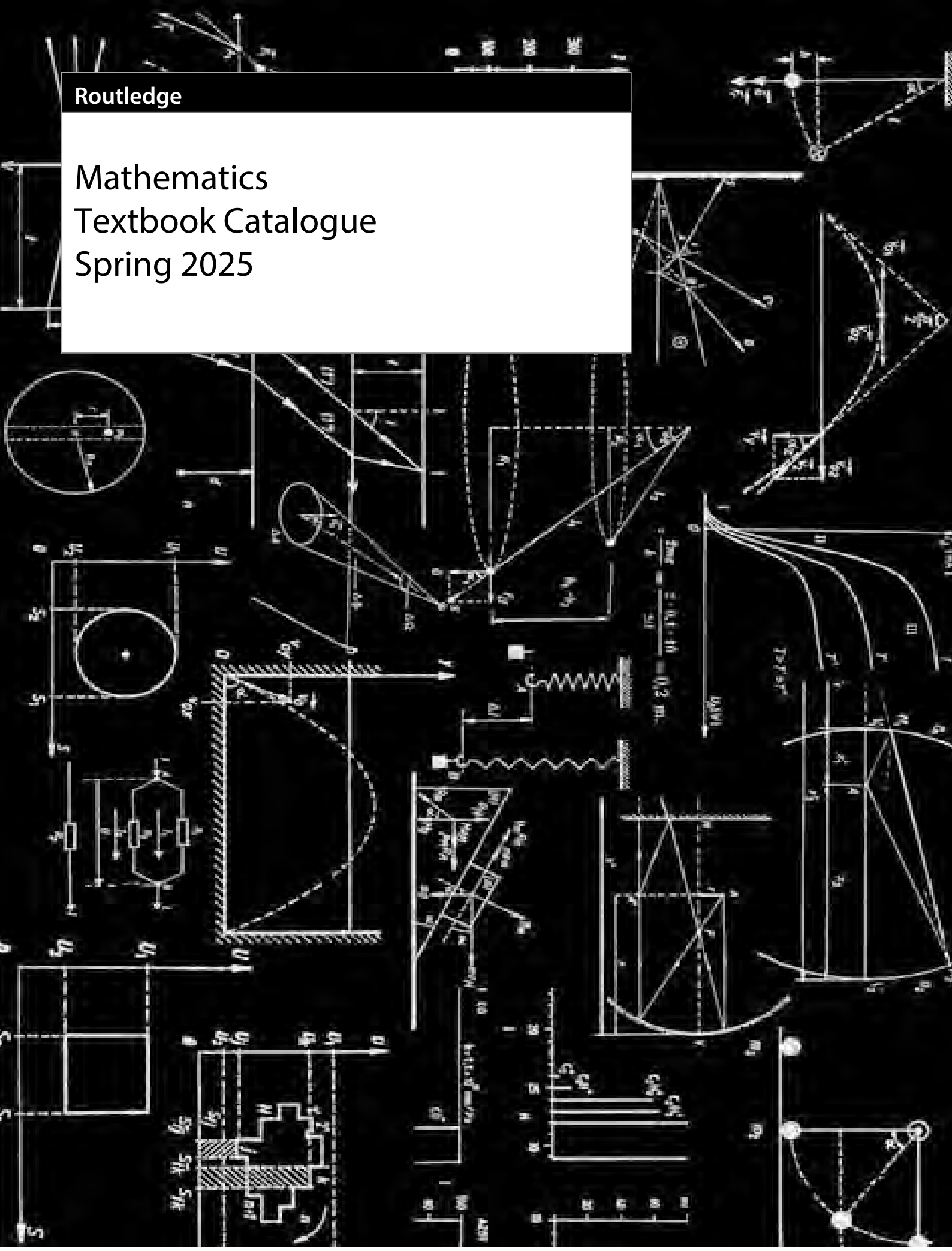

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An Inquiry-Based Approach

Jonathan K. Hodge Grand Valley State University, Allendale, Michigan, USA**, Steven Schlicker** Grand Valley State University, Allendale, Michigan, USA**, Ted Sundstrom** Grand Valley State University, Allendale, Michigan, USA

Series: Textbooks in Mathematics

Abstract Algebra: An Inquiry-Based Approach not only teaches abstract algebra but also provides a deeper understanding of what mathematics is, how it is done, and how mathematicians think. The second edition of this unique, flexible approach builds on the success of the first edition. The authors offer an emphasis on active learning and developing student intuition. The aim is to help students learn algebra by gradually building both their intuition and their ability to write coherent proofs in context.

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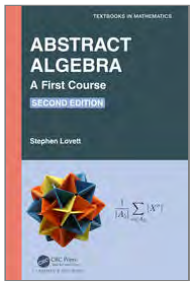

Stephen Lovett

Series: Textbooks in Mathematics

This textbook intends to serve as a first course in abstract algebra. The selection of topics serves both of the common trends in such a course: a balanced introduction to groups, rings, and fields; or a course that primarily emphasizes group theory. The writing style is student-centered, conscientiously motivating definitions and offering many illustrative examples. Various sections or sometimes just examples or exercises introduce applications to geometry, number theory, cryptography and many other areas. This book offers a unique feature in the lists of projects at the end of each section.

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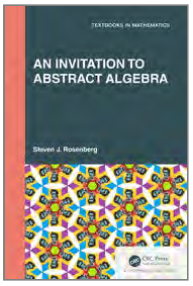

Steven J. Rosenberg

Series: Textbooks in Mathematics

Assuming only familiarity the notion of mathematical proof, the book introduces the most important algebraic structures (groups, rings, polynomials, fields, vector spaces) and the associated concepts of symmetry, homomorphism, isomorphism, and automorphism in the first 14 chapters. From Chapter 15, these topics are combined in the study of Galois Theory, direct sums and products, group actions, unique factorization, localization, and applications to geometry and the theory of polynomial equations.

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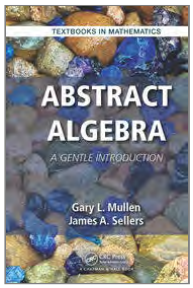
A Gentle Introduction



Gary L. Mullen , James A. Sellers

This book introduces the basic notions of abstract algebra to sophomores and perhaps even junior mathematics majors who have a relatively weak background with conceptual courses. It introduces the material with many concrete examples and establishes a firm foundation for introducing more abstract mathematical notions.

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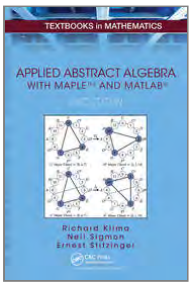

Richard Klima , Neil Sigmon , Ernest Stitzinger

This book provides an in-depth introduction to real-world abstract algebraic problems. Chapters examine the prerequisite mathematics needed, block designs, coding theory, and cryptography while the final chapters cover counting techniques, including Pólya's and Burnside's theorems. Eliminating the need for heavy number crunching, sophisticated mathematical software packages open the door to areas like cryptography, coding theory, and combinatorics that are dependent on abstract algebra. This book explores these topics and shows how to apply the software programs to abstract algebra and its related fields.

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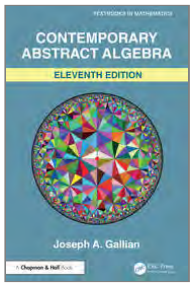

Joseph Gallian

Series: Textbooks in Mathematics

CONTEMPORARY ABSTRACT ALGEBRA, 11e is for a course to enable students to do computations and write proofs. This text stresses the importance of obtaining a solid introduction to the traditional topics, while at the same time presenting abstract algebra as a contemporary and very much active subject which is currently being used by working physicists, chemists, and computer scientists. For more than three decades, this classic text has been widely appreciated by instructors and students alike. The book offers an enjoyable read and conveys and develops enthusiasm for the beauty of the topics presented. It is comprehensive, lively, and engaging.

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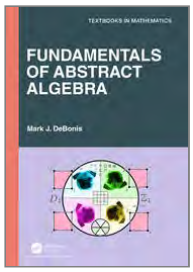

Mark J. DeBonis Manhattan College, USA

Series: Textbooks in Mathematics

This is a primary textbook for a one year first course in Abstract Algebra, but it has much more to offer besides this. The book is full of opportunities for further, deeper reading, including explorations of interesting applications and more advanced topics, such as Galois theory. Replete with exercises and examples, the book is geared towards careful pedagogy and accessibility, and requires only minimal prerequisites. The book includes a primer on some basic mathematical concepts that will be useful for readers to understand, and in this sense the book is self-contained.

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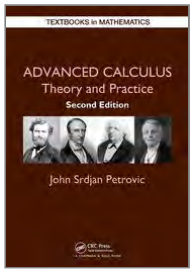

John Petrovic

Advanced Calculus: Theory and Practice, Second Edition, expands on the material covered in elementary calculus and presents this material in a rigorous manner. The text improves students' problem-solving and proof-writing skills, familiarizes them with the historical development of calculus concepts, and helps them understand the connections among different topics. The book explains how various topics in calculus may seem unrelated but in reality have common roots. Emphasizing historical perspectives, the text gives students a glimpse into the development of calculus and its ideas from the age of Newton and Leibniz to the twentieth century. Nearly 300 examples lead to import

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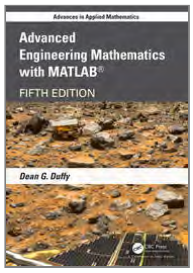

Dean G. Duffy US Naval Academy, Annapolis, Maryland, USA

Series: Advances in Applied Mathematics

To assist in the choice of topics included in this new edition, the author reviewed the syllabi of various engineering mathematics courses that are taught at a wide variety of schools. Due to time constraints an instructor can select perhaps 3 to 4 topics from the book, the most likely being ordinary differential equations, Laplace transforms, Fourier series and separation of variables to solve the wave, heat, or Laplace's equation. Laplace transforms are occasionally replaced by linear algebra or vector calculus.

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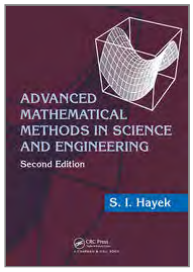

S.I. Hayek

This update of a best-selling text presents methods of applied mathematics that are particularly suited to address physical problems in science and engineering. This edition incorporates a new chapter that offers an extensive treatment of numerical methods. It also contains new appendices on vector algebra, calculus, and matrix algebra. The author provides a complete treatment of ODEs and PDEs, covers Green's functions for unbounded and bounded media, and explores self-adjoint systems and orthogonal series. Numerous examples illustrate the various methods of solution and answers to the end-of-chapter problems are included at the back of the book.

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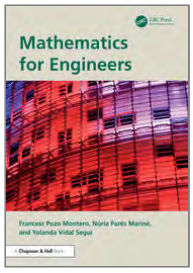

Francesc Pozo Montero Universitat Politecnica de Catalunya**, Núria Parés Mariné** Universitat Politecnica de Catalunya**, Yolanda Vidal Seguí** Universitat Politecnica de Catalunya

Mathematics for Engineers offers a comprehensive treatment of the core mathematical topics required for a modern engineering degree. The book begins with an introduction to the basics of mathematical reasoning and builds up the level of complexity as it progresses. The approach of the book is to build understanding through engagement, with numerous exercises and illuminating examples throughout the text design to foster a practical understanding of the topics under discussion.

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A Second Course with MatLab

Dean G. Duffy US Naval Academy, Annapolis, Maryland, USA

Series: Advances in Applied Mathematics

Developed from the author's successful textbook, Advanced Engineering Mathematics, fourth edition the author here offers topics for a second course. This text is then a companion to his book, Advanced Engineering Mathematics, Fifth Edition. These topics include essential, advanced mathematics to access as a refresher or to add to the mathematical education and address the needs of engineers and scientists who need to expand their working knowledge. These topics are driven by applications, many unique to this book, and exercises with solutions are offered to confirm understanding. MatLab is used throughout.

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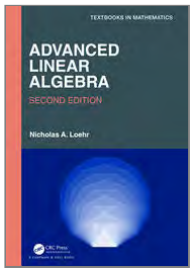

Nicholas A. Loehr Virginia Technical University, Blacksburg, USA

Series: Textbooks in Mathematics

Designed for advanced undergraduate and beginning graduate students in linear or abstract algebra, Advanced Linear Algebra covers theoretical aspects of the subject, examples, computations, and proofs. It explores a variety of advanced topics in linear algebra that highlight the rich interconnections of the subject to geometry, algebra, analysis, combinatorics, numerical computation, and many other areas of mathematics. A wide array of topics is included, ranging from concrete matrix theory (basic matrix computations, determinants, normal matrices, canonical forms, matrix factorizations, and numerical algorithms) to more abstract linear algebra.

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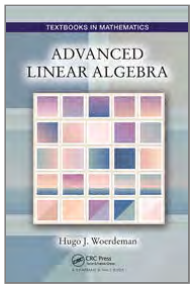
Advanced Linear Algebra



Hugo Woerdeman

Written in clear and concise language, this book covers the standard topics in a second linear algebra course. The book first introduces general fields and emphasizes matrix algebra over finite fields and complex numbers. It then proceeds to cover vector spaces in depth, addressing vector spaces over general fields. Also discussed are standard topics in linear algebra including linear transformations, Jordan canonical form, inner product spaces, and spectral theory. Additional material covers dual spaces, quotient spaces, and tensor products. It includes well-designed exercises and full solutions to almost all exercises.

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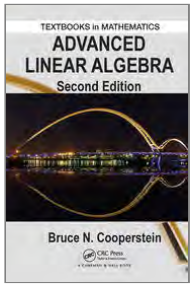

Bruce Cooperstein

This book discusses structure theory of an operator, topics on inner product spaces, and trace and determinant functions of a linear operator. It addresses bilinear forms with a full treatment of symplectic spaces and orthogonal spaces, as well as explains construction of tensor, symmetric, and exterior algebras. Featuring several new exercises, the second edition adds coverage of sesquilinear forms, linear groups, matrices, normed vector spaces, orthogonal spaces over perfect fields of characteristic two, and Clifford algebras. A solutions manual is available upon qualifying course adoption.

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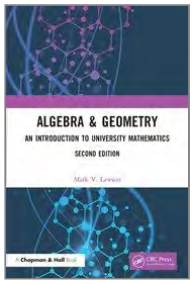

Mark Verus Lawson

This book provides a bridge between high school and undergraduate mathematics courses on algebra and geometry. The text focuses on linear equations, polynomial equations, and quadratic forms. The first few chapters cover foundational topics, including the importance of proofs and a discussion of the properties commonly encountered when studying algebra. The remaining chapters form the mathematical core of the book. These chapters explain the solution of different kinds of algebraic equations, the nature of the solutions, and the interplay between geometry and algebra.

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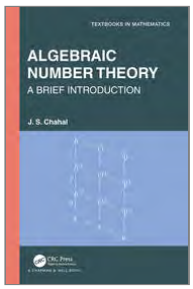

J.S. Chahal

Series: Textbooks in Mathematics

This book offers the basics of algebraic number theory for students and others who need an introduction and do not have the time to wade through the voluminous textbooks available. It is suitable for an independent study or as a textbook for a first course on the topic. The author presents the topic here by first offering a brief introduction of number theory and a review of the prerequisite material, then presents the basic theory of algebraic number theory.

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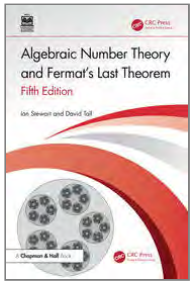

Ian Stewart , David Tall University of Warwick, UK

Updated to reflect current research and extended to cover more advanced topics as well as the basics, this book introduces fundamental ideas of algebraic numbers and explores one of the most intriguing stories in the history of mathematics—the quest for a proof of Fermat's Last Theorem. The authors use this celebrated theorem to motivate a general study of the theory of algebraic numbers, initially from a relatively concrete point of view. Students will see how Wiles's proof of Fermat's Last Theorem opened many new areas for future work.

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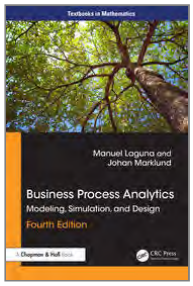

Manuel Laguna University of Colorado, Boulder, USA**,**
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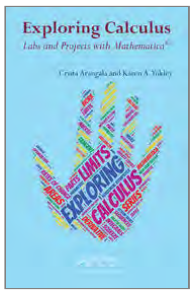

Crista Arangala Elon University, North Carolina, USA**,**
Karen A. Yokley Elon University, North Carolina, USA

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This text is meant to be a hands-on lab manual that can be used in class every day to guide the exploration of the theory and applications of differential and integral calculus. For the most part, labs can be used individually or in a sequence. Each lab consists of an explanation of material with integrated exercises. Some labs are split into multiple subsections and thus exercises are separated by those subsections. The exercise sections integrate problems, technology, Mathematica R visualization, and Mathematica CDFs that allow students to discover the theory and applications of differential and integral calculus in a meaningful and memorable way.

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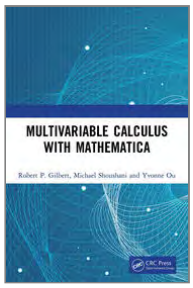

Robert P. Gilbert University of Delaware, Newark, USA**,**
Michael Shoushani , Yvonne Ou

This textbook aims to address the calculus of several variables. Instead of just using Mathematica to directly solve problems, the students are encouraged to learn the syntax and to write their own code to solve problems. This not only encourages scientific computing skills but at the same time stresses the complete understanding of the mathematics. Questions are provided at the end of the chapters to test the student's theoretical understanding of the mathematics, and there are also computer algebra questions which test the student's ability to apply their knowledge in non-trivial ways.

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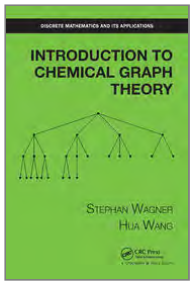
Introduction to Chemical Graph Theory



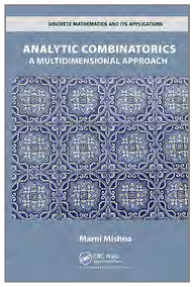
Stephan Wagner , Hua Wang

Introduction to Chemical Graph Theory is a concise introduction to the main topics and techniques in chemical graph theory, specifically the theory of topological indices. These include distance-based, degree-based, and counting-based indices. The book covers some of the most commonly used mathematical approaches in the subject. It is also written with the knowledge that chemical graph theory has many connections to different branches of graph theory (such as extremal graph theory, spectral graph theory).

CRC Press
January 2023 : 270pp
Pb: 978-1-032-47603-2 : **£45**
Hb: 978-1-138-32508-1 : **£130**
eBook: 978-0-429-45053-2
* For **full contents** and more information, visit: **www.routledge.com/9781032476032**

Analytic Combinatorics

A Multidimensional Approach



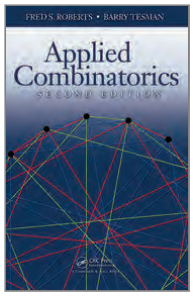
Marni Mishna

Analytic Combinatorics: A Multidimensional Approach is written in a reader-friendly fashion to better facilitate the understanding of the subject. Naturally, it is a firm introduction to the concept of analytic combinatorics and is a valuable tool to help readers better understand discrete objects. Primarily, the textbook is a gateway to more detailed and involved study and the topics covered such as the interactions between complex analysis and combinatorics will lead readers through number theory, algebraic geometry, probability, and formal language theory.

CRC Press
January 2023 : 252pp
Pb: 978-1-032-47513-4 : **£43.99**
Hb: 978-1-138-48976-9 : **£84.99**
eBook: 978-1-351-03682-5
* For **full contents** and more information, visit: **www.routledge.com/9781032475134**

2ND EDITION

Applied Combinatorics



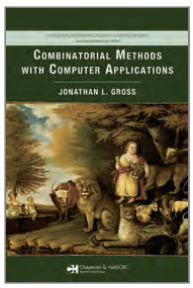
Fred S. Roberts Rutgers University, Piscataway, New Jersey, USA**, Barry Tesman** Dickinson College, Carlisle, Pennsylvania, USA

Series: Discrete Mathematics and Its Applications

Now with solutions to selected problems, this bestselling textbook presents the tools of combinatorics from an applied point of view. It focuses on three basic problems of combinatorics: counting, existence, and optimization problems. The text contains many examples from the biological, computer, and social sciences, including disease screening, genome mapping, satellite communication, search engines, telecommunications traffic, web data, sound systems, oil drilling, dynamic labor markets, data mining, and distributed computing. It also offers numerous references to the literature of combinatorics and its applications that enable readers to delve more deeply into the topics.

Chapman & Hall
June 2009 : 888pp
Hb: 978-1-420-09982-9 : **£145**
eBook: 978-0-429-13159-2
* For **full contents** and more information, visit: **www.routledge.com/9781420099829**

Combinatorial Methods with Computer Applications



Jonathan L. Gross Columbia University, New York, USA

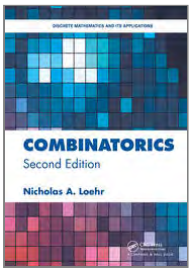
Series: Discrete Mathematics and Its Applications

This combinatorics text provides in-depth coverage of recurrences, generating functions, partitions, and permutations, along with some of the most interesting graph and network topics, design constructions, and finite geometries. It presents the computer and software algorithms in pseudo-code and incorporates definitions, theorems, proofs, examples, and nearly 300 illustrations as pedagogical elements of the exposition. Numerous problems, solutions, and hints reinforce basic skills and assist with creative problem solving. The author also offers a website with extensive graph theory informational resources as well as a computational engine to help with calculations for some of the exercises.

Chapman & Hall
November 2007 : 726pp
Hb: 978-1-584-88743-0 : **£115**
eBook: 978-0-429-14256-7
* For **full contents** and more information, visit: **www.routledge.com/9781584887430**

2ND EDITION

Combinatorics



Nicholas Loehr

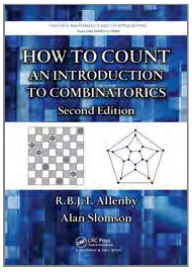
Bijective proofs are some of the most elegant and powerful techniques in all of mathematics. Suitable for readers without prior background in algebra or combinatorics, the book presents an introduction to enumerative and algebraic combinatorics emphasizing bijective methods. The text develops mathematical tools, such as basic counting rules, recursions, inclusion-exclusion techniques, generating functions, bijective proofs, and linear-algebraic methods to solve enumeration problems. The tools are used to analyze combinatorial structures, words, permutations, subsets, functions, compositions, integer partitions, graphs, trees, lattice paths, multisets, rook placements, and set partitions.

