1.	Record Nr.	UNINA9910300245503321
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	Titolo	Discrete Fractional Calculus / / by Christopher Goodrich, Allan C. Peterson
	Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2015
	ISBN	3-319-25562-2
	Edizione	[1st ed. 2015.]
	Descrizione fisica	1 online resource (XIII, 556 p.)
	Disciplina	515.625
	Soggetti	Differential equations
		Difference equations
		Functional equations
		Functions of real variables
		Differential Equations
		Difference and Functional Equations
		Real Functions
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Note generali	Bibliographic Level Mode of Issuance: Monograph
	Nota di bibliografia	Includes bibliographical references and index.
	Nota di contenuto	Preface -- 1. Basic Difference Calculus -- 2. Discrete Delta Fractional Calculus and Laplace Transforms -- 3. Nabla Fractional Calculus -- 4. Quantum Calculus -- 5. Calculus on Mixed Time Scales -- 6. Fractional Boundary Value Problems -- 7. Nonlocal BVPs and the Discrete Fractional Calculus.-Solutions to Selected Problems -- Bibliography -- Index.
	Sommario/riassunto	This text provides the first comprehensive treatment of the discrete fractional calculus. Experienced researchers will find the text useful as a reference for discrete fractional calculus and topics of current interest. Students who are interested in learning about discrete fractional calculus will find this text to provide a useful starting point. Several exercises are offered at the end of each chapter and select answers have been provided at the end of the book. The presentation of the content is designed to give ample flexibility for potential use in a myriad of courses and for independent study. The novel approach taken by the authors includes a simultaneous treatment of the

fractional- and integer-order difference calculus (on a variety of time scales, including both the usual forward and backwards difference operators). The reader will acquire a solid foundation in the classical topics of the discrete calculus while being introduced to exciting recent developments, bringing them to the frontiers of the subject. Most chapters may be covered or omitted, depending upon the background of the student. For example, the text may be used as a primary reference in an introductory course for difference equations which also includes discrete fractional calculus. Chapters 1—2 provide a basic introduction to the delta calculus including fractional calculus on the set of integers. For courses where students already have background in elementary real analysis, Chapters 1—2 may be covered quickly and readers may then skip to Chapters 6—7 which present some basic results in fractional boundary value problems (FBVPs). Chapters 6—7 in conjunction with some of the current literature listed in the Bibliography can provide a basis for a seminar in the current theory of FBVPs. For a two-semester course, Chapters 1—5 may be covered in depth, providing a very thorough introduction to both the discrete fractional calculus as well as the integer-order calculus.