of scientific computing. This volume discusses topics that depend more on calculus than linear algebra, in order to prepare the reader for solving differential equations. This book and its companions show how to determine the quality of computational results, and how to measure the relative efficiency of competing methods. Readers learn how to determine the maximum attainable accuracy of algorithms, and how to select the best method for computing problems. This book also discusses programming in several languages, including C++, Fortran and MATLAB. There are 90 examples, 200 exercises, 36 algorithms, 40 interactive JavaScript programs, 91 references to software programs and 1 case study. Topics are introduced with goals, literature references and links to public software. There are descriptions of the current algorithms in

GSLIB and MATLAB. This book could be used for a second course in numerical methods, for either upper level undergraduates or first year graduate students. Parts of the text could be used for specialized courses, such as nonlinear optimization or iterative linear algebra.