CRC Press
January 2023 : 642pp
Pb: 978-1-032-47671-1 : **£43.99**
Hb: 978-1-498-78025-4 : **£110**
eBook: 978-1-315-15336-0
* For **full contents** and more information, visit: **www.routledge.com/9781032476711**

2ND EDITION

How to Count

An Introduction to Combinatorics, Second Edition



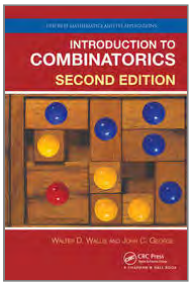
R.B.J.T. Allenby , Alan Slomson

Completely revised, this text shows how to solve numerous classic and other interesting combinatorial problems. The authors take an easily accessible approach that introduces problems before leading into the theory involved. They present proofs of key results as well as numerous worked examples. This second edition includes seven new chapters that cover occupancy problems, Stirling and Catalan numbers, graph theory, trees, Dirichlet's pigeonhole principle, Ramsey theory, and rook polynomials. It also contains 450 paired exercises, along with a full solution to one of the exercises in each pair. A solutions manual is available for qualifying instructors.

Chapman & Hall
October 2024 : 446pp
Pb: 978-1-032-91977-5 : **£45.99**
Hb: 978-1-420-08260-9 : **£58.99**
eBook: 978-0-429-11312-3
* For **full contents** and more information, visit: **www.routledge.com/9781032919775**

2ND EDITION

Introduction to Combinatorics



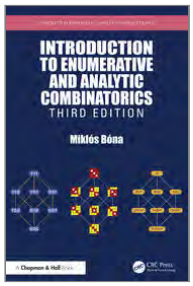
Walter D. Wallis , John C. George

The purpose of this undergraduate textbook is to offer all the material suitable for a beginning combinatorics course for students in STEM subjects particularly mathematics and computer science, although other subjects may benefit as well. This will be achieved through the use of plentiful (though brief) examples, and a variety of exercises and problems. In addition, we use in our examples more up-to-date ideas (such as digital music files rather than books on a shelf) and give some code to assist the student with the use of Mathematica, Maple, and other technological tools.

CRC Press
January 2023 : 444pp
Pb: 978-1-032-47699-5 : **£43.99**
Hb: 978-1-498-77760-5 : **£105**
eBook: 978-1-315-36689-0
* For **full contents** and more information, visit: **www.routledge.com/9781032476995**

3RD EDITION

Introduction to Enumerative and Analytic Combinatorics



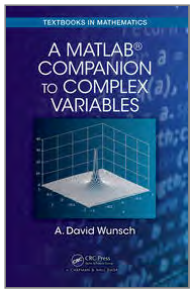
Miklos Bona University of Florida, Gainesville, USA

Series: Discrete Mathematics and Its Applications

These award-winning textbook targets the gap between introductory texts in discrete mathematics and advanced graduate texts in enumerative combinatorics. The author's goal is to make combinatorics more accessible to encourage student interest and to expand the number of students studying this rapidly expanding field. The book first deals with basic counting principles, compositions and partitions, and generating functions. It then focuses on the structure of permutations, graph enumeration, and extremal combinatorics. Lastly, the text discusses supplemental topics, including error-correcting codes, properties of sequences, and magic squares.

Chapman & Hall
March 2025 : 566pp
Hb: 978-1-032-30270-6 : **£91.99**
eBook: 978-1-003-30427-2
* For **full contents** and more information, visit: **www.routledge.com/9781032302706**

A MatLab® Companion to Complex Variables



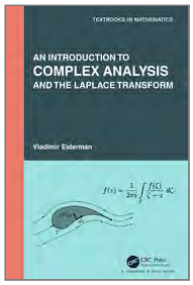
A. David Wunsch University of Massachusetts Lowell, USA

Series: Textbooks in Mathematics

A MATLAB® Companion to Complex Variables provides students with a clear understanding of the utility of MATLAB in complex arithmetic. An ideal adjunct to standard texts on the functions of complex variables, the book allows professors to quickly find and assign MATLAB programming problems that will strengthen students' knowledge of the language and concepts of complex variable theory. The book shows students how MATLAB can be a powerful companion in such staples of complex variable theory as conformal mapping, infinite series, contour integration, and Laplace and Fourier transforms.

CRC Press
April 2016 : 360pp
Pb: 978-1-498-75567-2 : **£68.99**
Hb: 978-1-138-44165-1 : **£185**
eBook: 978-1-315-38033-9
* For **full contents** and more information, visit: **www.routledge.com/9781498755672**

An Introduction to Complex Analysis and the Laplace Transform



Vladimir Eiderman Indiana University, IN, USA.

Series: Textbooks in Mathematics

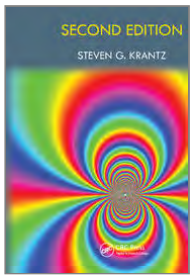
The textbook is designed for university students studying science and engineering. The author starts with the notion of a complex number and finish with residues and their applications. I have aimed for a comparatively short book that would give a sufficiently full exposition of the fundamentals of the theory of functions of a complex variable to prepare the student for various applications. Many applications are then included.

Chapman & Hall
August 2024 : 398pp
Pb: 978-1-032-16203-4 : **£56.99**
Hb: 978-0-367-40978-4 : **£105**
eBook: 978-0-367-81028-3
* For **full contents** and more information, visit: **www.routledge.com/9781032162034**

2ND EDITION

Complex Variables

A Physical Approach with Applications

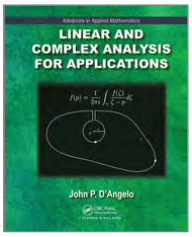


Steven G. Krantz

Complex Variables: A Physical Approach with Applications, Second Edition offers a notable revision. The emphasis remains on theory and practice. The first part of the text focuses on the fundamental concepts. The author then moves on to a detailed look at how complex variables are used in the real world. The author is among the leading textbook authors in analysis.

Chapman & Hall
January 2023 : 378pp
Pb: 978-1-032-47569-1 : **£43.99**
Hb: 978-0-367-22267-3 : **£105**
eBook: 978-0-429-27516-6
* For **full contents** and more information, visit: **www.routledge.com/9781032475691**

Linear and Complex Analysis for Applications



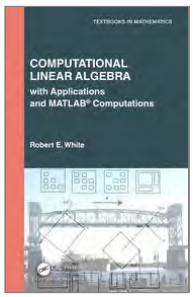
John P. D'Angelo

This book develops an understanding of sophisticated tools by using them. Complex variable theory is developed. The first three chapters and selected topics make a nice course. This course should appeal to faculty who want an integrated treatment of linear algebra and complex analysis, including applications and also reviewing vector analysis. Students can continue with the Hilbert space chapter and conclude with probability and quantum mechanics. The first five chapters together with the last section of Chapter 7 make an applied complex variables course. Such a course would be ideal for many graduate students.

CRC Press
January 2023 : 274pp
Pb: 978-1-032-47702-2 : **£43.99**
Hb: 978-1-498-75610-5 : **£84.99**
eBook: 978-1-315-11884-0
* For **full contents** and more information, visit: **www.routledge.com/9781032477022**

Computational Linear Algebra

with Applications and MATLAB® Computations



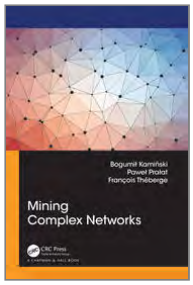
Robert E. White North Carolina State University, Raleigh, USA

Series: Textbooks in Mathematics

Courses on linear algebra and numerical analysis need each other. Often NA courses have some linear algebra topics, and LA courses mention some topics from numerical analysis/scientific computing. This text merges these two areas into one introductory undergraduate course. It assumes students have had multivariable calculus. The text has a number of applications. These are to motivate the student to study the linear algebra topics. Also, the text has a number of computations. MATLAB, is used, but one could modify these codes to other programming languages. These are either to simplify some linear algebra computation, or to model a particular application.

Chapman & Hall
April 2023 : 330pp
Hb: 978-1-032-30246-1 : **£45.99**
eBook: 978-1-003-30412-8
* For **full contents** and more information, visit: **www.routledge.com/9781032302461**

Mining Complex Networks



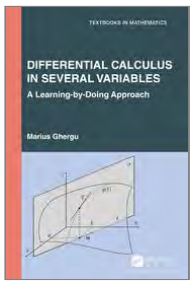
Bogumil Kaminski , Pawel Prałat , Francois Theberge

This book concentrates on mining networks, a sub field within data science. Mining complex networks in order to understand the principles governing the organization and the behavior of such networks is crucial for a broad range of fields of study, including information and social sciences, economics, biology, and neuroscience. This textbook is aimed to be suitable for an upper-year undergraduate course or a graduate course. Students in programs such as data science, mathematics, computer science, business, engineering, physics, statistics, and social science will benefit from courses that are based on this textbook.

Chapman & Hall
August 2024 : 278pp
Pb: 978-1-032-11205-3 : **£56.99**
Hb: 978-1-032-11203-9 : **£84.99**
eBook: 978-1-003-21886-9
* For **full contents** and more information, visit: **www.routledge.com/9781032112053**

Differential Calculus in Several Variables

A Learning-by-Doing Approach



Marius Ghergu

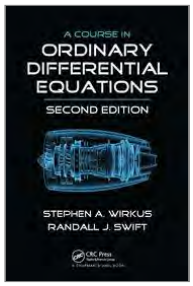
Series: Textbooks in Mathematics

The aim of this book is to lead the reader out from the ordinary routine of computing and calculating by engaging in a more dynamic process of learning.

Chapman & Hall
February 2024 : 324pp
Pb: 978-1-032-58254-2 : **£53.99**
Hb: 978-1-032-58339-6 : **£145**
eBook: 978-1-003-44965-2
* For **full contents** and more information, visit: **www.routledge.com/9781032582542**

2ND EDITION

A Course in Ordinary Differential Equations



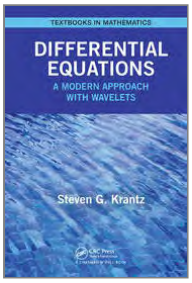
Stephen A. Wirkus , Randall J. Swift

This second edition presents analytical and numerical solution methods for typical engineering, physics, and mathematics applications. It uses the latest versions of MATLAB®, Maple™, and Mathematica® and moves the computer codes to Computer Labs at the end of each chapter. Along with new projects, exercises, and color graphs, this edition includes new sections on complex variables, the exponential response formula for solving nonhomogeneous equations, forced vibrations, and nondimensionalization. It also covers linear systems in their entirety before addressing applications to nonlinear systems.

Chapman & Hall
October 2024 : 808pp
Pb: 978-1-032-91749-8 : **£69.99**
Hb: 978-1-466-50908-5 : **£76.99**
eBook: 978-0-429-09873-4
* For **full contents** and more information, visit: **www.routledge.com/9781032917498**

Differential Equations

A Modern Approach with Wavelets



Steven Krantz

This new book from one of the most published authors in all of mathematics is an attempt to offer a new, more modern take on the Differential Equations course. Because of the theory of wavelets, Fourier analysis is ever more important and central. And applications are a driving force behind much of mathematics.This text presents a more balanced picture. It covers differential equations (both ordinary and partial), Fourier analysis and applications in equal measure and with equal weight. The Riemann integral is used throughout.

CRC Press
January 2023 : 482pp
Pb: 978-1-032-47484-7 : **£43.99**
Hb: 978-0-367-44409-9 : **£105**
eBook: 978-1-003-00950-4
* For **full contents** and more information, visit: **www.routledge.com/9781032474847**

2ND EDITION

Applied Differential Equations

The Primary Course

Vladimir A. Dobrushkin Brown University, RI, USA

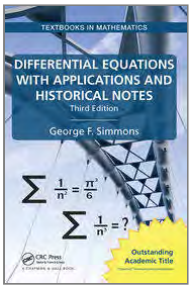
Series: Textbooks in Mathematics

The author presents a contemporary treatment of ordinary differential equations (ODEs). The author describes DEs in the context of applications. Students learn to solve differential equations analytically, numerically, and to analyze them qualitatively, and interpret the results.The text offers novel approaches to mathematical modeling to harness the capabilities of numerical algorithms and popular computer software. Many examples and exercises help students master effective solution techniques, including reliable numerical approximations. Designed for a one- or two-semester course, the text enables students to obtain a solid foundation in differential equations.

Chapman & Hall
September 2022 : 706pp
Hb: 978-1-138-60658-6 : **£135**
eBook: 978-1-003-29959-2
* For **full contents** and more information, visit: **www.routledge.com/9781138606586**

3RD EDITION

Differential Equations with Applications and Historical Notes



George F. Simmons

Designed for an introductory course on differential equations, this book uses explicit explanation to ensure students fully comprehend the subject matter. Emphasizing modeling and applications, the third edition of this classic text presents a substantial new section on Gauss's bell curve and improves coverage of Fourier analysis, numerical methods, and linear algebra. Relating the development of mathematics to human activity, the text includes unique examples and exercises, as well as the author's distinctive historical notes, throughout. Outstanding Academic Title of the Year, Choice magazine, American Library Association.

CRC Press
January 2023 : 762pp
Pb: 978-1-032-47714-5 : **£43.99**
Hb: 978-1-498-70259-1 : **£96.99**
eBook: 978-1-315-37182-5
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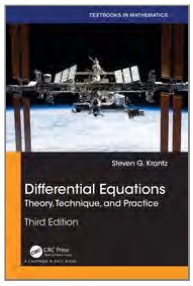
3RD EDITION

Differential Equations

Theory, Technique, and Practice



Steven G. Krantz Washington University, St. Louis, Missouri, USA

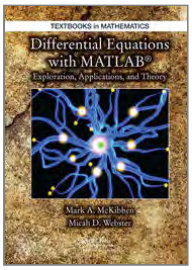
Series: Textbooks in Mathematics

The first edition of this text was authored to create a contemporary approach from a classic, Differential Equations, by George Simmons. The first seven chapters follow the basic outline of Simmon's book, yet from there the author introduces a varied approach, introducing numerical methods prior to systems of equations, and after non-linear theory, a chapter on dynamical systems. This book also integrates technology use though out, to meet the expectations of today's instructors and students. The new edition continues to modernize a classic text on differential equations, as the author continues to make it his own.

Chapman & Hall
May 2022 : 488pp
Hb: 978-1-032-10270-2 : **£84.99**
eBook: 978-1-003-21452-6
* For **full contents** and more information, visit: **www.routledge.com/9781032102702**

Differential Equations with MATLAB

Exploration, Applications, and Theory



Mark McKibben , Micah D. Webster

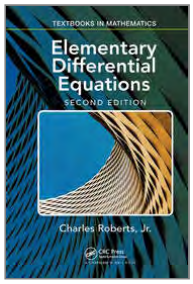
Designed for an undergraduate course on mathematical modeling or differential equations, this text provides students with an understanding of the practical and theoretical aspects of mathematical models involving ODEs and PDEs. It develops students' intuition by building the theory from the ground up and illustrates the analysis of more than 20 distinct models through concrete applications in physics, engineering, finance, and many other areas. The book also uses MATLAB® GUIs that enable students to discover patterns and make conjectures.

Chapman & Hall
October 2024 : 498pp
Pb: 978-1-032-91925-6 : **£56.99**
Hb: 978-1-466-55707-9 : **£110**
eBook: 978-0-429-09783-6
* For **full contents** and more information, visit: **www.routledge.com/9781032919256**

2ND EDITION

Elementary Differential Equations

Applications, Models, and Computing

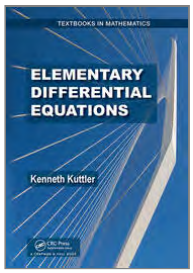


Charles Roberts

This second edition is a valuable, up-to-date tool for instructors teaching courses about differential equations. It serves as an excellent introductory textbook for undergraduate students majoring in applied mathematics, computer science, various engineering disciplines and other sciences. They also will find that the textbook will aide them greatly in their professional careers because of its instructions on how to use computers to solve equations.

CRC Press
January 2023 : 554pp
Pb: 978-1-032-47584-4 : **£43.99**
Hb: 978-1-498-77608-0 : **£120**
eBook: 978-1-315-15210-3
* For **full contents** and more information, visit: **www.routledge.com/9781032475844**

Elementary Differential Equations



Kenneth Kuttler

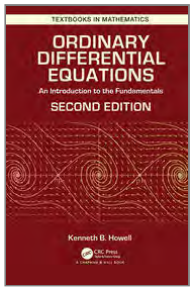
Elementary Differential Equations presents the standard material in a first course on differential equations, including all standard methods which have been a part of the subject since the time of Newton and the Bernoulli brothers. The emphasis in this book is on theory and methods and differential equations as a part of analysis.The book mentions the main computer algebra systems, yet the emphasis is placed on MATLAB and numerical methods which include graphing the solutions and obtaining tables of values. Featured applications are easily understood. Complete explanations of the mathematics and emphasis on methods for findi

CRC Press
January 2023 : 588pp
Pb: 978-1-032-47648-3 : **£43.99**
Hb: 978-1-138-74091-4 : **£135**
eBook: 978-1-315-18313-8
* For **full contents** and more information, visit: **www.routledge.com/9781032476483**

2ND EDITION

Ordinary Differential Equations

An Introduction to the Fundamentals



Kenneth B. Howell

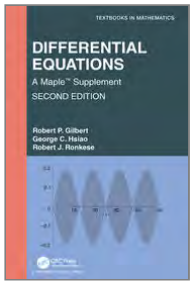
The Second Edition of this successful text builds upon over ten years of in-class use. The text is unique in its approach to motivation, precision, explanations and methods. A layered approach offers an opportunity for flexible coverage and depth. Topics are introduced in a more accessfible way before subsequent sections develop these further. Motivating and giving reasons for the concepts and computations is an important part of the text. The author offers an emphasis on modeling and technology use. Guides for carrying out some of the lengthier computational procedures are given with illustrative examples integrated into the discussion. An engaging writing style appeals to students.

CRC Press
January 2023 : 906pp
Pb: 978-1-032-47505-9 : **£43.99**
Hb: 978-1-138-60583-1 : **£105**
eBook: 978-0-429-34742-9
* For **full contents** and more information, visit: **www.routledge.com/9781032475059**

2ND EDITION

Differential Equations

A Maple™ Supplement



Robert P. Gilbert University of Delaware, Newark, USA**,**
George C. Hsiao , Robert J. Ronkese

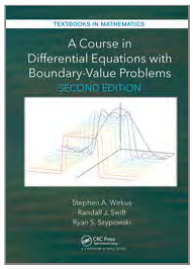
Series: Textbooks in Mathematics

This book illustrates how MAPLE™ can be used to supplement a standard, elementary text in ordinary and partial differential equation. The authors are firm believers in the teaching of mathematics as an experimental science where the student does numerous calculations and then synthesizes these experiments into a general theory. The goal of the book is to teach the students enough about the computer algebra system MAPLE™ so that it can be used in an investigative way. This book was developed through ten years of instruction in the differential equations course.

Chapman & Hall
June 2021 : 243pp
Pb: 978-1-032-00781-6 : **£49.99**
Hb: 978-1-032-02179-9 : **£135**
eBook: 978-1-003-17564-3
* For **full contents** and more information, visit: **www.routledge.com/9781032007816**

2ND EDITION

A Course in Differential Equations with Boundary Value Problems

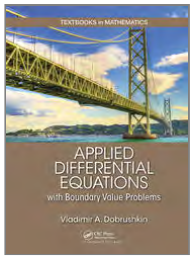


Stephen A. Wirkus , Randall J. Swift , Ryan Szypowski

A Course in Ordinary Differential Equations, Second Edition teaches students how to use analytical and numerical solution methods in typical engineering, physics, and mathematics applications. Lauded for its extensive computer code and student-friendly approach, the first edition of this popular textbook was the first on ordinary differential equations (ODEs) to include instructions on using MATLAB®, Mathematica®, and Maple™. This second edition reflects the feedback of students and professors who used the first edition in the classroom. Thiis version adds two new chapters to the current text.

CRC Press
January 2023 : 788pp
Pb: 978-1-032-47696-4 : **£43.99**
Hb: 978-1-498-73605-3 : **£105**
eBook: 978-1-315-36961-7
* For **full contents** and more information, visit: **www.routledge.com/9781032476964**

Applied Differential Equations with Boundary Value Problems



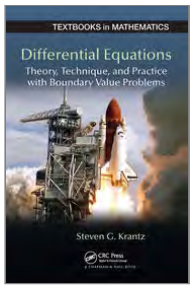
Vladimir Dobrushkin

This version of the author's DE text will include a new chapter on Linear Boundary Value Problems for instructors who want to add this coverage to their DE course.

CRC Press
January 2023 : 698pp
Pb: 978-1-032-47657-5 : **£43.99**
Hb: 978-1-498-73365-6 : **£110**
eBook: 978-1-315-36978-5
* For **full contents** and more information, visit: **www.routledge.com/9781032476575**

Differential Equations

Theory,Technique and Practice with Boundary Value Problems

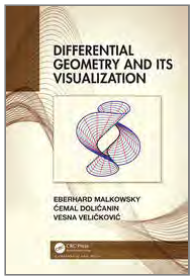


Steven G. Krantz

This book delivers a stimulating exposition of modeling and computing, preparing students for higher-level mathematical and analytical thinking. Designed for an undergraduate-level course on ordinary differential equations, the text presents classical ideas and cutting-edge techniques in dynamical systems and other areas, highlighting applications from engineering, physics, and applied science. This version adds coverage of Sturm-Liouville theory and problems, streamlines content for the interests of engineers, enhances examples, and augments the substantial and valuable exercise sets. A solutions manual is available with qualifying course adoption.

Chapman & Hall
October 2024 : 480pp
Pb: 978-1-032-91962-1 : **£74.99**
Hb: 978-1-498-73501-8 : **£110**
eBook: 978-0-429-09166-7
* For **full contents** and more information, visit: **www.routledge.com/9781032919621**

Differential Geometry and Its Visualization



Eberhard Malkowsky University of Nis, Serbia**, Ćemal Dolićanin , Vesna Veličković**

This book is suitable for graduate level courses in differential geometry, serving both students and teachers. It can also be used as a supplementary reference for research in mathematics and the natural and engineering sciences. A great number of illustrating examples, visualizations and genuine figures created by the authors' own software are included to support the understanding of the presented concepts and results, and to develop an adequate perception of the shapes of geometric objects, their properties and the relations between them.

Chapman & Hall
August 2023 : 492pp
Hb: 978-1-032-43666-1 : **£91.99**
eBook: 978-1-003-37056-7
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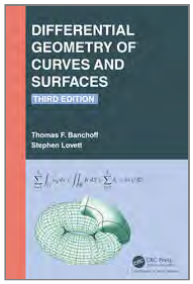
3RD EDITION

Differential Geometry of Curves and Surfaces



Thomas F. Banchoff Brown University, Providence, Rhode Island, USA**, Stephen Lovett** Wheaton College, Illinois, USA

The Third Edition of this popular and intriguing text takes both an analytical/theoretical approach and a visual/intuitive approach to the local and global properties of curves and surfaces. Requiring only multivariable calculus and linear algebra, it develops students' geometric intuition through interactive graphics applets. Applets are presented in Maple workbook format, and can be accessed using the free Maple Player. The Third Edition offers a broader list of examples and exercises. More elementary exercises are added and some challenging problems are moved later in exercise sets to assure more graduated progress. The authors also add hints to motivate the more difficult exercises.

Chapman & Hall
August 2024 : 384pp
Pb: 978-1-032-04778-2 : **£56.99**
Hb: 978-1-032-28109-4 : **£58.99**
eBook: 978-1-003-29534-1
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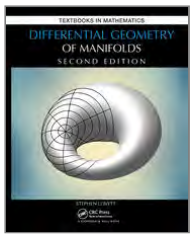
2ND EDITION

Differential Geometry of Manifolds

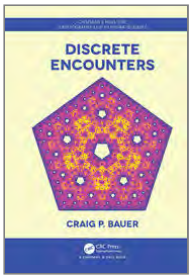


Stephen Lovett

The Second Edition presents the extension of differential geometry from curves and surfaces to manifolds in general. The book provides a broad introduction to the field of differentiable and Riemannian manifolds, tying together classical and modern formulations. The goal is to introduce manifolds in a both streamlined and mathematically rigorous way while keeping a view toward applications, particularly in physics.

Chapman & Hall
January 2023 : 450pp
Pb: 978-1-032-47490-8 : **£43.99**
Hb: 978-0-367-18046-1 : **£86.99**
eBook: 978-0-429-05929-2
* For **full contents** and more information, visit: **www.routledge.com/9781032474908**

Discrete Encounters



Craig Bauer

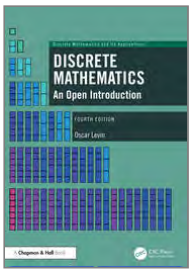
This book offers a new, fresh approach to the Discrete Mathematics course. Combining traditional course topics with popular culture, applications from a varity of historical examples and a focus on the historical development of the material. The author's intent is to enterain as well as teach. His very unique approach offers a quite different look at these topics. The book will cover many of the same topics found in other texts but with a notable twist in presentation. Defining discrete mathematics, the author moves quickly into combinatorics, permutations, differnce euqations, graph theory, financial mathematics, fractals and chaos, trees, etc.

CRC Press
January 2023 : 732pp
Pb: 978-1-032-47448-9 : **£43.99**
Hb: 978-1-498-73586-5 : **£130**
eBook: 978-0-429-40050-6
* For **full contents** and more information, visit: **www.routledge.com/9781032474489**

4TH EDITION

Discrete Mathematics

An Open Introduction



Oscar Levin

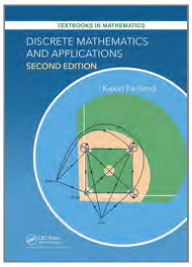
Series: Discrete Mathematics and Its Applications

This book aims to provide an introduction to select topics in discrete mathematics at a level appropriate for first or second year undergraduate math and computer science majors, especially those who intend to teach middle and high school mathematics. The book began as a set of notes for the Discrete Mathematics course at the University of Northern Colorado. This course serves both as a survey of the topics in discrete math and as the "bridge" course for math majors.

Chapman & Hall
March 2025 : 496pp
Pb: 978-1-032-96616-8 : **£49.99**
Hb: 978-1-032-96552-9 : **£165**
eBook: 978-1-003-58990-7
* For **full contents** and more information, visit: **www.routledge.com/9781032966168**

2ND EDITION

Discrete Mathematics and Applications



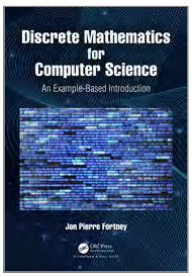
Kevin Ferland

This book is intended for a one-semester course in discrete mathematics. Such a course is typically taken by mathematics, mathematics education, and computer science majors, usually in their sophomore year. Calculus is not a prerequisite to use this book. Part one focuses on how to write proofs, then moves on to topics in number theory, employing set theory in the process. Part two focuses on computations, combinatorics, graph theory, trees, and algorithms.

CRC Press
January 2023 : 944pp
Pb: 978-1-032-47689-6 : **£43.99**
Hb: 978-1-498-73065-5 : **£91.99**
eBook: 978-1-315-15727-6
* For **full contents** and more information, visit: **www.routledge.com/9781032476896**

Discrete Mathematics for Computer Science

An Example-Based Introduction



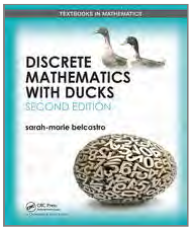
Jon Pierre Fortney

Discrete Mathematics for Computer Science: An Example-Based Introduction is intended for a first or second-year discrete mathematics course for computer science majors. It covers many important mathematical topics essential for future computer science majors, such as algorithms, number representations, logic, set theory, Boolean algebra, functions, combinatorics, algorithmic complexity, graphs, and trees.

Chapman & Hall
December 2020 : 270pp
Pb: 978-0-367-54989-3 : **£49.99**
Hb: 978-0-367-54988-6 : **£150**
eBook: 978-1-003-09147-9
* For **full contents** and more information, visit: **www.routledge.com/9780367549893**

2ND EDITION

Discrete Mathematics with Ducks



Sarah-Marie Belcastro

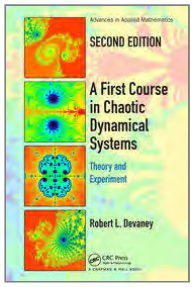
Discrete Mathematics with Ducks is a gentle introduction for students who find the proofs and abstractions of mathematics challenging. At the same time, it provides stimulating material, which instructors can use for more advanced students. The first edition was widely well received with its amusing writing style, and numerous exercises and materials that engaged students at all levels. The new, expanded edition continues to facilitate effective and active learning. It is designed to help students learn about discrete mathematics through problem-based activities. These are created to inspire students to understand mathematics by actively practici

Chapman & Hall
June 2020 : 700pp
Pb: 978-0-367-57070-5 : **£39.99**
Hb: 978-1-138-05259-8 : **£110**
eBook: 978-1-315-16767-1
* For **full contents** and more information, visit: **www.routledge.com/9780367570705**

2ND EDITION

A First Course In Chaotic Dynamical Systems

Theory And Experiment

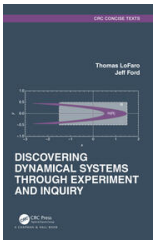


Robert L. Devaney

The first text to introduce modern topics in dynamical systems at the undergraduate level, the book integrates both theory and computer experiments into its coverage of contemporary ideas. A classic, it offers a gradual introduction to the basic mathematical ideas behind such topics as chaos, fractals, Newton's method, symbolic dynamics, the Julia set, and the Mandelbrot set. It includes biographies of some of the leading researchers in the field. The new edition offers a heavily revised chapter on chaos and an emphasis on encouraging student research and experiment. The book is accessible to readers with only a background in calculus. Many new examples and exercises and updated references.

CRC Press
January 2023 : 320pp
Pb: 978-1-032-47452-6 : **£46**
Hb: 978-0-367-23599-4 : **£89**
eBook: 978-0-429-28066-5
* For **full contents** and more information, visit: **www.routledge.com/9781032474526**

Discovering Dynamical Systems Through Experiment and Inquiry



Thomas LoFaro , Jeff Ford Gustavus Adolphus Collete

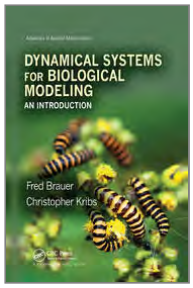
Series: Textbooks in Mathematics

The book differs from most texts on the topic by blending the use of computer simulations with inquiry-based learning (IBL). Students can discover examples and counterexamples through manipulations built into the software though a link to the website. While symbolic dynamics is a fairly standard topic in an undergraduate dynamics text, the authors emphasize it in a way that is more detailed and inclusive than is typically the case.

Chapman & Hall
August 2024 : 216pp
Pb: 978-0-367-71376-8 : **£56.99**
Hb: 978-0-367-90394-7 : **£84.99**
eBook: 978-1-003-02413-2
* For **full contents** and more information, visit: **www.routledge.com/9780367713768**

Dynamical Systems for Biological Modeling

An Introduction



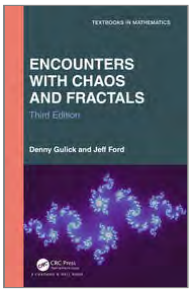
Fred Brauer , Christopher Kribs

This book prepares both biology and mathematics students with the understanding and techniques necessary to undertake basic modeling of biological systems. Its approach emphasizes qualitative ideas rather than explicit computations and does not overwhelm students with precise technical details. The book discusses a variety of biological modeling topics, including population biology, epidemiology, immunology, intraspecies competition, harvesting, predator-prey systems, structured populations, and more. The authors also include many examples of problems with solutions and some exercises which follow the examples quite closely.

Chapman & Hall
October 2024 : 492pp
Pb: 978-1-032-91932-4 : **£74.99**
Hb: 978-1-420-06641-8 : **£96.99**
eBook: 978-0-429-19609-6
* For **full contents** and more information, visit: **www.routledge.com/9781032919324**

3RD EDITION

Encounters with Chaos and Fractals



Denny Gulick , Jeff Ford Gustavus Adolphus Collete

Series: Textbooks in Mathematics

Encounters with Chaos and Fractals, Third Edition provides an accessible introduction to chaotic dynamics and fractal geometry. It incorporates important mathematical concepts and backs up the definitions and results with motivation, examples, and applications. The Third Edition updates this classic book for a modern audience. New applications on contemporary topics, like data science and mathematical modelling, appear throughout. Coding activities are transitioned to open-source programming languages, including Python.

Chapman & Hall
May 2024 : 410pp
Hb: 978-1-032-67786-6 : **£81.99**
eBook: 978-1-032-67875-7
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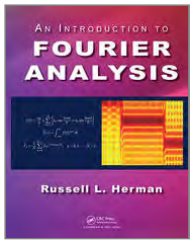
An Introduction to Fourier Analysis



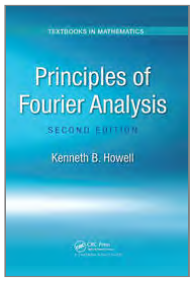
Russell L. Herman

This book can be used as a textbook for undergraduate courses in Fourier analysis or applied mathematics, which covers Fourier series and orthogonal functions, Fourier and Laplace transforms and an introduction to complex variables. These topics are tied together through the application of the spectral analysis of analog and discrete signals. Its emphasis on applications makes it suitable for courses with students from different backgrounds. The textbook has been extensively class-tested over the past 10 years.

CRC Press
January 2023 : 402pp
Pb: 978-1-032-47725-1 : **£43.99**
Hb: 978-1-498-77370-6 : **£96.99**
eBook: 978-1-315-36706-4
* For **full contents** and more information, visit: **www.routledge.com/9781032477251**

2ND EDITION

Principles of Fourier Analysis



Kenneth B. Howell

Strikingly different from typical presentations, Principles of Fourier Analysis provides an introduction to and comprehensive overview of the mathematical theory of Fourier analysis as it is used in applications in engineering, science, and mathematics. It presents the general results and formulas most useful to those who use Fourier analysis in their work, complete with indications of the limitations of those results and formulas. The author's uniquely accessible approach stimulates readers' understanding and appreciation of the fundamental concepts and helps them develop the ability to handle the more sophisticated mathematics ultimately required by Fourier analysis.

CRC Press
January 2023 : 804pp
Pb: 978-1-032-47700-8 : **£43.99**
Hb: 978-1-498-73409-7 : **£86.99**
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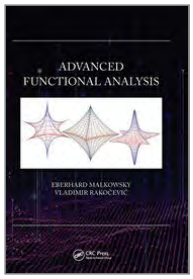
Advanced Functional Analysis

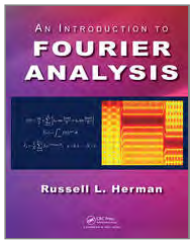


Eberhard Malkowsky , Vladimir Rakočević

Advanced Functional Analysis is a self-contained and comprehensive reference for advanced functional analysis and can serve as a guide for related research. The book can be used as a textbook in advanced functional analysis, which is a modern and important field in mathematics, for graduate and postgraduate courses and seminars at universities. At the same time, it enables the interested readers to do their own research.

CRC Press
September 2020 : 464pp
Pb: 978-0-367-65656-0 : **£45.99**
Hb: 978-1-138-33715-2 : **£110**
eBook: 978-0-429-44259-9
* For **full contents** and more information, visit: **www.routledge.com/9780367656560**

An Introduction to Fourier Analysis



Russell L. Herman

This book can be used as a textbook for undergraduate courses in Fourier analysis or applied mathematics, which covers Fourier series and orthogonal functions, Fourier and Laplace transforms and an introduction to complex variables. These topics are tied together through the application of the spectral analysis of analog and discrete signals. Its emphasis on applications makes it suitable for courses with students from different backgrounds. The textbook has been extensively class-tested over the past 10 years.

CRC Press
January 2023 : 402pp
Pb: 978-1-032-47725-1 : **£43.99**
Hb: 978-1-498-77370-6 : **£96.99**
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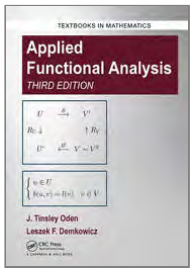
3RD EDITION

Applied Functional Analysis

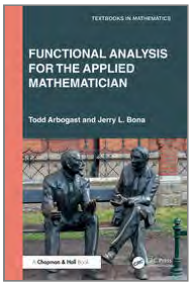


J. Tinsley Oden , Leszek Demkowicz

The textbook for Funcational Analysis provides not only solid mathematical foundations for the subject but, with many examples drawing from mechanics and science, motivates an engineering or science student to study the subject, and provides the necessary connections with applications. The first part covers an intro to modern mathematics, linear algebra, Lebesque measure and integration theory, and topology with metric spaces. The last two chapters cover the actual subject - theory of Banach and Hilbert spaces, finishing with a short introduction to Spectral Theory.

CRC Press
January 2023 : 632pp
Pb: 978-1-032-47637-7 : **£43.99**
Hb: 978-1-498-76114-7 : **£135**
eBook: 978-1-315-11948-9
* For **full contents** and more information, visit: **www.routledge.com/9781032476377**

Functional Analysis for the Applied Mathematician



Todd Arbogast , Jerry L. Bona

Series: Textbooks in Mathematics

This self-contained volume provides a rigorous introduction to functional analysis and its applications. Students from mathematics, science, engineering, and certain social science and interdisciplinary programs will benefit from the material. It is accessible to graduate and advanced undergraduate students with a solid background in undergraduate mathematics and an appreciation of mathematical rigor. Students are called upon to actively engage with the material, to the point of proving some of the basic results or their straightforward generalizations, both within the text and within the generous set of exercises.

Chapman & Hall
February 2025 : 424pp
Hb: 978-1-032-79156-2 : **£94.99**
eBook: 978-1-003-49213-9
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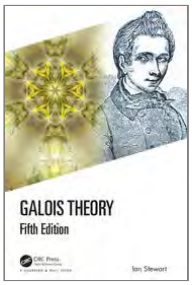
5TH EDITION

Galois Theory



Ian Stewart

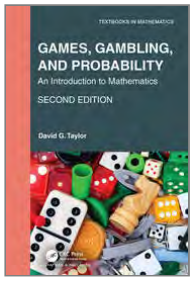
Since 1973, Galois Theory has been educating undergraduate students on Galois groups and classical Galois theory. In Galois Theory, Fifth Edition, mathematician and popular science author Ian Stewart updates this well-established textbook for today's algebra students. This bestseller continues to deliver a rigorous yet engaging treatment of the subject while keeping pace with current educational requirements. More than 200 exercises and a wealth of historical notes augment the proofs, formulas, and theorems.

Chapman & Hall
September 2022 : 386pp
Pb: 978-1-032-10158-3 : **£54.99**
Hb: 978-1-032-10159-0 : **£150**
eBook: 978-1-003-21394-9
* For **full contents** and more information, visit: **www.routledge.com/9781032101583**

2ND EDITION

Games, Gambling, and Probability

An Introduction to Mathematics



David G. Taylor Roanoke College, Salem, Virginia, USA

Series: Textbooks in Mathematics

The goal for this textbook is to complement the inquiry-based learning movement. According to the author, concepts and ideas will stick with the reader more when they are motivated in an interesting way. Here, we use questions about various games (not just casino games) to motivate the mathematics, and the writing aims to emphasiz a "just-in-time" mathematics approach. Topics are presented mathematically as questions about the games themselves are posed.

Chapman & Hall
August 2024 : 516pp
Pb: 978-1-032-01812-6 : **£56.99**
Hb: 978-0-367-82043-5 : **£84.99**
eBook: 978-1-003-01158-3
* For **full contents** and more information, visit: **www.routledge.com/9781032018126**

Mathematics of The Big Four Casino Table Games

Blackjack, Baccarat, Craps, & Roulette

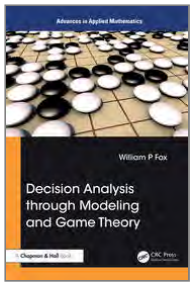
Mark Bollman Albion College, Albion, Michigan, USA

Series: AK Peters/CRC Recreational Mathematics Series

Mathematics is the basis of casino games, which are the bedrock of a $100 billion/year industry. Mathematics of the Big Four Casino Table Games: Blackjack, Baccarat, Craps, & Roulette takes an in-depth look at the four biggest table games in casinos: blackjack, baccarat, craps, and roulette. It guides readers through the mathematical principles that underpin these games and their different variations, providing insights that will be of huge interest to gamblers, casino managers, researchers, and students of mathematics.

Chapman & Hall
August 2021 : 364pp
Pb: 978-0-367-74090-0 : **£29.99**
Hb: 978-0-367-74229-4 : **£76.99**
eBook: 978-1-003-15668-0
* For **full contents** and more information, visit: **www.routledge.com/9780367740900**

Decision Analysis through Modeling and Game Theory



William P. Fox

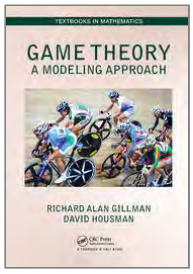
Series: Advances in Applied Mathematics

This unique book presents decision analysis in the context of mathematical modeling and game theory. The author emphasizes and focuses on the model formulation and modeling building skills required for decision analysis, as well as the technology to support the analysis. The primary objective of this book is illustrative in nature. It sets the tone through the introduction to mathematical modeling. The text provides a process for formally thinking about the problem and illustrates many scenarios and illustrative examples.

Chapman & Hall
November 2024 : 314pp
Pb: 978-1-032-72691-5 : **£74.99**
Hb: 978-1-032-72160-6 : **£190**
eBook: 978-1-032-72688-5
* For **full contents** and more information, visit: **www.routledge.com/9781032726915**

Game Theory

A Modeling Approach



Richard Alan Gillman , David Housman

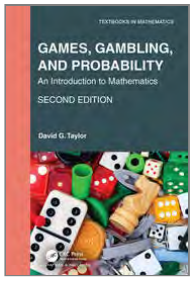
This is an introductory game theory book that quickly moves readers through the fundamental ideas of game theory to enable them to engage in creative modeling projects based on game theoretic concepts. The book is linear, as the chapters are not independent. Readers should be able to build simple game theoretic models after chapter 3. Each subsequent chapter adds another feature to the reader's model-building repertoire.

CRC Press
January 2023 : 342pp
Pb: 978-1-032-47559-2 : **£43.99**
Hb: 978-1-482-24809-8 : **£58.99**
eBook: 978-1-315-15688-0
* For **full contents** and more information, visit: **www.routledge.com/9781032475592**

2ND EDITION

Games, Gambling, and Probability

An Introduction to Mathematics



David G. Taylor Roanoke College, Salem, Virginia, USA

Series: Textbooks in Mathematics

The goal for this textbook is to complement the inquiry-based learning movement. According to the author, concepts and ideas will stick with the reader more when they are motivated in an interesting way. Here, we use questions about various games (not just casino games) to motivate the mathematics, and the writing aims to emphasiz a "just-in-time" mathematics approach. Topics are presented mathematically as questions about the games themselves are posed.

Chapman & Hall
August 2024 : 516pp
Pb: 978-1-032-01812-6 : **£56.99**
Hb: 978-0-367-82043-5 : **£84.99**
eBook: 978-1-003-01158-3
* For **full contents** and more information, visit: **www.routledge.com/9781032018126**

Games, Puzzles, and Computation

Robert A. Hearn , Erik D. Demaine

Series: AK Peters/CRC Recreational Mathematics Series

This book explores the underlying mathematical reasons for why games and puzzles are challenging and so much fun. It shows how games and puzzles can serve as powerful models of computation, offering a new way of thinking about computation. The appendices provide a substantial survey of all known results in the field of game complexity, serving as a reference guide for readers interested in the computational complexity of particular games or interested in open problems about such complexities.

A K Peters/CRC Press
June 2009 : 248pp
Hb: 978-1-568-81322-6 : **£105**
eBook: 978-0-429-19274-6
* For **full contents** and more information, visit: **www.routledge.com/9781568813226**

2ND EDITION

Introducing Game Theory and its Applications

Elliott Mendelson , Daniel Zwillinger

Series: Advances in Applied Mathematics

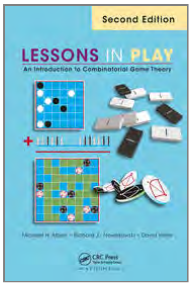
Introducing Game Theory and its Applications presents an easy-to-read introduction to the basic ideas and techniques of game theory. After a brief introduction, the authors begin with a chapter devoted to combinatorial games--a topic neglected or treated minimally in most other texts. The focus then shifts to two-person zero-sum games and their solution.

Chapman & Hall
August 2024 : 287pp
Pb: 978-1-032-81180-2 : **£63.99**
Hb: 978-0-367-50791-6 : **£160**
eBook: 978-1-003-05127-5
* For **full contents** and more information, visit: **www.routledge.com/9781032811802**

2ND EDITION

Lessons in Play

An Introduction to Combinatorial Game Theory, Second Edition



Michael Albert , Richard Nowakowski , David Wolfe

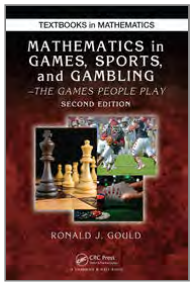
A thorough revision of a popular text in combinatorial game theory, this second edition reorganizes presentation to make it more widely accessible. The beginning focuses less on technical and more on conceptual material and applications. Still written in a textbook style with supporting evidence and proofs, the authors add many more exercises and examples and implement a two-step approach for some aspects of the material involving an initial introduction, examples, and basic results to be followed later by more technical and abstract results.

A K Peters/CRC Press
January 2023 : 346pp
Pb: 978-1-032-47566-0 : **£43.99**
Hb: 978-1-482-24303-1 : **£68.99**
eBook: 978-1-482-24304-8
* For **full contents** and more information, visit: **www.routledge.com/9781032475660**

2ND EDITION

Mathematics in Games, Sports, and Gambling

The Games People Play, Second Edition



Ronald J. Gould Emory University, Atlanta, Georgia, USA

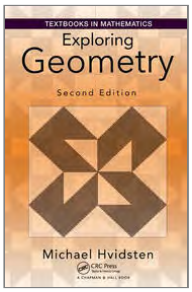
Series: Textbooks in Mathematics

This book focuses on mathematical thinking and problem solving, demonstrating how discrete probability, statistics, and elementary discrete mathematics can be applied in games, sports, and gambling situations. The text draws on numerous examples, questions, and problems to explain the application of mathematical theory to various real-life games.

Chapman & Hall
November 2015 : 378pp
Pb: 978-1-498-71952-0 : **£81**
Hb: 978-1-138-42752-5 : **£195**
eBook: 978-0-429-16215-2
* For **full contents** and more information, visit: **www.routledge.com/9781498719520**

2ND EDITION

Exploring Geometry



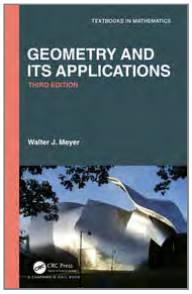
Michael Hvidsten

This text promotes student engagement with the beautiful ideas of geometry. Every major concept is introduced in its historicalcontext and connects the idea with real-life. A system of experimentation followed by rigorous explanation and proof is central.Exploratory projects play an integral role in this text. Students develop a better sense of how to prove a result and visualizeconnections between statements, making these connections real. They develop the intuition needed to conjecture a theorem anddevise a proof of what they have observed.

CRC Press
January 2023 : 558pp
Pb: 978-1-032-47706-0 : **£43.99**
Hb: 978-1-498-76080-5 : **£105**
eBook: 978-1-315-36764-4
* For **full contents** and more information, visit: **www.routledge.com/9781032477060**

3RD EDITION

Geometry and Its Applications



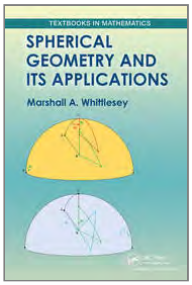
Walter Meyer

Series: Textbooks in Mathematics

This unique textbook combines traditional geometry presents a contemporary approach that is grounded in real-world applications. It balances the deductive approach with discovery learning, introduces axiomatic, Euclidean and non-Euclidean, and transformational geometry. The text integrates applications and examples throughout. The Third Edition offers many updates, including expaning on historical notes, Geometry and Its Applications is a significant text for any college or university that focuses on geometry's usefulness in other disciplines. It is especially appropriate for engineering and science majors, as well as future mathematics teachers.

Chapman & Hall
August 2024 : 489pp
Pb: 978-0-367-68999-5 : **£56.99**
Hb: 978-0-367-18798-9 : **£110**
eBook: 978-0-429-19832-8
* For **full contents** and more information, visit: **www.routledge.com/9780367689995**

Spherical Geometry and Its Applications



Marshall Whittlesey

Spherical Geometry and Its Applications introduces spherical geometry and its practical applications in a mathematically rigorous form. The text can serve as a course in spherical geometry for mathematics majors. Readers from various academic backgrounds can comprehend various approaches to the subject. The book introduces an axiomatic system for spherical geometry and uses it to prove the main theorems of the subject. It also provides an alternate approach using quaternions. The author illustrates how a traditional axiomatic system for plane geometry can be modified to produce a different geometric world.

CRC Press
January 2023 : 348pp
Pb: 978-1-032-47537-0 : **£43.99**
Hb: 978-0-367-19690-5 : **£84.99**
eBook: 978-0-429-32880-0
* For **full contents** and more information, visit: **www.routledge.com/9781032475370**

3RD EDITION

The Shape of Space

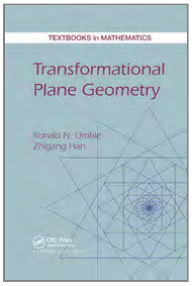
Jeffrey R. Weeks

Series: Textbooks in Mathematics

The Shape of Space, Third Edition maintains the standard of excellence set by the previous editions. This lighthearted textbook covers the basic geometry and topology of two- and three-dimensional spaces—stretching students' minds as they learn to visualize new possibilities for the shape of our universe. Its informal exposition and engaging exercises appeal to an exceptionally broad audience, from liberal arts students to math undergraduate and graduate students looking for a clear intuitive understanding to supplement more formal texts, and even laypeople seeking an entertaining self-study book.

Chapman & Hall
January 2020 : 362pp
Pb: 978-1-138-06121-7 : **£44.99**
Hb: 978-1-138-06227-6 : **£120**
eBook: 978-1-315-16255-3
* For **full contents** and more information, visit: **www.routledge.com/9781138061217**

Transformational Plane Geometry



Ronald N. Umble , Zhigang Han

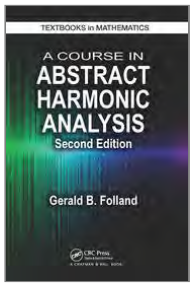
Series: Textbooks in Mathematics

Designed for a one-semester undergraduate course, this text takes a hands-on, interactive approach to teaching plane geometry. It is self-contained, defining basic concepts from linear and abstract algebra gradually as needed. Following the standards of the National Council of Teachers of Mathematics and the Common Core State Standards, the text provides students with a concrete visual alternative to Euclid's purely axiomatic approach to plane geometry. It uses exploratory activities to motivate geometrical concepts and includes exercises at the end of each section.

Chapman & Hall
June 2019 : 236pp
Pb: 978-1-138-38223-7 : **£58.99**
Hb: 978-1-482-23471-8 : **£84.99**
eBook: 978-0-429-09010-3
* For **full contents** and more information, visit: **www.routledge.com/9781138382237**

2ND EDITION

A Course in Abstract Harmonic Analysis



Gerald B. Folland

This book presents the essentials of harmonic analysis on locally compact groups in a concise and accessible form. The text provides necessary background on Banach algebras and spectral theory, develops the theory of analysis on Abelian groups and compact groups, examines the theory of induced representations, and explores the theory of representations of non-Abelian, non-compact groups. This second edition adds material on representations of the discrete Heisenberg group, coverage of von Neumann algebras and Wiener's theorem, and discussion of SU(2), SO(3), and SO(4) using quaternions.

Chapman & Hall
October 2024 : 320pp
Pb: 978-1-032-92221-8 : **£56.99**
Hb: 978-1-498-72713-6 : **£86.99**
eBook: 978-0-429-15469-0
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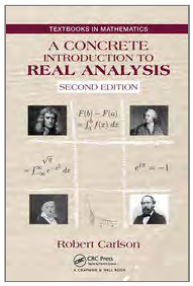
2ND EDITION

A Concrete Introduction to Real Analysis



Robert Carlson

The Second Edition offers a major re-organization of the book, with the goal of making it much more competitive as a text for students. The revised edition will be appropriate for a one- or two-semester introductory real analysis course. Like the first edition, the primary audience is the large collection of students who will never take a graduate level analysis course. The choice of topics and level of coverage is suitable for future high school teachers, and for students who will become engineers or other professionals needing a sound working knowledge of undergraduate mathematics.

CRC Press
January 2023 : 314pp
Pb: 978-1-032-47643-8 : **£43.99**
Hb: 978-1-498-77813-8 : **£105**
eBook: 978-1-315-15272-1
* For **full contents** and more information, visit: **www.routledge.com/9781032476438**

Classical Analysis

An Approach through Problems

Hongwei Chen Department of Mathematics, Christopher Newport University.

Series: Textbooks in Mathematics

A conceptually clear induction to fundamental analysis theorems; a tutorial for creative approaches for solving problems; a collection of modern challenging problems; a pathway to undergraduate research, all these desires gave life to the pages here. The author presents proofs as a form of exploration rather than just a manipulation of symbols. Each problem is selected for its natural charm - the connection with an authentic mathematical experience, the origination from the ingenious work of professionals, and ready developments into well-shaped results of broader interest.

Chapman & Hall
December 2022 : 442pp
Hb: 978-1-032-30247-8 : **£76.99**
eBook: 978-1-003-30413-5
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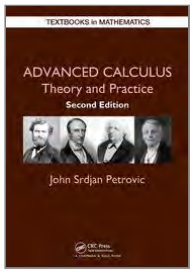
2ND EDITION

Advanced Calculus

Theory and Practice



John Petrovic

Advanced Calculus: Theory and Practice, Second Edition, expands on the material covered in elementary calculus and presents this material in a rigorous manner. The text improves students' problem-solving and proof-writing skills, familiarizes them with the historical development of calculus concepts, and helps them understand the connections among different topics. The book explains how various topics in calculus may seem unrelated but in reality have common roots. Emphasizing historical perspectives, the text gives students a glimpse into the development of calculus and its ideas from the age of Newton and Leibniz to the twentieth century. Nearly 300 examples lead to import

Chapman & Hall
February 2023 : 622pp
Pb: 978-1-032-47433-5 : **£43.99**
Hb: 978-1-138-56821-1 : **£110**
eBook: 978-0-203-70514-8
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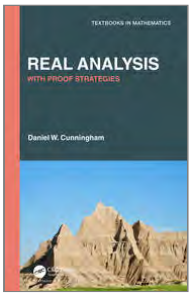
Real Analysis

With Proof Strategies



Daniel W. Cunningham

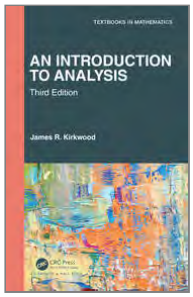
Series: Textbooks in Mathematics

Typically, undergraduates see real analysis as one of the most difficult courses that a mathematics major is required to take. The main reason for this perception is twofold: Students must comprehend new abstract concepts and learn to deal with these concepts on a level of rigor and proof not previously encountered. A key challenge for an instructor of real analysis is to find a way to bridge the gap between a student's preparation and the mathematical skills that are required to be successful in such a course. The book not only presents the fundamental theorems of real analysis, but also shows the reader how to compose and produce the proofs of these theorems.

Chapman & Hall
January 2023 : 281pp
Pb: 978-0-367-54966-4 : **£43.99**
Hb: 978-0-367-54965-7 : **£84.99**
eBook: 978-1-003-09136-3
* For **full contents** and more information, visit: **www.routledge.com/9780367549664**

3RD EDITION

An Introduction to Analysis



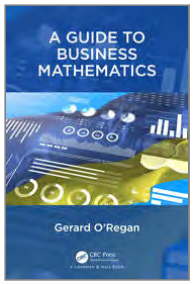
James R. Kirkwood Sweet Briar College, Virginia, USA

Series: Textbooks in Mathematics

The third edition of this widely popular textbook provides a mathematically rigorous introduction to analysis of real-valued functions of one variable. This intuitive, student-friendly text is written in a manner that will help to ease the transition from primarily computational to primarily theoretical mathematics. The material is presented clearly and as intuitive as possible while maintaining mathematical integrity. The author supplies the ideas of the proof and leaves the write-up as an exercise. The text also states why a step in a proof is the reasonable thing to do and which techniques are recurrent.

Chapman & Hall
August 2024 : 336pp
Pb: 978-1-032-02186-7 : **£56.99**
Hb: 978-0-367-70235-9 : **£84.99**
eBook: 978-1-003-14514-1
* For **full contents** and more information, visit: **www.routledge.com/9781032021867**

A Guide to Business Mathematics



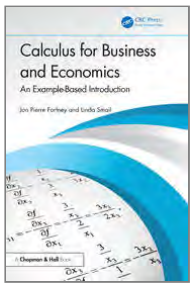
Gerard O'Regan

This book provides a valuable self-study guide to business practitioners, business students and the general reader to enable them to gain an appropriate insight into the mathematics used in business. This book offers an accessible introduction to essential mathematics for the business field. The author uses modelling and applications to motivate the material, demonstrating how mathematics is used in the financial sector. In addition to the role of the actuary and the banker, the book covers operations research including game theory, trade discounts, and the fundamentals of statistics and probability.

Chapman & Hall
August 2022 : 412pp
Pb: 978-1-032-31116-6 : **£76.99**
Hb: 978-1-032-31119-7 : **£195**
eBook: 978-1-003-30814-0
* For **full contents** and more information, visit: **www.routledge.com/9781032311166**

Calculus for Business and Economics

An Example-Based Introduction



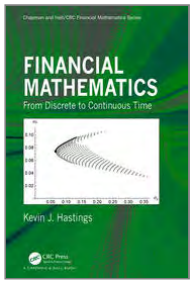
Jon Pierre Fortney , Linda Smail Zayed University, UAE

This book is designed for first-year university students specializing in business and economics. This book is crafted in a clear, easy-to-read style, covering all the essential calculus-related topics that students are likely to encounter in their studies. With real-world business and economics applications seamlessly integrated around the core calculus concepts, students will find the book of real practical value throughout their time in university and beyond.

Chapman & Hall
February 2025 : 344pp
Pb: 978-1-032-76850-2 : **£49.99**
Hb: 978-1-032-76430-6 : **£125**
eBook: 978-1-003-48023-5
* For **full contents** and more information, visit: **www.routledge.com/9781032768502**

Financial Mathematics

From Discrete to Continuous Time



Kevin J. Hastings Knox College, Galesburg, Illinois, USA

Series: Chapman and Hall/CRC Financial Mathematics Series

This book is for advanced undergraduates, MBA, or other students in quantitative finance programs. It is a study of the mathematical ideas and techniques of two main arms of the area of Financial Mathematics: portfolio optimization and derivative valuation. The approach is mathematically correct but informal, sometimes omitting proofs of the more difficult results and stressing practical results and interpretation. The text includes examples requiring the numerical and graphical power of the machine. It will illustrate simulation techniques to stand in for analytical techniques when the latter are impractical. The text follows up on the author's Introduction to Mathematical Finance.

Chapman & Hall
December 2022 : 429pp
Hb: 978-1-498-78040-7 : **£84.99**
eBook: 978-0-429-11365-9
* For **full contents** and more information, visit: **www.routledge.com/9781498780407**

Financial Mathematics

A Comprehensive Treatment in Discrete Time

Giuseppe Campolieti Wilfrid Laurier University, Waterloo, Ontario, Canada**, Roman N. Makarov** Wilfrid Laurier University, Waterloo, Ontario, Canada

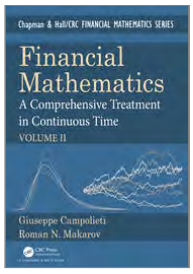
Series: Chapman and Hall/CRC Financial Mathematics Series

The book has been tested and refined through years of classroom teaching experience. With an abundance of examples, problems, and fully worked out solutions, the text introduces the financial theory and relevant mathematical methods in a mathematically rigorous yet engaging way. This textbook provides complete coverage of discrete-time financial models that form the cornerstones of financial derivative pricing theory. Unlike similar texts in the field, this one presents multiple problem-solving approaches, linking related comprehensive techniques for pricing different types of financial derivatives.

Chapman & Hall
August 2024 : 589pp
Pb: 978-1-032-02307-6 : **£56.99**
Hb: 978-1-138-58787-8 : **£91.99**
eBook: 978-0-429-50366-5
* For **full contents** and more information, visit: **www.routledge.com/9781032023076**

Financial Mathematics

A Comprehensive Treatment in Continuous Time Volume II



Giuseppe Campolieti Wilfrid Laurier University, Waterloo, Ontario, Canada**, Roman N. Makarov** Wilfrid Laurier University, Waterloo, Ontario, Canada

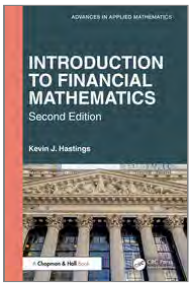
Series: Textbooks in Mathematics

The book has been tested and refined through years of classroom teaching experience. With an abundance of examples, problems, and fully worked out solutions, the text introduces the financial theory and relevant mathematical methods in a mathematically rigorous yet engaging way. This textbook provides complete coverage of discrete-time financial models that form the cornerstones of financial derivative pricing theory. Unlike similar texts in the field, this one presents multiple problem-solving approaches, linking related comprehensive techniques for pricing different types of financial derivatives.

Chapman & Hall
December 2022 : 510pp
Hb: 978-1-138-60363-9 : **£86.99**
eBook: 978-0-429-46888-9
* For **full contents** and more information, visit: **www.routledge.com/9781138603639**

2ND EDITION

Introduction to Financial Mathematics



Kevin J. Hastings Knox College, Galesburg, Illinois, USA

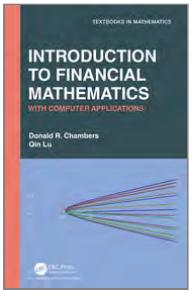
Series: Advances in Applied Mathematics

The second edition of this successful and widely recognized textbook again focuses on discrete topics. The author recognizes two distinct paths of study and careers of actuarial science and financial engineering. This text can be very useful as a common core for both. The notable changes and updates to this edition are itemized in the Preface, however, overall, the presentation has been made more efficient. One example is the chapter on discrete probability, rather unique in its emphasis on giving the deterministic problems studied earlier a probabilistic context.

Chapman & Hall
November 2024 : 413pp
Hb: 978-1-032-26236-9 : **£84.99**
eBook: 978-1-003-28727-8
* For **full contents** and more information, visit: **www.routledge.com/9781032262369**

Introduction to Financial Mathematics

With Computer Applications



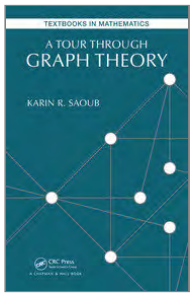
Donald R. Chambers Lafayette College, USA**, Qin Lu** Lafayette College, USA

Series: Textbooks in Mathematics

This book's primary objective is to educate aspiring finance professionals about mathematics and computation in the context of financial derivatives. The authors offer a balance of traditional coverage and technology to fill the void between highly mathematical books and broad finance books. A key feature of this book is its focus on applying models in three programming languages –R, Mathematica and EXCEL. Each of the three approaches offers unique advantages. The computer applications are carefully introduced and require little prior programming background.

Chapman & Hall
August 2024 : 580pp
Pb: 978-0-367-75278-1 : **£56.99**
Hb: 978-0-367-41039-1 : **£91.99**
eBook: 978-0-367-81442-7
* For **full contents** and more information, visit: **www.routledge.com/9780367752781**

A Tour through Graph Theory



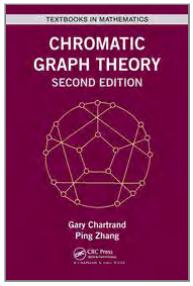
Karin R Saoub

Series: Textbooks in Mathematics

A Tour Through Graph Theory introduces graph theory to students who are not mathematics majors. Rather than featuring formal mathematical proofs, the book focuses on explanations and logical reasoning. It also includes thoughtful discussions of historical problems and modern questions. The book inspires readers to learn by working through examples, drawing graphs and exploring concepts. This book distinguishes itself from others covering the same topic. It strikes a balance of focusing on accessible problems for non-mathematical students while providing enough material for a semester-long course.

Chapman & Hall
October 2017 : 320pp
Pb: 978-1-138-19780-0 : **£81**
Hb: 978-1-138-07084-4 : **£165**
eBook: 978-1-315-11683-9
* For **full contents** and more information, visit: **www.routledge.com/9781138197800**

Chromatic Graph Theory



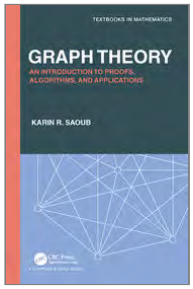
Gary Chartrand , Ping Zhang

With Chromatic Graph Theory, Second Edition, the authors present various fundamentals of graph theory that lie outside of graph colorings, including basic terminology and results, trees and connectivity, Eulerian and Hamiltonian graphs, matchings and factorizations, and graph embeddings. The remainder of the text deals exclusively with graph colorings.

CRC Press
January 2023 : 526pp
Pb: 978-1-032-47510-3 : **£43.99**
Hb: 978-1-138-34386-3 : **£115**
eBook: 978-0-429-43886-8
* For **full contents** and more information, visit: **www.routledge.com/9781032475103**

Graph Theory

An Introduction to Proofs, Algorithms, and Applications



Karin R Saoub

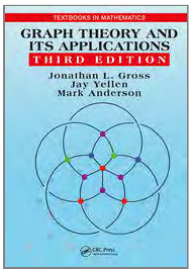
Series: Textbooks in Mathematics

This text, for the first undergraduate course, will explore major topics in graph theory from both a theoretical and applied viewpoint. Topics will progress from understanding basic terminology, to addressing computational questions, and finally ending with broad theoretical results. Examples and exercises will guide the reader through this progression, with particular care in strengthening proof techniques and written mathematical explanations. Current applications and exploratory exercises are provided to further the reader's mathematical reasoning and understanding of the relevance of graph theory to the modern world.

Chapman & Hall
March 2021 : 438pp
Pb: 978-0-367-74375-8 : **£45.99**
Hb: 978-1-138-36140-9 : **£84.99**
eBook: 978-1-138-36141-6
* For **full contents** and more information, visit: **www.routledge.com/9780367743758**

3RD EDITION

Graph Theory and Its Applications



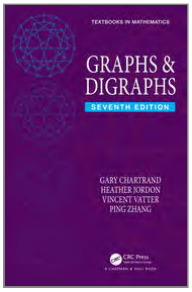
Jonathan L. Gross , Jay Yellen , Mark Anderson

Graph Theory and Its Applications, Third Edition is the latest edition of the international, bestselling textbook for undergraduate courses in graph theory, yet expansive enough to be used for graduate courses as well. The textbook takes a comprehensive and accessible approach to graph theory that integrates careful exposition of classical developments with emerging methods, models, and practical needs.

CRC Press
January 2023 : 592pp
Pb: 978-1-032-47595-0 : **£43.99**
Hb: 978-1-482-24948-4 : **£84.99**
eBook: 978-0-429-42513-4
* For **full contents** and more information, visit: **www.routledge.com/9781032475950**

6TH EDITION

Graphs & Digraphs



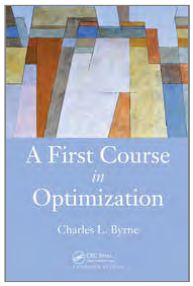
Gary Chartrand Western Michigan University, Kalamazoo, USA**, Linda Lesniak** Western Michigan University, Kalamazoo, Michigan, USA**, Ping Zhang** Western Michigan University, Kalamazoo, Michigan, USA

Series: Discrete Mathematics and Its Applications

This book masterfully employs student-friendly exposition, clear proofs, abundant examples, and numerous exercises to provide an essential understanding of the concepts, theorems, history, and applications of graph theory. Fully updated and thoughtfully reorganized, the sixth edition of this bestselling, classroom-tested text adds 160+ new exercises, several conjectures and open problems, many new theorems and examples, new material on graph decompositions, a proof of the perfect graph theorem, material on Hamiltonian extension, and a new chapter on the probabilistic method in graph theory and random graphs.

Chapman & Hall
December 2015 : 640pp
Pb: 978-1-032-60698-9 : **£57.99**
Hb: 978-1-498-73576-6 : **£105**
eBook: 978-1-003-46128-9
* For **full contents** and more information, visit: **www.routledge.com/9781032606989**

A First Course in Optimization

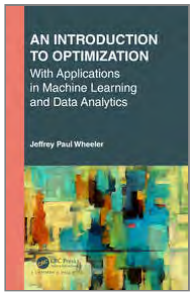


Charles Byrne

This text is designed for a one-semester course in optimization taken by advanced undergraduate and beginning graduate students in the mathematical sciences and engineering. It teaches students the basics of continuous optimization and helps them better understand the mathematics from previous courses. The book focuses on general problems and the underlying theory. It covers the fundamental problems of constrained and unconstrained optimization, linear and convex programming, basic iterative solution algorithms, and more general iterative optimization methods.

Chapman & Hall
October 2024 : 316pp
Pb: 978-1-032-92238-6 : **£56.99**
Hb: 978-1-482-22656-0 : **£96.99**
eBook: 978-0-429-16097-4
* For **full contents** and more information, visit: **www.routledge.com/9781032922386**

An Introduction to Optimization with Applications in Machine Learning and Data Analytics



Jeffrey Paul Wheeler Department of Mathematics, The University of Pittsburgh, PA, USA

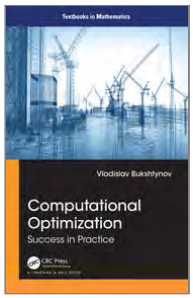
Series: Textbooks in Mathematics

The primary goal of this text is a practical one. Equipping students with the enough knowledge and creating an independent research platform, the author strives to prepare students for professional careers. Providing students with a marketable skill set requires topics from many areas of optimization. The initial goal of this text is to develop marketable skill set for mathematics majors but also for students of engineering, computer science, economics, statistics, and business. Optimization reaches into many different fields.

Chapman & Hall
December 2023 : 473pp
Hb: 978-0-367-42550-0 : **£91.99**
eBook: 978-0-367-42551-7
* For **full contents** and more information, visit: **www.routledge.com/9780367425500**

Computational Optimization

Success in Practice



Vladislav Bukshtynov

Series: Textbooks in Mathematics

This textbook offers a guided tutorial reviewing the theoretical fundamentals while going through the practical examples used for constructing the computational frame, applied to various real-life models. This book will lead the readers through the entire process. They will start from the simple calculus examples of fitting data and basics of optimal control methods and end up by constructing a multi-component framework for running PDE-constrained optimization. This framework will be assembled piece by piece; the readers may apply this process at the level of complexity matching their current projects or research needs.

Chapman & Hall
February 2023 : 414pp
Hb: 978-1-032-22947-8 : **£86.99**
eBook: 978-1-003-27516-9
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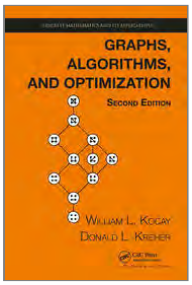
2ND EDITION

Graphs, Algorithms, and Optimization



William Kocay , Donald L. Kreher

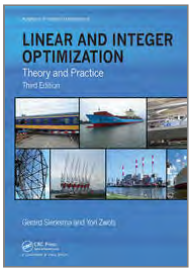
This comprehensive text features clear exposition on modern algorithmic graph theory presented in a rigorous yet approachable way. It covers the major areas of graph theory, including discrete optimization and its connection to graph algorithms. The authors explore surface topology from an intuitive point of view and include detailed discussions on linear programming that emphasize graph theory problems useful in mathematics and computer science. Many algorithms are provided along with the data structure needed to program the algorithms efficiently.

CRC Press
January 2023 : 566pp
Pb: 978-1-032-47715-2 : **£43.99**
Hb: 978-1-482-25116-6 : **£76.99**
eBook: 978-1-315-37256-3
* For **full contents** and more information, visit: **www.routledge.com/9781032477152**

3RD EDITION

Linear and Integer Optimization

Theory and Practice, Third Edition



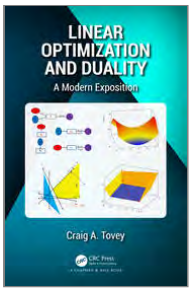
Gerard Sierksma , Gerard Sierksma , Yori Zwols

This textbook presents a strong and clear relationship between theory and practice. It covers basic topics such as Dantzig's simplex algorithm, duality, sensitivity analysis, integer optimization models, and network models as well as more advanced topics including interior point algorithms, the branch-and-bound algorithm, cutting planes, and complexity. Along with case studies, it also discusses more advanced techniques such as column generation, multiobjective optimization, and game theory. It also includes computer code in the form of models in GMPL. The book contains appendices covering mathematical proofs, linear algebra, graph theory, convexity, and a background in nonlinear o

Chapman & Hall
October 2024 : 686pp
Pb: 978-1-032-91780-1 : **£56.99**
Hb: 978-1-498-71016-9 : **£105**
eBook: 978-0-429-15996-1
* For **full contents** and more information, visit: **www.routledge.com/9781032917801**

Linear Optimization and Duality

A Modern Exposition



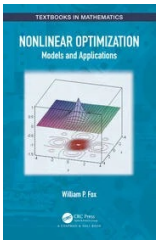
Craig A. Tovey Georgia Institute of Technology, Atlanta, USA

This textbook presents a theoretical treatment of linear programming, network flows and applications, integer programming, and computational complexity. The author includes a rigorous discussion of theory, numerous examples and exercises, and geometric intuitive explanations. He also offers computational tips and interpretation of software input. Unlike other books, this text incorporates duality throughout its chapters, rather than treating it as an add-on topic. It also discusses computational complexity theory, which can be used to classify problems according to the appropriate solution method.

Chapman & Hall
August 2024 : 586pp
Pb: 978-0-367-61820-9 : **£56.99**
Hb: 978-1-439-88746-2 : **£71.99**
eBook: 978-1-315-11721-8
* For **full contents** and more information, visit: **www.routledge.com/9780367618209**

Nonlinear Optimization

Models and Applications



William P. Fox

Series: Textbooks in Mathematics

The study of nonlinear optimization is both fundamental and a key course for applied mathematics, operations research, management science, industrial engineering, and economics at most colleges and universities. The use of linear programming software for microcomputers has become widely available. Like most tools, however, it is useless unless the user understands its applications and purpose. The user must ensure that the mathematical input accurately reflects the real-world problem to be solved and that the numerical results are correctly used. Therefore, the mathematical modeling framework is critical to setting up and solving mathematical programming problems.

Chapman & Hall
August 2024 : 416pp
Pb: 978-0-367-56111-6 : **£56.99**
Hb: 978-0-367-44415-0 : **£84.99**
eBook: 978-1-003-00957-3
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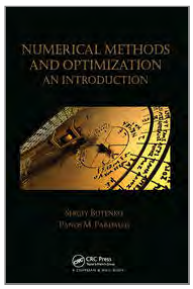
Numerical Methods and Optimization

An Introduction



Sergiy Butenko , Panos M. Pardalos

This book combines the materials from introductory numerical methods and introductory optimization courses into a single text. This classroom-tested approach enriches a standard numerical methods syllabus with optional chapters on numerical optimization and provides a valuable numerical methods background for students taking an introductory optimization or operations research course. The book includes some mathematical proofs as samples of rigorous analysis but in most cases, uses only examples to illustrate the concepts. A MATLAB® guide and code are available for download.

Chapman & Hall
October 2024 : 414pp
Pb: 978-1-032-92031-3 : **£56.99**
Hb: 978-1-466-57777-0 : **£84.99**
eBook: 978-0-429-18842-8
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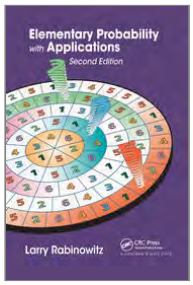
2ND EDITION

Elementary Probability with Applications



Larry Rabinowitz

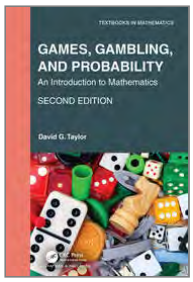
This text shows students how probability has practical uses in many different fields, such as business, politics, and sports. It requires minimal mathematics training and no previous knowledge of probability. In the book, students learn about probability concepts from real-world examples rather than theory. The text explains how probability models with underlying assumptions are used to model actual situations. By studying the book, students will appreciate the subject of probability and its applications and develop their problem-solving and reasoning skills.

Chapman & Hall
September 2020 : 218pp
Pb: 978-0-367-65828-1 : **£47.99**
Hb: 978-1-498-77132-0 : **£84.99**
eBook: 978-1-315-36714-9
* For **full contents** and more information, visit: **www.routledge.com/9780367658281**

2ND EDITION

Games, Gambling, and Probability

An Introduction to Mathematics



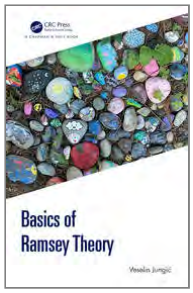
David G. Taylor Roanoke College, Salem, Virginia, USA

Series: Textbooks in Mathematics

The goal for this textbook is to complement the inquiry-based learning movement. According to the author, concepts and ideas will stick with the reader more when they are motivated in an interesting way. Here, we use questions about various games (not just casino games) to motivate the mathematics, and the writing aims to emphasiz a "just-in-time" mathematics approach. Topics are presented mathematically as questions about the games themselves are posed.

Chapman & Hall
August 2024 : 516pp
Pb: 978-1-032-01812-6 : **£56.99**
Hb: 978-0-367-82043-5 : **£84.99**
eBook: 978-1-003-01158-3
* For **full contents** and more information, visit: **www.routledge.com/9781032018126**

Basics of Ramsey Theory

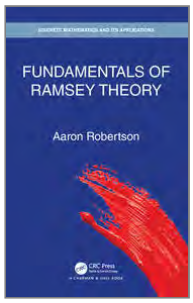


Veselin Jungić Simon Fraser University, Canada

Basics of Ramsey Theory serves as a gentle introduction to Ramsey theory for students interested in becoming familiar with a dynamic segment of contemporary mathematics that combines ideas from number theory and combinatorics. The core of the of the book consists of discussions and proofs of the results now universally known as Ramsey's theorem, van der Waerden's theorem, Schur's theorem, Rado's theorem, the Hales–Jewett theorem, and the Happy End Problem of Erdős and Szekeres. The aim is to present these in a manner that will be challenging but enjoyable, and broadly accessible to anyone with a genuine interest in mathematics.

Chapman & Hall
June 2023 : 238pp
Hb: 978-1-032-26037-2 : **£100**
eBook: 978-1-003-28637-0
* For **full contents** and more information, visit: **www.routledge.com/9781032260372**

Fundamentals of Ramsey Theory



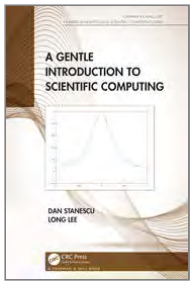
Aaron Robertson Colgate University

Series: Discrete Mathematics and Its Applications

This up-to-date book introduces the field of Ramsey theory from several different viewpoints so that the reader can decide which flavor of Ramsey theory best suits them. The book covers integer, graph, and Euclidean Ramsey theory with many proofs being combinatorial in nature. The author motivates topics and discussion, rather than just a list of theorems and proofs. In order to engage the reader, each chapter has a section of exercises. The presentation is comprehensive and reader friendly.

Chapman & Hall
August 2024 : 255pp
Pb: 978-1-032-01802-7 : **£56.99**
Hb: 978-1-138-36433-2 : **£84.99**
eBook: 978-0-429-43141-8
* For **full contents** and more information, visit: **www.routledge.com/9781032018027**

A Gentle Introduction to Scientific Computing



Dan Stanescu University of Wyoming, USA**, Long Lee** University of Wyoming, USA

Series: Chapman & Hall/CRC Numerical Analysis and Scientific Computing Series

A Gentle Introduction to Scientific Computing intends to serve a very broad audience of college students across a variety of disciplines. It aims to expose its readers to some of the basic tools and techniques used in computational science, with a view to helping them understand what happens 'behind the scenes' when simple tools such as solving equations, plotting and interpolation are used. To make the book as practical as possible, the authors explore their subject both from a theoretical, mathematical perspective and from an implementation-driven, programming perspective.

Chapman & Hall
May 2024 : 282pp
Pb: 978-1-032-26131-7 : **£45.99**
Hb: 978-0-367-20684-0 : **£84.99**
eBook: 978-0-429-26287-6
* For **full contents** and more information, visit: **www.routledge.com/9781032261317**

An Introduction to Scientific Computing with MATLAB® and Python Tutorials

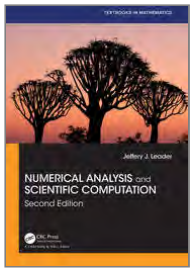
Sheng Xu

This book serves as a textbook for a first introductory course on scientific computing. It covers preliminary numerical concepts and techniques to get students started in scientific computing. The prerequisites are only calculus and linear algebra, so a student can take the course in the second year. Many numerical techniques, such as those for ordinary and partial differential equations, iterative methods for eigenvalue problems, and methods for constrained optimization, are not included, because specialized courses focused on these numerical techniques are available in most universities. Tutorials for MatLab and Python use are included.

Chapman & Hall
August 2024 : 397pp
Pb: 978-1-032-06318-8 : **£56.99**
Hb: 978-1-032-06315-7 : **£84.99**
eBook: 978-1-003-20169-4
* For **full contents** and more information, visit: **www.routledge.com/9781032063188**

2ND EDITION

Numerical Analysis and Scientific Computation



Jeffery J. Leader

Series: Textbooks in Mathematics

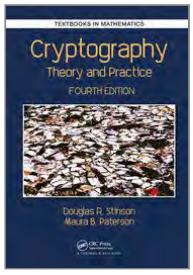
The Second Edition is an introductory numerical analysis text with a more modern scientific computing flavour. The distinguishing approach is intended a.) bringing more modern methods, often taught at the beginning graduate level, down to the undergraduate level; b.) infusing the book with Matlab; and c.) developing the subject in a way that highlights how numerical analysis can be used in applied computational modelling, while still sticking with a primarily mathematical approach. The new edition includes Python, more on special functions and computer arithmetic, and new chapters on computational modelling/scientific programming principles and parallel computing.

Chapman & Hall
August 2024 : 582pp
Pb: 978-1-032-20483-3 : **£56.99**
Hb: 978-0-367-48686-0 : **£91.99**
eBook: 978-1-003-04227-3
* For **full contents** and more information, visit: **www.routledge.com/9781032204833**

4TH EDITION

Cryptography

Theory and Practice



Douglas Robert Stinson , Maura Paterson

Through three editions, Cryptography: Theory and Practice, has been embraced by instructors and students alike. It offers a comprehensive primer for the subject's fundamentals while presenting the most current advances in cryptography.The authors offer comprehensive, in-depth treatment of the methods and protocols that are vital to safeguarding the seemingly infinite and increasing amount of information circulating around the world.

CRC Press
January 2023 : 598pp
Pb: 978-1-032-47604-9 : **£43.99**
Hb: 978-1-138-19701-5 : **£86.99**
eBook: 978-1-315-28249-7
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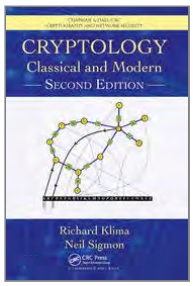
2ND EDITION

Cryptology

Classical and Modern

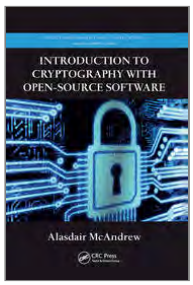


Richard Klima , Richard E. Klima , Neil Sigmon , Neil P. Sigmon

Cryptology: Classical and Modern, Second Edition proficiently introduces readers to the fascinating field of cryptology. The book covers classical methods including substitution, transposition, Playfair, ADFGVX, Alberti, Vigene re, and Hill ciphers.

CRC Press
January 2023 : 496pp
Pb: 978-1-032-47592-9 : **£43.99**
Hb: 978-1-138-04762-4 : **£110**
eBook: 978-1-315-17066-4
* For **full contents** and more information, visit: **www.routledge.com/9781032475929**

Introduction to Cryptography with Open-Source Software



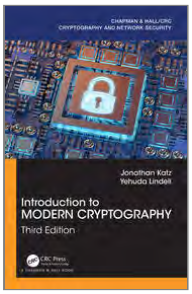
Alasdair McAndrew

This text illustrates algorithms and cryptosystems using examples and the open-source computer algebra system of Sage. It enables students to run their own programs and develop a deep and solid understanding of the mechanics of cryptography. The author, a noted educator in the field, covers the methods, algorithms, and applications of modern cryptographic systems. He provides a highly practical learning experience by progressing at a gentle pace, keeping mathematics at a manageable level, and including numerous end-of-chapter exercises.

CRC Press
October 2024 : 462pp
Pb: 978-1-032-91965-2 : **£44.99**
Hb: 978-1-439-82570-9 : **£84.99**
eBook: 978-0-429-09455-2
* For **full contents** and more information, visit: **www.routledge.com/9781032919652**

3RD EDITION

Introduction to Modern Cryptography



Jonathan Katz University of Maryland, College Park, USA**,**
Yehuda Lindell Bar-Ilan University, Ramat Gan, Israel

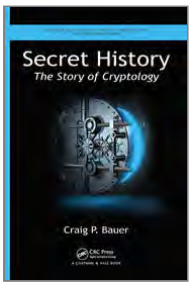
Series: Chapman & Hall/CRC Cryptography and Network Security Series

Now the most used texbook for introductory cryptography courses in both mathematics and computer science, the Third Edition builds upon previous editions by offering several new sections, topics, and exercises. The authors introduce the core principles of modern cryptography, with an emphasis on formal definitions, clear assumptions, and rigorous proofs of security. The book begins by focusing on private-key cryptography. The second half covers public-key cryptography, beginning with a self-contained introduction to the number theory needed to understand the RSA, Diffie-Hellman, and El Gamal cryptosystems (and others), and adds coverage of post-quantum cryptograpy to this edition.

Chapman & Hall
December 2020 : 648pp
Hb: 978-0-815-35436-9 : **£110**
eBook: 978-1-351-13303-6
* For **full contents** and more information, visit: **www.routledge.com/9780815354369**

Secret History

The Story of Cryptology



Craig P. Bauer

Most available cryptology books primarily focus on either mathematics or history. Breaking this mold, Secret History gives a thorough yet accessible treatment of both the mathematics and history of cryptology. Requiring minimal mathematical prerequisites, the book presents the mathematics in sufficient detail and weaves the history throughout the chapters. In addition to the fascinating historical and political sides of cryptology, the author—a former Scholar-in-Residence at the U.S. National Security Agency Center for Cryptologic History—includes interesting instances of codes and ciphers in crime, literature, music, and art.

Chapman & Hall
October 2024 : 620pp
Pb: 978-1-032-91819-8 : **£56**
Hb: 978-1-466-56186-1 : **£81**
eBook: 978-0-429-09987-8
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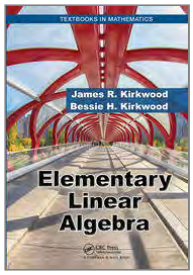
Elementary Linear Algebra



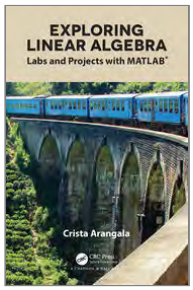
James R. Kirkwood , Bessie H. Kirkwood

Elementary Linear Algebra is written for the first undergraduate course. The book focuses on the importance of linear algebra in many disciplines such as engineering, economics, statistics, and computer science. The text reinforces critical ideas and lessons of traditional topics. More importantly, the book is written in a manner that deeply ingrains computational methods.

CRC Press
January 2023 : 322pp
Pb: 978-1-032-47638-4 : **£43.99**
Hb: 978-1-498-77846-6 : **£135**
eBook: 978-1-351-25312-3
* For **full contents** and more information, visit: **www.routledge.com/9781032476384**

Exploring Linear Algebra

Labs and Projects with MATLAB®



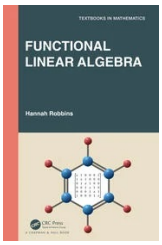
Crista Arangala Elon University, North Carolina, USA

Series: Textbooks in Mathematics

This text is meant to be a hands-on lab manual that can be used in class everyday to guide the exploration of the theory and applications of linear algebra. For the most part, labs can be used individually or in a sequence. Each lab consists of and explanation of material with integrated exercises. Some labs are split into multiple subsections and thus exercises are separated by those subsections.The exercise sections integrate problems using Mathematica demonstrations (an online tool that can be used with an browser with java capabilities) and Matlab coding. This allows students to discover the theory and applications of linear algebra in a meaningful and memorable way

Chapman & Hall
March 2019 : 156pp
Pb: 978-1-138-06349-5 : **£45.99**
Hb: 978-1-138-06351-8 : **£135**
eBook: 978-1-315-16099-3
* For **full contents** and more information, visit: **www.routledge.com/9781138063495**

Functional Linear Algebra



Hannah Robbins Roanoke College, USA

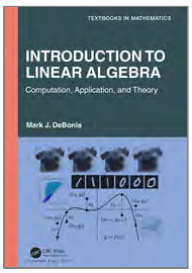
Series: Textbooks in Mathematics

This is a unique text authored to address the need for a one-term linear algebra course when students have only had calculus. It does not assume students have had a proofs course. As readers work through this book, it is important to understand the basic ideas, definitions, and computational skills. The best way to do this is to work through enough examples and problems to make sure the material is thoroughly grasped. The computational techniques used in this book can be done either by hand or using technology. This book specifically addresses how to use Mathematica, but feel free to use whichever technological tool best suits your needs.

Chapman & Hall
August 2024 : 405pp
Pb: 978-0-367-74559-2 : **£56.99**
Hb: 978-0-367-48687-7 : **£84.99**
eBook: 978-1-003-04228-0
* For **full contents** and more information, visit: **www.routledge.com/9780367745592**

Introduction To Linear Algebra

Computation, Application, and Theory



Mark J. DeBonis Manhattan College, USA

Series: Textbooks in Mathematics

This book is designed for students who have never been exposed to the topics in a linear algebra course. The text is filled with interesting and diverse application sections but is also a theoretical text which aims to train students to do succinct computation in a knowledgeable way. After completing the course with this text, the student will not only know the best and shortest way to do linear algebraic computations but will also know why such computations are both effective and successful.

Chapman & Hall
May 2024 : 434pp
Pb: 978-1-032-10938-1 : **£45.99**
Hb: 978-1-032-10898-8 : **£84.99**
eBook: 978-1-003-21779-4
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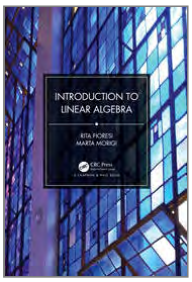
Introduction to Linear Algebra

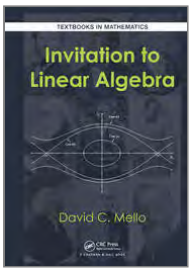


Rita Fioresi Università di Bologna, Italy**, Marta Morigi** Università di Bologna, Italy

Linear algebra provides the essential mathematical tools to tackle all the problems in Science. Introduction to Linear Algebra is primarily aimed at students in applied fields (e.g. Computer Science and Engineering), providing them with a concrete, rigorous approach to face and solve various types of problems for the applications of their interest. This book offers a straightforward introduction to linear algebra that requires a minimal mathematical background to read and engage with.

Chapman & Hall
September 2023 : 274pp
Pb: 978-0-367-63550-3 : **£45.99**
Hb: 978-0-367-62654-9 : **£84.99**
eBook: 978-1-003-11960-9
* For **full contents** and more information, visit: **www.routledge.com/9780367635503**

Invitation to Linear Algebra



David C. Mello

Unlike most books of this type, the book has been organized into "lessons" rather than chapters. This has been done to limit the size of the mathematical morsels that students must digest during each class, and to make it easier for instructors to budget class time. The book contains considerably more material than normally appears in a first course. For example, several advanced topics such as the Jordan canonical form and matrix power series have been included. This was done to make the book more flexible than most books presently available, and to allow instructors to choose enrichment material which may reflect their interests, and those of their students.

CRC Press
January 2023 : 408pp
Pb: 978-1-032-47687-2 : **£43.99**
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eBook: 978-1-315-15319-3
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Linear Algebra

Lina Oliveira

This book is intended primarily as an undergraduate textbook but is written in such a way that it can be also a valuable resource for independent learning. The narrative of the book takes a matrix approach: the exposition is intertwined with matrices either as the main subject or as tools to explore the theory. Each chapter contains a description of its aims, a summary at the end of the chapter, exercises and solutions. The reader is carefully guided through the theory and techniques presented which are outlined throughout in "How to…" text boxes. Common mistakes and pitfalls are also pointed out as one goes along.

Chapman & Hall
July 2022 : 328pp
Pb: 978-0-815-37331-5 : **£54.99**
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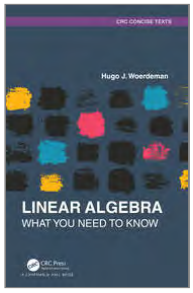
Linear Algebra

What you Need to Know



Hugo J. Woerdeman

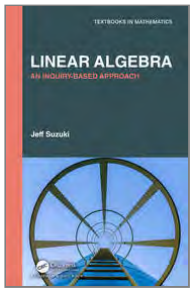
Series: Textbooks in Mathematics

This concise introduction to Linear Algebra is authored by a leading researcher whose goal is to present a book that covers all the requisite material for a first course on the topic in a more practical way. The book focuses on the development of the mathematical theory and also presents many applications to assist instructors and students to master the material and apply it to their areas of interest, whether it be to further their studies in mathematics, science, engineering, statistics, economics, or other disciplines. Finally, the text encourages the exploration of different computational software programs.

Chapman & Hall
March 2021 : 282pp
Pb: 978-0-367-68473-0 : **£76.99**
Hb: 978-0-367-69738-9 : **£185**
eBook: 978-1-003-13770-2
* For **full contents** and more information, visit: **www.routledge.com/9780367684730**

Linear Algebra

An Inquiry-Based Approach



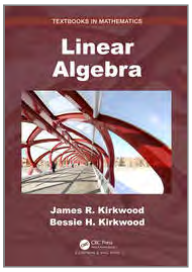
Jeff Suzuki Brooklyn College, NY, USA

Series: Textbooks in Mathematics

This book is written to give instructors a tool to teach students to develop a mathematical concept from first principles. The Inquiry-based Approach is central to this development. The text is organized around and offers the standard topics expected in a first undergraduate course in linear algebra. This text is offered to foster an environment that supports the creative process. The twin goals of this textbook are: Providing opportunities to be creative, Teaching "ways of thinking" that will make it easier for to be creative.

CRC Press
August 2024 : 376pp
Pb: 978-0-367-75487-7 : **£56.99**
Hb: 978-0-367-24896-3 : **£84.99**
eBook: 978-0-429-28498-4
* For **full contents** and more information, visit: **www.routledge.com/9780367754877**

Linear Algebra



James R. Kirkwood Sweet Briar College, Virginia, USA**, Bessie H. Kirkwood**

Series: Textbooks in Mathematics

This is the second of a two-part set of books for the undergraduate linear algebra sequence. The text is for the more advanced course taught in most mathematics departments. This course is based around matrix theory and focused on the theory of linear algebra. In addition to the chapters found in the author's Elementary Linear Algebra, here he offers seven additional chapters including the Jordan Canonical Form and The Perron-Frobenius Theorem, The book emphasizes intutition as well as rigor. It offers a historical perspective.

Chapman & Hall
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Linear Algebra and Its Applications with R

Ruriko Yoshida

Series: Textbooks in Mathematics

The book developed from the need to teach a linear algebra course to students focused on data science and bioinformatics programs. The author presents the topics in a traditional course yet offers lectures as well as lab exercises on simulated and empirical data sets. This textbook provides students a theoretical basis which can then be applied to the practical R and Python problems, providing the tools needed for real-world applications. This book is designed from first principles to demonstrate the importance of linear algebra through working computational examples with R and python including tutorials on how to install R in the Appendix.

Chapman & Hall
August 2024 : 424pp
Pb: 978-1-032-02052-5 : **£56.99**
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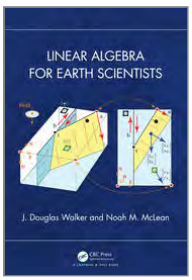
Linear Algebra for Earth Scientists



J. Douglas Walker , Noah M. McLean

This book is written for undergraduate and graduate students in Earth and Environmental sciences. It is intended to give students enough background in linear algebra to work with systems of equations and data in geology, hydrology, geophysics, or whatever part of the Earth Sciences they engage with. The book does not presuppose any extensive prior knowledge of linear algebra. Instead, the book builds students up from a low base to a working understanding of the subject that they can apply to their work, using many familiar examples in the geosciences.

Chapman & Hall
April 2024 : 320pp
Hb: 978-1-032-55594-2 : **£97.99**
eBook: 978-1-003-43204-3
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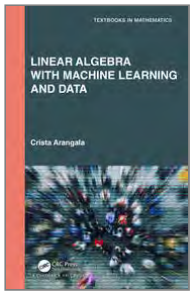
Linear Algebra With Machine Learning and Data



Crista Arangala Elon University, North Carolina, USA

Series: Textbooks in Mathematics

This book takes a deep dive into several key linear algebra subjects as they apply to data analytics and data mining. The book offers a case study approach where each case will be grounded in a real-world application. This text is meant to be used for a second course in applications of Linear Algebra to Data Analytics, with a supplemental chapter on Decision Trees and their applications in regression analysis. The text can be considered in two different but overlapping general data analytics categories, clustering and interpolation.

Chapman & Hall
May 2023 : 310pp
Hb: 978-0-367-45839-3 : **£81.99**
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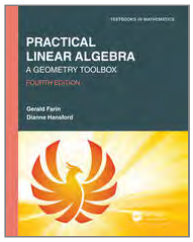
4TH EDITION

Practical Linear Algebra

A Geometry Toolbox



Gerald Farin Arizona State University, Tempe, USA**,**
Dianne Hansford FarinHansford R&D, Paradise Valley, Arizona, USA

Series: Textbooks in Mathematics

Linear algebra is growing in importance. 3D entertainment, animations in movies and video games are developed using linear algebra. The Fourth Edition of this popular text introduces linear algebra in a comprehensive, geometric, and algorithmic way. The authors start with the fundamentals in 2D and 3D, then move on to higher dimensions, expanding on the fundamentals and introducing new topics, which are necessary for many real-life applications and the development of abstract thought. Applications are introduced to motivate topics.This practical approach to a linear algebra course, whether through classroom instruction or self-study, is unique to this book. .

Chapman & Hall
August 2024 : 590pp
Pb: 978-1-032-02191-1 : **£56.99**
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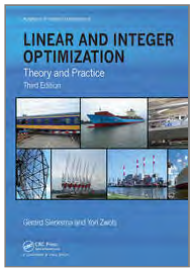
3RD EDITION

Linear and Integer Optimization

Theory and Practice, Third Edition



Gerard Sierksma , Gerard Sierksma , Yori Zwols

This textbook presents a strong and clear relationship between theory and practice. It covers basic topics such as Dantzig's simplex algorithm, duality, sensitivity analysis, integer optimization models, and network models as well as more advanced topics including interior point algorithms, the branch-and-bound algorithm, cutting planes, and complexity. Along with case studies, it also discusses more advanced techniques such as column generation, multiobjective optimization, and game theory. It also includes computer code in the form of models in GMPL. The book contains appendices covering mathematical proofs, linear algebra, graph theory, convexity, and a background in nonlinear o

Chapman & Hall
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Hb: 978-1-498-71016-9 : **£105**
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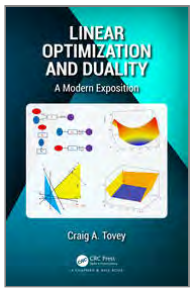
Linear Optimization and Duality

A Modern Exposition



Craig A. Tovey Georgia Institute of Technology, Atlanta, USA

This textbook presents a theoretical treatment of linear programming, network flows and applications, integer programming, and computational complexity. The author includes a rigorous discussion of theory, numerous examples and exercises, and geometric intuitive explanations. He also offers computational tips and interpretation of software input. Unlike other books, this text incorporates duality throughout its chapters, rather than treating it as an add-on topic. It also discusses computational complexity theory, which can be used to classify problems according to the appropriate solution method.

Chapman & Hall
August 2024 : 586pp
Pb: 978-0-367-61820-9 : **£56.99**
Hb: 978-1-439-88746-2 : **£71.99**
eBook: 978-1-315-11721-8
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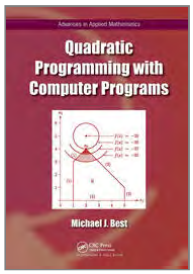
Quadratic Programming with Computer Programs



Michael J. Best

Quadratic programming is a mathematical technique that allows for the optimization of a quadratic function in several variables. QP is a subset of Operations Research and is the next higher lever of sophistication than Linear Programming. It is a key mathematical tool in Portfolio Optimization and structural plasticity. This is useful in Civil Engineering as well as Statistics.

CRC Press
January 2023 : 400pp
Pb: 978-1-032-47694-0 : **£43.99**
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eBook: 978-1-315-12088-1
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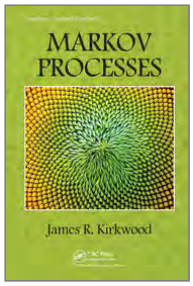
Markov Processes



James R. Kirkwood

This text fills a niche between a calculus-based probability course and a stochastic processes course typically taken by upper undergraduate students. While Markov processes are touched on in probability courses, this book offers the opportunity to concentrate on the topic when additional study is required. It discusses how Markov processes are applied in a number of fields, including economics, physics, and mathematical biology.

CRC Press
October 2024 : 340pp
Pb: 978-1-032-92164-8 : **£56**
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eBook: 978-0-429-06911-6
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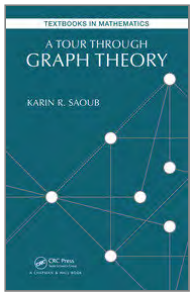
A Tour through Graph Theory



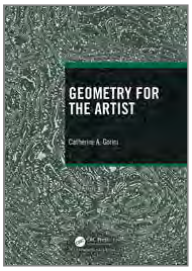
Karin R Saoub

Series: Textbooks in Mathematics

A Tour Through Graph Theory introduces graph theory to students who are not mathematics majors. Rather than featuring formal mathematical proofs, the book focuses on explanations and logical reasoning. It also includes thoughtful discussions of historical problems and modern questions. The book inspires readers to learn by working through examples, drawing graphs and exploring concepts. This book distinguishes itself from others covering the same topic. It strikes a balance of focusing on accessible problems for non-mathematical students while providing enough material for a semester-long course.

Chapman & Hall
October 2017 : 320pp
Pb: 978-1-138-19780-0 : **£81**
Hb: 978-1-138-07084-4 : **£165**
eBook: 978-1-315-11683-9
* For **full contents** and more information, visit: **www.routledge.com/9781138197800**

Geometry for the Artist



Catherine A. Gorini

This book is aimed both at artists willing to dive deeper into geometry and at mathematicians open to learning about applications of mathematics in art. The book includes topics such as perspective, symmetry, topology, fractals, curves, surfaces, and more. A key part of the book's approach is the analysis of art from a geometric point of view—looking at examples of how artists use each new topic. In addition, exercises encourage students to experiment in their own work with the new ideas presented in each chapter. This book is an exceptional resource for students in a general-education mathematics course or teacher-education geometry course.

Chapman & Hall
May 2023 : 254pp
Pb: 978-0-367-62825-3 : **£48.99**
Hb: 978-0-367-62823-9 : **£135**
eBook: 978-1-003-11097-2
* For **full contents** and more information, visit: **www.routledge.com/9780367628253**

2ND EDITION

Crocheting Adventures with Hyperbolic Planes

Tactile Mathematics, Art and Craft for all to Explore, Second Edition

Daina Taimina

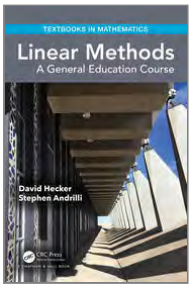
Series: AK Peters/CRC Recreational Mathematics Series

Winner, Euler Book Prize, awarded by the Mathematical Association of America. With over 200 full color photographs, this non-traditional, tactile introduction to non-Euclidean geometries also covers early development of geometry and connections between geometry, art, nature, and sciences.

CRC Press
August 2019 : 212pp
Pb: 978-0-367-37507-2 : **£25.99**
Hb: 978-1-138-30115-3 : **£47.99**
eBook: 978-0-203-73273-1
* For **full contents** and more information, visit: **www.routledge.com/9780367375072**

Linear Methods

A General Education Course



David Hecker , Stephen Andrilli La Salle University

Series: Textbooks in Mathematics

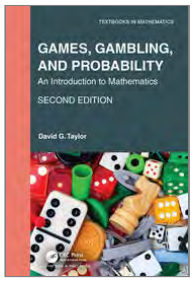
Linear Methods: A General Education Course is expressly written for non-mathematical students, particularly freshmen taking a required core mathematics course. Rather than covering a hodgepodge of different topics as is typical for a core mathematics course, this text encourages students to explore one particular branch of mathematics, elementary linear algebra, in some depth. The material is presented in an accessible manner, as opposed to a traditional overly rigorous approach. While introducing students to useful topics in linear algebra, the book also includes a gentle introduction to more abstract facets of the subject.

Chapman & Hall
August 2018 : 426pp
Pb: 978-1-138-04921-5 : **£86.99**
Hb: 978-1-138-06292-4 : **£175**
eBook: 978-1-315-16969-9
* For **full contents** and more information, visit: **www.routledge.com/9781138049215**

2ND EDITION

Games, Gambling, and Probability

An Introduction to Mathematics



David G. Taylor Roanoke College, Salem, Virginia, USA

Series: Textbooks in Mathematics

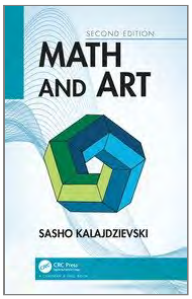
The goal for this textbook is to complement the inquiry-based learning movement. According to the author, concepts and ideas will stick with the reader more when they are motivated in an interesting way. Here, we use questions about various games (not just casino games) to motivate the mathematics, and the writing aims to emphasiz a "just-in-time" mathematics approach. Topics are presented mathematically as questions about the games themselves are posed.

Chapman & Hall
August 2024 : 516pp
Pb: 978-1-032-01812-6 : **£56.99**
Hb: 978-0-367-82043-5 : **£84.99**
eBook: 978-1-003-01158-3
* For **full contents** and more information, visit: **www.routledge.com/9781032018126**

2ND EDITION

Math and Art

An Introduction to Visual Mathematics



Sasho Kalajdzievski University of Manitoba, Winnipeg, Canada

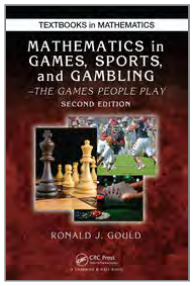
This book explores the potential of mathematics to generate visually appealing objects and reveals some of the beauty of mathematics. It includes numerous illustrations, photographs, and art reproductions to demonstrate how mathematics can inspire or generate art. Sequentially organized according to mathematical maturity level, each chapter covers a cross section of mathematics. For art students, the book stresses an understanding of the mathematical background of relatively complicated yet intriguing visual objects. For science students, it presents various elegant mathematical theories and notions.

Chapman & Hall
September 2021 : 398pp
Pb: 978-0-367-07611-5 : **£58.99**
Hb: 978-0-367-07613-9 : **£150**
eBook: 978-0-429-02160-2
* For **full contents** and more information, visit: **www.routledge.com/9780367076115**

2ND EDITION

Mathematics in Games, Sports, and Gambling

The Games People Play, Second Edition



Ronald J. Gould Emory University, Atlanta, Georgia, USA

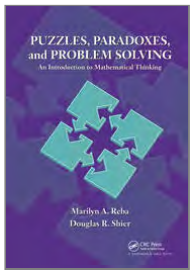
Series: Textbooks in Mathematics

This book focuses on mathematical thinking and problem solving, demonstrating how discrete probability, statistics, and elementary discrete mathematics can be applied in games, sports, and gambling situations. The text draws on numerous examples, questions, and problems to explain the application of mathematical theory to various real-life games.

Chapman & Hall
November 2015 : 378pp
Pb: 978-1-498-71952-0 : **£81**
Hb: 978-1-138-42752-5 : **£195**
eBook: 978-0-429-16215-2
* For **full contents** and more information, visit: **www.routledge.com/9781498719520**

Puzzles, Paradoxes, and Problem Solving

An Introduction to Mathematical Thinking



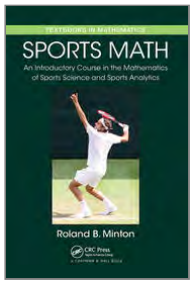
Marilyn A. Reba , Douglas R. Shier

Designed for undergraduate students in liberal arts mathematics courses, this text uses puzzles and paradoxes to introduce basic principles of mathematical thought. Decision-making situations that progress from recreational problems to important contemporary applications develop the critical-thinking skills of non-science and non-technical majors. The book covers graphs, logic, probability, voting, and cryptography. It uses a core set of representations, strategies, and algorithms to analyze diverse games, puzzles, and applications. This unified treatment logically connects the topics with a recurring set of solution approaches.

Chapman & Hall
October 2024 : 606pp
Pb: 978-1-032-91826-6 : **£56.99**
Hb: 978-1-482-22753-6 : **£110**
eBook: 978-0-429-17634-0
* For **full contents** and more information, visit: **www.routledge.com/9781032918266**

Sports Math

An Introductory Course in the Mathematics of Sports Science and Sports Analytics



Roland B. Minton

Can you really keep your eye on the ball? How is massive data collection changing sports?Mathematical sports courses are growing in popularity. The author's course at Roanoke College is a mix of physics, physiology, mathematics, and statistics. Many students of both genders find it exciting to think about sports. Sports problems are easy to create and state, even for students who do not live sports 24/7. Sports are part of their culture and knowledge base, and the opportunity to be an expert on some area of sports is invigorating. This should be the primary reason for the growth of mathematics of sports courses: the topic provides intrinsic motivation for

CRC Press
January 2023 : 278pp
Pb: 978-1-032-47712-1 : **£43.99**
Hb: 978-1-498-70626-1 : **£58.99**
eBook: 978-1-315-37160-3
* For **full contents** and more information, visit: **www.routledge.com/9781032477121**

The Magic Theorem

A Greatly-Expanded, Much-Abridged Edition of The Symmetries of Things

John H. Conway , Heidi Burgiel , Chaim Goodman-Strauss

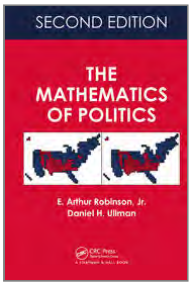
Series: AK Peters/CRC Recreational Mathematics Series

The Magic Theorem: a Greatly-Expanded, Much-Abridged Edition of The Symmetries of Things presents a wonderfully unique re-imagining of the classic book, The Symmetries of Things. Begun as a standard second edition by the original author team, it changed in scope following the passing of John Conway. This version of the book fulfils the original vision for the project: an elementary introduction to the orbifold signature notation and the theory behind it.

A K Peters/CRC Press
July 2025 : 192pp
Pb: 978-1-032-16200-3 : **£27.99**
Hb: 978-1-032-18273-5 : **£145**
* For **full contents** and more information, visit: **www.routledge.com/9781032162003**

2ND EDITION

The Mathematics of Politics



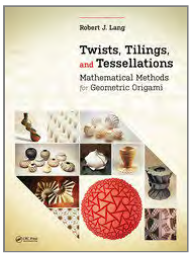
E. Arthur Robinson , Daniel H. Ullman

This book focuses on mathematical reasoning about politics. People commonly believe mathematics has nothing to say about politics. The high school experience suggests mathematics is the study of numbers, operations, formulas, and manipulations of symbols. Those who, from this experience, conclude mathematics has no relevance to politics will not find much in this book they regard as mathematics. A lot of wasted effort can be averted if mathematics is used to determine whether some decisions are actually impossible in the first place. Is it possible to create methods to vote, methods to apportion, and methods to make decisions in a satisfactory way? This is where mathematics meets politics

CRC Press
January 2023 : 478pp
Pb: 978-1-032-47709-1 : **£46**
Hb: 978-1-498-79886-0 : **£81**
eBook: 978-1-315-36667-8
* For **full contents** and more information, visit: **www.routledge.com/9781032477091**

Twists, Tilings, and Tessellations

Mathematical Methods for Geometric Origami



Robert J. Lang http://www.langorigami.com, Alamo, California, USA

Series: AK Peters/CRC Recreational Mathematics Series

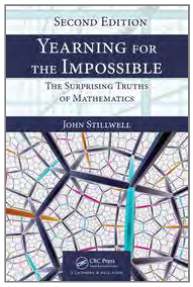
Twists, Tilings, and Tessellation describes the underlying principles and mathematics of the broad and exciting field of abstract and mathematical origami, most notably the field of origami tessellations. It contains folding instructions, underlying principles, mathematical concepts, and many beautiful photos of the latest work in this fast-expanding field.

A K Peters/CRC Press
February 2018 : 756pp
Pb: 978-1-568-81232-8 : **£68.99**
Hb: 978-1-138-56306-3 : **£150**
eBook: 978-1-315-15703-0
* For **full contents** and more information, visit: **www.routledge.com/9781568812328**

2ND EDITION

Yearning for the Impossible

The Surprising Truths of Mathematics, Second Edition



John Stillwell University of San Francisco, USA

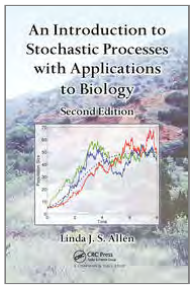
Series: AK Peters/CRC Recreational Mathematics Series

Yearning for the Impossible: The Surprising Truth of Mathematics, Second Edition explores the history of mathematics from the perspective of the creative tension between common sense and the "impossible" as the author follows the discovery or invention of new concepts that have marked mathematical progress. The author puts these creations into a broader context involving related "impossibilities" from art, literature, philosophy, and physics. This new edition contains many new exercises and commentaries, clearly discussing a wide range of challenging subjects.

CRC Press
May 2018 : 328pp
Pb: 978-1-138-58610-9 : **£35.99**
Hb: 978-1-138-59621-4 : **£86.99**
eBook: 978-0-429-50481-5
* For **full contents** and more information, visit: **www.routledge.com/9781138586109**

2ND EDITION

An Introduction to Stochastic Processes with Applications to Biology

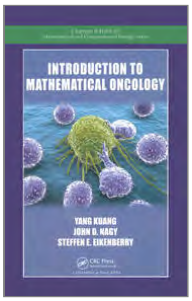


Linda J. S. Allen

Focusing on discrete and continuous time Markov chains and continuous time and state Markov processes, this text presents the basic theory of stochastic processes necessary in understanding and applying stochastic methods to biological problems. This edition contains a new chapter on stochastic differential equations that extends the basic theory to multivariate processes. Along with additional references, it now includes examples and exercises from cellular and molecular biology and doubles the number of exercises and MATLAB® programs at the end of each chapter.

Chapman & Hall
October 2024 : 492pp
Pb: 978-1-032-91927-0 : **£56.99**
Hb: 978-1-439-81882-4 : **£66.99**
eBook: 978-0-429-18460-4
* For **full contents** and more information, visit: **www.routledge.com/9781032919270**

Introduction to Mathematical Oncology



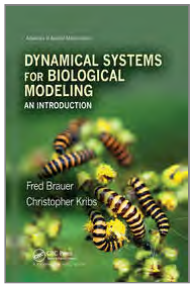
Yang Kuang , John D. Nagy , Steffen E. Eikenberry

Extensively classroom-tested in undergraduate and graduate courses, this self-contained book presents biologically well-motivated and mathematically tractable models that facilitate both a deep understanding of cancer biology and better cancer treatment designs. It covers the medical and biological background of the diseases, modeling issues, and existing methods and their limitations. The authors introduce mathematical and programming tools, along with analytical and numerical studies of the models. They also develop new mathematical tools and look to future improvements on dynamical models.

Chapman & Hall
March 2021 : 490pp
Pb: 978-0-367-78315-0 : **£45.99**
Hb: 978-1-584-88990-8 : **£86.99**
eBook: 978-1-315-36540-4
* For **full contents** and more information, visit: **www.routledge.com/9780367783150**

Dynamical Systems for Biological Modeling

An Introduction



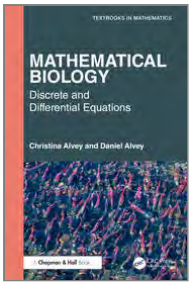
Fred Brauer , Christopher Kribs

This book prepares both biology and mathematics students with the understanding and techniques necessary to undertake basic modeling of biological systems. Its approach emphasizes qualitative ideas rather than explicit computations and does not overwhelm students with precise technical details. The book discusses a variety of biological modeling topics, including population biology, epidemiology, immunology, intraspecies competition, harvesting, predator-prey systems, structured populations, and more. The authors also include many examples of problems with solutions and some exercises which follow the examples quite closely.

Chapman & Hall
October 2024 : 492pp
Pb: 978-1-032-91932-4 : **£74.99**
Hb: 978-1-420-06641-8 : **£96.99**
eBook: 978-0-429-19609-6
* For **full contents** and more information, visit: **www.routledge.com/9781032919324**

Mathematical Biology

Discrete and Differential Equations



Christina Alvey , Daniel Alvey

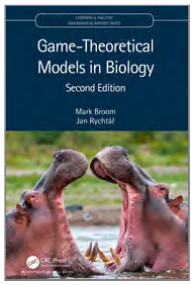
Series: Textbooks in Mathematics

This text serves as an exploration of the beautiful topic of mathematical biology through the lens of discrete and differential equations. Intended for students who have completed differential and integral calculus, this book allows students to explore topics such as bifurcation diagrams, nullclines, discrete dynamics, and SIR models for disease spread, which are often reserved for more advanced undergraduate or graduate courses. These exciting topics are sprinkled throughout the text alongside the more typical first and second order linear differential equations and systems of linear differential equations.

Chapman & Hall
August 2024 : 378pp
Hb: 978-1-032-28825-3 : **£81.99**
eBook: 978-1-003-29866-3
* For **full contents** and more information, visit: **www.routledge.com/9781032288253**

2ND EDITION

Game-Theoretical Models in Biology



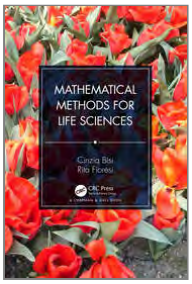
Mark Broom City, University of London, UK**, Jan Rychtář** Virginia Commonwealth University, USA

Series: Chapman & Hall/CRC Mathematical Biology Series

Covering the major topics of evolutionary game theory, this book presents both abstract and practical mathematical models of real biological situations. It discusses the static aspects of game theory in a mathematically rigorous way that is appealing to mathematicians. In addition, the authors explore many applications of game theory to biology, making the text useful to biologists as well. In this thoroughly revised new edition, the authors have added three new chapters on the evolution of structured populations, biological signalling games, and a topical new chapter on evolutionary models of cancer along with detailed changes to the existing chapters.

Chapman & Hall
August 2024 : 622pp
Pb: 978-1-032-30870-8 : **£45.99**
Hb: 978-0-367-45668-9 : **£84.99**
eBook: 978-1-003-02468-2
* For **full contents** and more information, visit: **www.routledge.com/9781032308708**

Mathematical Methods for Life Sciences



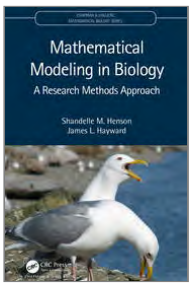
Cinzia Bisi Ferrara University, Italy**, Rita Fioresi** University of Bologna

Mathematical Methods for Life Sciences introduces calculus, and other key mathematical methods, to students from applied sciences (biology, biotechnology, chemistry, pharmacology, material science, etc). Special attention is paid to real-world applications, and for every concept, many concrete examples are provided. The book does not aim to enable students to prove theorems and construct elaborate proofs, but rather to leave students with a clear understanding of the practical mathematics behind the power of optimization, dynamical systems, and all the predictive tools these theories give rise to.

Chapman & Hall
January 2024 : 246pp
Pb: 978-1-032-38058-2 : **£53.99**
Hb: 978-1-032-36229-8 : **£145**
eBook: 978-1-003-34328-8
* For **full contents** and more information, visit: **www.routledge.com/9781032380582**

Mathematical Modeling in Biology

A Research Methods Approach



Shandelle M. Henson , James L. Hayward

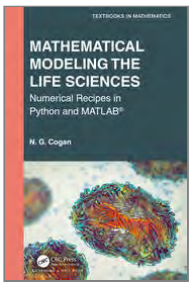
Series: Chapman & Hall/CRC Mathematical Biology Series

This textbook is primarily written for advanced mathematics and science undergraduate students and graduate-level biology students. Although the applications center on ecology, the expertise of the authors, the methodology can be imported to any other science, including social science and economics. The aim of the book, beyond being a useful aid to teaching and learning the core modeling skills needed for mathematical biology, is to encourage students to think deeply and clearly about the meaning of mathematics in science and to learn significant research methods. Most importantly, it is hoped that students will experience some of the excitement of doing research.

Chapman & Hall
January 2023 : 338pp
Pb: 978-1-032-20694-3 : **£61.99**
Hb: 978-1-032-20821-3 : **£155**
eBook: 978-1-003-26538-2
* For **full contents** and more information, visit: **www.routledge.com/9781032206943**

Mathematical Modeling the Life Sciences

Numerical Recipes in Python and MATLAB®



N. G. Cogan

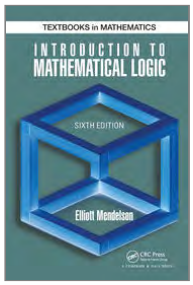
Series: Textbooks in Mathematics

The purpose of this unique textbook is to bridge the gap between the need for numerical solutions to modelling techniques through computer simulations to develop skill in employing sensitivity analysis to biological and life sciences applications.

Chapman & Hall
September 2022 : 246pp
Pb: 978-1-032-32826-3 : **£61.99**
Hb: 978-0-367-55493-4 : **£165**
eBook: 978-1-003-31693-0
* For **full contents** and more information, visit: **www.routledge.com/9781032328263**

6TH EDITION

Introduction to Mathematical Logic



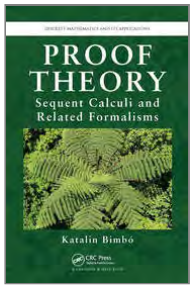
Elliott Mendelson

This bestselling, classic textbook continues to provide a complete one-semester introduction to mathematical logic. The sixth edition incorporates recent work on Gödel's second incompleteness theorem as well as an appendix on consistency proofs for first-order arithmetic. It also offers historical perspectives and many new exercises of varying difficulty, which motivate and lead students to an in-depth, practical understanding of the material.

Chapman & Hall
October 2024 : 514pp
Pb: 978-1-032-91914-0 : **£56.99**
Hb: 978-1-482-23772-6 : **£105**
eBook: 978-0-429-16209-1
* For **full contents** and more information, visit: **www.routledge.com/9781032919140**

Proof Theory

Sequent Calculi and Related Formalisms

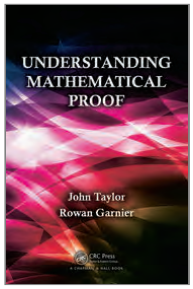


Katalin Bimbo

Although sequent calculi constitute an important category of proof systems, they are not as well known as axiomatic and natural deduction systems. Addressing this deficiency, this book presents a comprehensive treatment of sequent calculi, including a wide range of variations. It focuses on sequent calculi for various non-classical logics, from intuitionistic logic to relevance logic, linear logic, and modal logic. The author presents a variety of proof systems for classical and non-classical logics and devotes chapters to proofs of cut theorems and decidability theorems.

Chapman & Hall
October 2024 : 386pp
Pb: 978-1-032-92077-1 : **£56.99**
Hb: 978-1-466-56466-4 : **£105**
eBook: 978-0-429-09969-4
* For **full contents** and more information, visit: **www.routledge.com/9781032920771**

Understanding Mathematical Proof

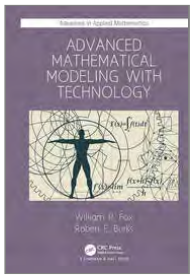


John Taylor University of Brighton, UK**, Rowan Garnier** Surrey, UK

The notion of proof is central to mathematics yet it is one of the most difficult aspects of the subject to teach and master. In particular, undergraduate mathematics students often experience difficulties in understanding and constructing proofs. This text describes the nature of mathematical proof, explores the various techniques that mathematicians adopt to prove their results, and offers advice and strategies for constructing proofs. It will improve students' ability to understand proofs and construct correct proofs of their own.

Chapman & Hall
March 2014 : 414pp
Pb: 978-1-466-51490-4 : **£61.99**
Hb: 978-1-138-46685-2 : **£180**
eBook: 978-0-429-19073-5
* For **full contents** and more information, visit: **www.routledge.com/9781466514904**

Advanced Mathematical Modeling with Technology



William P. Fox U.S. Naval Post Graduate School**, Robert E. Burks**

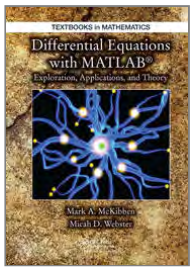
Series: Advances in Applied Mathematics

Mathematical modeling is both a skill and an art and must be practiced in order to maintain and enhance the ability to use those skills. Though the topics covered in this book are the typical topics of most mathematical modeling courses, this book is best used for individuals or groups who have already taken an introductory mathematical modeling course. This book will be of interest to instructors and students offering courses focused on discrete modeling or modeling for decision making.

Chapman & Hall
August 2024 : 572pp
Pb: 978-1-032-00181-4 : **£56.99**
Hb: 978-0-367-49442-1 : **£84.99**
eBook: 978-1-003-04619-6
* For **full contents** and more information, visit: **www.routledge.com/9781032001814**

Differential Equations with MATLAB

Exploration, Applications, and Theory



Mark McKibben , Micah D. Webster

Designed for an undergraduate course on mathematical modeling or differential equations, this text provides students with an understanding of the practical and theoretical aspects of mathematical models involving ODEs and PDEs. It develops students' intuition by building the theory from the ground up and illustrates the analysis of more than 20 distinct models through concrete applications in physics, engineering, finance, and many other areas. The book also uses MATLAB® GUIs that enable students to discover patterns and make conjectures.

Chapman & Hall
October 2024 : 498pp
Pb: 978-1-032-91925-6 : **£56.99**
Hb: 978-1-466-55707-9 : **£110**
eBook: 978-0-429-09783-6
* For **full contents** and more information, visit: **www.routledge.com/9781032919256**

Introduction to Mathematical Modeling

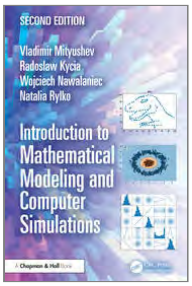
Mayer Humi

The purpose of this book is to provide the student with a firm introduction to mathematical modeling methodology and actual modeling problems in various fields of science and engineering. The book will also stress the integration of the symbolic, numerical and graphical tools that have become available in the last two decades.

Chapman & Hall
June 2024 : 512pp
Pb: 978-1-032-47695-7 : **£45.99**
Hb: 978-1-498-72800-3 : **£86.99**
eBook: 978-1-315-37030-9
* For **full contents** and more information, visit: **www.routledge.com/9781032476957**

2ND EDITION

Introduction to Mathematical Modeling and Computer Simulations



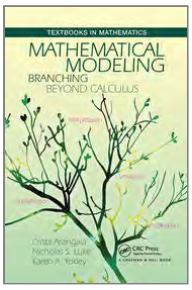
Vladimir Mityushev , Radoslaw Antoni Kycia , Wojciech Nawalaniec , Natalia Rylko

This book continues to serve as an engaging and accessible textbook for undergraduates studying mathematical modeling and computer simulations. The book is heavily focussed on applications, and so may have a particular appeal to applied mathematicians, engineers, and others working in applied quantitative disciplines. The book may also be useful as a reference text for reference text for early-career stage practitioners.

Chapman & Hall
December 2024 : 348pp
Hb: 978-1-032-66151-3 : **£84.99**
eBook: 978-1-032-68428-4
* For **full contents** and more information, visit: **www.routledge.com/9781032661513**

Mathematical Modeling

Branching Beyond Calculus

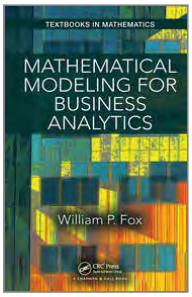


Crista Arangala , Nicolas S. Luke , Karen A. Yokley

Most modeling texts tend to target students with a background in either differential equations or statistics and probability. This text will begin with models at a different level, starting with students with a Calculus I background. The text will emphasize biological models as well as from other disciplines. Biology applications and models will encourage students from this discipline to appreciate higher mathematics. The emphasis on mathematical biology will be unique to this text. There are several applications that will be highlighted throughout the text, using different modeling techniques to model the same application. Mathematica will be integrated into the book.

CRC Press
January 2023 : 316pp
Pb: 978-1-032-47633-9 : **£43.99**
Hb: 978-1-498-77071-2 : **£91.99**
eBook: 978-1-315-12064-5
* For **full contents** and more information, visit: **www.routledge.com/9781032476339**

Mathematical Modeling for Business Analytics



William Fox

Mathematical Modeling for Business Analytics is written for decision makers at all levels. This book presents the latest tools and techniques available to help in the decision process. The interpretation and explanation of the results are crucial to understanding the strengths and limitations of modeling. This book emphasizes and focuses on the aspects of constructing a useful model formulation, as well as building the skills required for decision analysis. The book also focuses on sensitivity analysis.

CRC Press
January 2023 : 450pp
Pb: 978-1-032-47640-7 : **£43.99**
Hb: 978-1-138-55661-4 : **£120**
eBook: 978-1-315-15020-8
* For **full contents** and more information, visit: **www.routledge.com/9781032476407**

Mathematical Modeling in the Age of the Pandemic

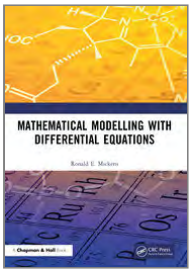
William P. Fox

Series: Textbooks in Mathematics

This book's purpose is to shed some light on the meaning and interpretations of many of the types of models that are or might be used in the presentation of analysis. Understanding the concepts presented is essential in the entire modeling process of a pandemic. From the virus itself and its infectious rates and deaths rates to explain the process for testing a vaccine or eventually a cure, the author builds, presents, and shows model testing.

Chapman & Hall
September 2021 : 174pp
Pb: 978-0-367-68474-7 : **£68.99**
Hb: 978-0-367-70312-7 : **£175**
eBook: 978-1-003-14563-9
* For **full contents** and more information, visit: **www.routledge.com/9780367684747**

Mathematical Modelling with Differential Equations



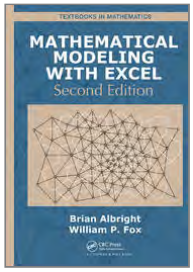
Ronald E. Mickens Clark Atlanta University, SW Atlanta, Georgia, USA

This book aims to introduce various strategies for modeling systems using differential equations. Some of these methodologies are elementary and quite direct to comprehend and apply while others are complex in nature and require thoughtful, deep contemplation. Many topics discussed in the chapter do not appear in any of the standard textbooks and this provides users an opportunity to consider a more general set of interesting systems that can be modeled.

Chapman & Hall
May 2024 : 284pp
Pb: 978-1-032-01530-9 : **£45.99**
Hb: 978-1-032-01445-6 : **£84.99**
eBook: 978-1-003-17897-2
* For **full contents** and more information, visit: **www.routledge.com/9781032015309**

2ND EDITION

Mathematical Modeling with Excel



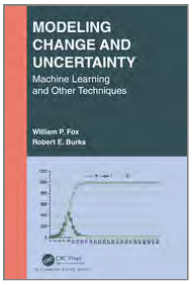
Brian Albright , William P Fox

This text presents a wide variety of common types of models found in other mathematical modeling texts, as well as some new types. However, the models are presented in a very unique format. A typical section begins with a general description of the scenario being modeled. The model is then built using the appropriate mathematical tools. Then it is implemented and analyzed in Excel via step-by-step instructions. In the exercises, we ask students to modify or refine the existing model, analyze it further, or adapt it to similar scenarios.

CRC Press
January 2023 : 370pp
Pb: 978-1-032-47512-7 : **£43.99**
Hb: 978-1-138-59707-5 : **£86.99**
eBook: 978-0-429-48713-2
* For **full contents** and more information, visit: **www.routledge.com/9781032475127**

Modeling Change and Uncertainty

Machine Learning and Other Techniques



William P. Fox U.S. Naval Post Graduate School**, Robert E. Burks**

Series: Textbooks in Mathematics

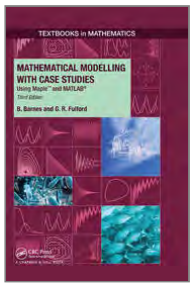
This book offers a problem-solving approach. The authors introduce a problem to help motivate the learning of a particular mathematical modeling topic. The problem provides the issue or what is needed to solve using an appropriate modeling technique. Then principles are applied to the problem and present the steps in obtaining an appropriate model to solve the problem. Mathematical modeling offers a framework for decision makers in all fields. This framework consists of four key components: the formulation process, the solution process, interpretation of the solution in the context of the actual problem, and sensitivity analysis.

Chapman & Hall
August 2024 : 464pp
Pb: 978-1-032-28843-7 : **£56.99**
Hb: 978-1-032-06237-2 : **£84.99**
eBook: 978-1-003-29876-2
* For **full contents** and more information, visit: **www.routledge.com/9781032288437**

3RD EDITION

Mathematical Modelling with Case Studies

Using Maple and MATLAB, Third Edition

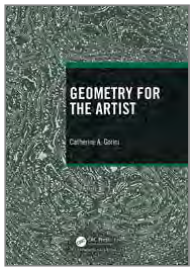


B. Barnes , G..R. Fulford

This popular text provides students with hands-on modeling skills for a wide variety of problems involving differential equations that describe rates of change. This edition includes updated Maple™ and MATLAB® code as well as new case studies and exercises. The text focuses on growth and decay processes, interacting populations, and heating/cooling problems. It carefully details the process of constructing a model. It uses flow diagrams and word equations to aid in the model-building process and to develop the mathematical equations.

Chapman & Hall
October 2024 : 390pp
Pb: 978-1-032-92071-9 : **£56.99**
Hb: 978-1-482-24772-5 : **£96.99**
eBook: 978-0-429-16274-9
* For **full contents** and more information, visit: **www.routledge.com/9781032920719**

Geometry for the Artist



Catherine A. Gorini

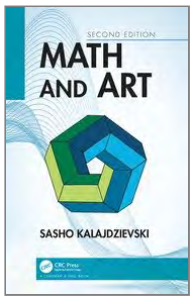
This book is aimed both at artists willing to dive deeper into geometry and at mathematicians open to learning about applications of mathematics in art. The book includes topics such as perspective, symmetry, topology, fractals, curves, surfaces, and more. A key part of the book's approach is the analysis of art from a geometric point of view—looking at examples of how artists use each new topic. In addition, exercises encourage students to experiment in their own work with the new ideas presented in each chapter. This book is an exceptional resource for students in a general-education mathematics course or teacher-education geometry course.

Chapman & Hall
May 2023 : 254pp
Pb: 978-0-367-62825-3 : **£48.99**
Hb: 978-0-367-62823-9 : **£135**
eBook: 978-1-003-11097-2
* For **full contents** and more information, visit: **www.routledge.com/9780367628253**

2ND EDITION

Math and Art

An Introduction to Visual Mathematics



Sasho Kalajdzievski University of Manitoba, Winnipeg, Canada

This book explores the potential of mathematics to generate visually appealing objects and reveals some of the beauty of mathematics. It includes numerous illustrations, photographs, and art reproductions to demonstrate how mathematics can inspire or generate art. Sequentially organized according to mathematical maturity level, each chapter covers a cross section of mathematics. For art students, the book stresses an understanding of the mathematical background of relatively complicated yet intriguing visual objects. For science students, it presents various elegant mathematical theories and notions.

Chapman & Hall
September 2021 : 398pp
Pb: 978-0-367-07611-5 : **£58.99**
Hb: 978-0-367-07613-9 : **£150**
eBook: 978-0-429-02160-2
* For **full contents** and more information, visit: **www.routledge.com/9780367076115**

2ND EDITION

Mathematics and Music

Composition, Perception, and Performance

James S. Walker University of Wisconsin, Eau Claire, USA**,**
Gary Don University of Wisconsin, Eau Claire, USA

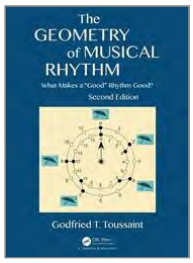
Mathematics and Music: Composition, Perception, and Performance, Second Edition includes many new sections and more consistent expectations of student's experience. The new edition of this popular text is more accessible for students with limited musical backgrounds and only high school mathematics is required. The new edition includes more illustrations. The added sections deal with the XronoMorph rhythm generator, musical composition and analyzing personal performance. The text teaches the basics of reading music, explaining how various patterns in music can be described with mathematics, providing mathematical explanations for musical scales, harmony, and rhythm.

Chapman & Hall
February 2023 : 398pp
Pb: 978-1-032-16111-2 : **£42.99**
Hb: 978-1-138-58494-5 : **£115**
eBook: 978-0-429-50618-5
* For **full contents** and more information, visit: **www.routledge.com/9781032161112**

2ND EDITION

The Geometry of Musical Rhythm

What Makes a "Good" Rhythm Good?, Second Edition



Godfried T. Toussaint New York University Abu Dhabi, United Arab Emirates

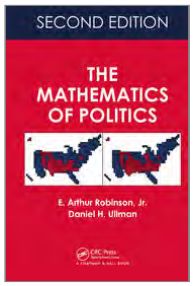
Series: AK Peters/CRC Recreational Mathematics Series

The original edition of The Geometry of Musical Rhythm was the first book to provide a systematic and accessible computational geometric analysis of the musical rhythms of the world. The new edition retains all of this, while also adding 100 pages, 93 figures, 225 new references, and six new chapters covering topics such as meter and metric complexity, rhythmic grouping, expressive timbre and timing in rhythmic performance, and evolution phylogenetic analysis of ancient Greek paeonic rhythms.

Chapman & Hall
December 2019 : 370pp
Pb: 978-0-815-37097-0 : **£49.99**
Hb: 978-0-815-35038-5 : **£180**
eBook: 978-1-351-24777-1
* For **full contents** and more information, visit: **www.routledge.com/9780815370970**

2ND EDITION

The Mathematics of Politics



E. Arthur Robinson , Daniel H. Ullman

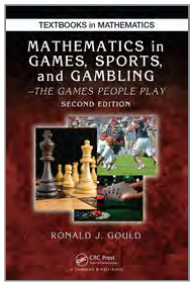
This book focuses on mathematical reasoning about politics. People commonly believe mathematics has nothing to say about politics. The high school experience suggests mathematics is the study of numbers, operations, formulas, and manipulations of symbols. Those who, from this experience, conclude mathematics has no relevance to politics will not find much in this book they regard as mathematics. A lot of wasted effort can be averted if mathematics is used to determine whether some decisions are actually impossible in the first place. Is it possible to create methods to vote, methods to apportion, and methods to make decisions in a satisfactory way? This is where mathematics meets politics

CRC Press
January 2023 : 478pp
Pb: 978-1-032-47709-1 : **£46**
Hb: 978-1-498-79886-0 : **£81**
eBook: 978-1-315-36667-8
* For **full contents** and more information, visit: **www.routledge.com/9781032477091**

2ND EDITION

Mathematics in Games, Sports, and Gambling

The Games People Play, Second Edition



Ronald J. Gould Emory University, Atlanta, Georgia, USA

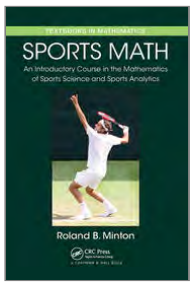
Series: Textbooks in Mathematics

This book focuses on mathematical thinking and problem solving, demonstrating how discrete probability, statistics, and elementary discrete mathematics can be applied in games, sports, and gambling situations. The text draws on numerous examples, questions, and problems to explain the application of mathematical theory to various real-life games.

Chapman & Hall
November 2015 : 378pp
Pb: 978-1-498-71952-0 : **£81**
Hb: 978-1-138-42752-5 : **£195**
eBook: 978-0-429-16215-2
* For **full contents** and more information, visit: **www.routledge.com/9781498719520**

Sports Math

An Introductory Course in the Mathematics of Sports Science and Sports Analytics



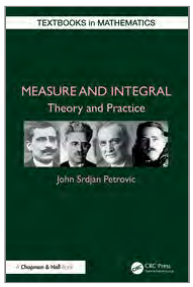
Roland B. Minton

Can you really keep your eye on the ball? How is massive data collection changing sports?Mathematical sports courses are growing in popularity. The author's course at Roanoke College is a mix of physics, physiology, mathematics, and statistics. Many students of both genders find it exciting to think about sports. Sports problems are easy to create and state, even for students who do not live sports 24/7. Sports are part of their culture and knowledge base, and the opportunity to be an expert on some area of sports is invigorating. This should be the primary reason for the growth of mathematics of sports courses: the topic provides intrinsic motivation for

CRC Press
January 2023 : 278pp
Pb: 978-1-032-47712-1 : **£43.99**
Hb: 978-1-498-70626-1 : **£58.99**
eBook: 978-1-315-37160-3
* For **full contents** and more information, visit: **www.routledge.com/9781032477121**

Measure and Integral

Theory and Practice



John Srdjan Petrovic Western Michigan University, Kalamazoo, USA

Series: Textbooks in Mathematics

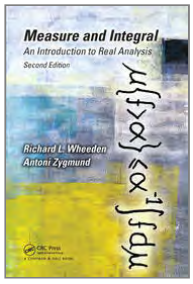
This accessible introduction to the topic covers the theory of measure and integral, as introduced by Lebesgue and developed in the first half of the 20th century. It leads naturally to Banach spaces of functions and linear operators acting on them. This material is typically covered in a graduate course and is almost always treated in an abstract way, with little or no motivation. The author employs a plethora of examples and exercises and strives to motivate every concept with its historical background. This textbook is accessible to a wider range of students, including at the undergraduate level.

Chapman & Hall
January 2025 : 530pp
Hb: 978-1-032-71242-0 : **£91.99**
eBook: 978-1-032-71649-7
* For **full contents** and more information, visit: **www.routledge.com/9781032712420**

2ND EDITION

Measure and Integral

An Introduction to Real Analysis, Second Edition



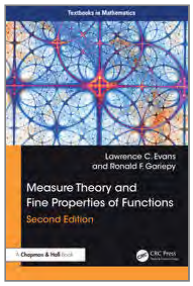
Richard L. Wheeden

This classic text provides an introduction to real analysis by first developing the theory of measure and integration in the simple setting of Euclidean space, and then introducing a more general treatment based on abstract notions characterized by axioms and with less geometric content. Packed with new exercises and material, the long-awaited second edition of this highly respected text for upper-division undergraduate and first-year graduate students of mathematics, statistics, probability, or engineering is revised for a new generation of students, instructors, and mathematicians.

Chapman & Hall
October 2024 : 532pp
Pb: 978-1-032-91893-8 : **£56**
Hb: 978-1-498-70289-8 : **£115**
eBook: 978-0-429-17157-4
* For **full contents** and more information, visit: **www.routledge.com/9781032918938**

2ND EDITION

Measure Theory and Fine Properties of Functions



Lawrence C. Evans University of California, Berkeley, USA

Series: Textbooks in Mathematics

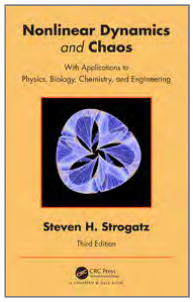
This popular textbook provides a detailed examination of the central assertions of measure theory in n-dimensional Euclidean space. The book emphasizes the roles of Hausdorff measure and capacity in characterizing the fine properties of sets and functions. This book gathers together the essentials of real analysis on Rn, with particular emphasis on integration and differentiation. This widely popular treatment has been updated to address all needed corrections and minor edits from the previous Revised Edition. The book includes many interesting topics working mathematical analysts need to know, but ones rarely taught.

Chapman & Hall
March 2025 : 339pp
Hb: 978-1-032-94644-3 : **£74.99**
* For **full contents** and more information, visit: **www.routledge.com/9781032946443**

3RD EDITION

Nonlinear Dynamics and Chaos

With Applications to Physics, Biology, Chemistry, and Engineering

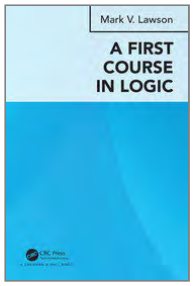


Steven H Strogatz

The goal of this Third Edition is the same as previous editions: to provide a good foundation for anyone who'd like to learn about nonlinear dynamics and chaos from an applied perspective. Changes to this edition include substantial exercises about conceptual models of climate change, an updated treatment of the SIR model of epidemics, and amendments (based on recent research) about the Selkov model of oscillatory glycolysis. Equations, diagrams, and explanations have been reconsidered and often revised. There are also about 50 new references, many from the recent literature.

Chapman & Hall
January 2024 : 616pp
Pb: 978-0-367-02650-9 : **£72.99**
Hb: 978-1-032-70789-1 : **£195**
eBook: 978-0-429-39849-0
* For **full contents** and more information, visit: **www.routledge.com/9780367026509**

A First Course in Logic

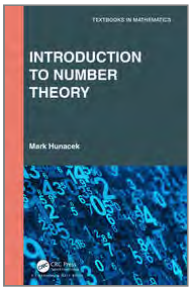


Mark Verus Lawson

A First Course in Logic is an introduction to first-order logic suitable for first and second year mathematicians and computer scientists. There are three components to this course: propositional logic; Boolean algebras; and predicate/first-order, logic. Logic is the basis of proofs in mathematics — how do we know what we say is true? — and also of computer science — how do I know this program will do what I think it will?

CRC Press
November 2018 : 250pp
Pb: 978-0-815-38665-0 : **£61.99**
Hb: 978-0-815-38664-3 : **£150**
eBook: 978-1-351-17538-8
* For **full contents** and more information, visit: **www.routledge.com/9780815386650**

Introduction to Number Theory



Mark Hunacek

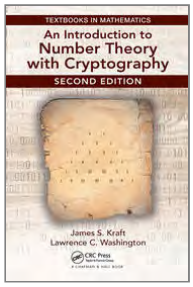
Series: Textbooks in Mathematics

Introduction to Number Theory covers the essential content of an interductory number theory course. The book employs a versatile approach to the use of algebraic ideas. Instructors who wish to put this material into a broader context may do so, though the author introduces these concepts in a non-essential way. A final chapter discusses algebraic systems (like the Gaussian integers) presuming no previous exposure to abstract algebra. Studying general systems urges students realize unique factorization into primes is a more subtle idea than may at first appear; students will find this chapter interesting, fun and quite accessible.

Chapman & Hall
March 2023 : 164pp
Pb: 978-1-032-01720-4 : **£39.99**
Hb: 978-1-032-33205-5 : **£96.99**
eBook: 978-1-003-31871-2
* For **full contents** and more information, visit: **www.routledge.com/9781032017204**

2ND EDITION

An Introduction to Number Theory with Cryptography



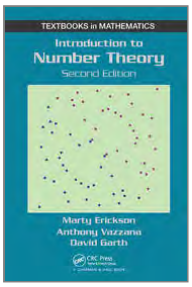
James Kraft , Lawrence Washington

Building on the success of the first edition, An Introduction to Number Theory with Cryptography, Second Edition, increases coverage of the popular and important topic of cryptography, integrating it with traditional topics in number theory. The authors have written the text in an engaging style to reflect number theory's increasing popularity. The book is designed to be used by sophomore, junior, and senior undergraduates, but it is also accessible to advanced high school students and is appropriate for independent study. It includes a few more advanced topics for students who wish to explore beyond the traditional curriculum.

CRC Press
January 2023 : 600pp
Pb: 978-1-032-47635-3 : **£43.99**
Hb: 978-1-138-06347-1 : **£110**
eBook: 978-1-351-66411-0
* For **full contents** and more information, visit: **www.routledge.com/9781032476353**

2ND EDITION

Introduction to Number Theory

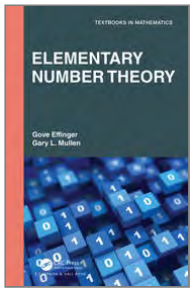


Anthony Vazzana , David Garth

This classroom-tested, student-friendly text covers a diverse array of number theory topics, from the ancient Euclidean algorithm for finding the greatest common divisor of two integers to recent developments such as cryptography, the theory of elliptic curves, and the negative solution of Hilbert's tenth problem. Ideal for a one- or two-semester undergraduate-level course, the second edition features a more flexible structure, adds several new sections, expands exercise sets to encompass a wider variety of problems, and provides calculations, tutorials, and code via an author-maintained website.

Chapman & Hall
October 2024 : 426pp
Pb: 978-1-032-92008-5 : **£56.99**
Hb: 978-1-498-71749-6 : **£96.99**
eBook: 978-0-429-15895-7
* For **full contents** and more information, visit: **www.routledge.com/9781032920085**

Elementary Number Theory



Gove Effinger , Gary L. Mullen

Series: Textbooks in Mathematics

This text is intended to be used as an undergraduate introduction to the theory of numbers. Each chapter, after an introduction, develops a new topic clearly broken out in sections which include theoretical material together with numerous examples, each worked out in considerable detail. At the end of each chapter, after a summary of the topic, there are a number of solved problems, also worked out in detail, followed by a set of supplementary problems. The first eight chapters discuss some standard material in elementary number theory. The remaining chapters discuss topics which might be considered a bit more advanced. We then close with a chapter on Open Problems in Number Theory.

Chapman & Hall
September 2021 : 254pp
Pb: 978-1-032-01723-5 : **£49.99**
Hb: 978-1-032-04418-7 : **£135**
eBook: 978-1-003-19311-1
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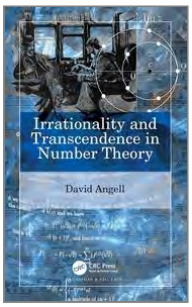
Irrationality and Transcendence in Number Theory

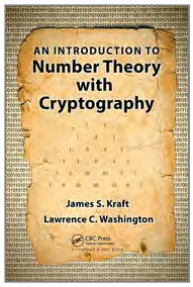


David Angell Univeristy of New South Wales, Australia

This book tells the story of irrational numbers from their discovery in the days of Pythagoras to the ideas behind the work of Baker and Mahler on transcendence in the 20th century. It focuses on themes of irrationality, algebraic and transcendental numbers, continued fractions, approximation of real numbers by rationals, and relations between automata and transcendence. This book serves as a guide and introduction to number theory for advanced undergraduates and early postgraduates. The book includes a wide range of exercises, from routine problems to surprising and thought-provoking extension material.

Chapman & Hall
January 2024 : 242pp
Pb: 978-0-367-62875-8 : **£48.99**
Hb: 978-0-367-62837-6 : **£84.99**
eBook: 978-1-003-11120-7
* For **full contents** and more information, visit: **www.routledge.com/9780367628758**

An Introduction to Number Theory with Cryptography

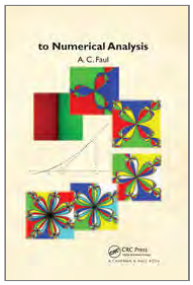


James S. Kraft , Lawrence C. Washington

Written by well-known professors, this text is designed for an undergraduate-level mathematics course on number theory. It gives instructors the option of integrating the hot topic of cryptography into their coverage. The book also covers standard number theory topics. It gradually increases the level of difficulty of material and "Check Your Understanding" sections offer a tutorial approach for students.

Chapman & Hall
October 2024 : 572pp
Pb: 978-1-032-91856-3 : **£56.99**
Hb: 978-1-482-21441-3 : **£105**
eBook: 978-0-429-15658-8
* For **full contents** and more information, visit: **www.routledge.com/9781032918563**

A Concise Introduction to Numerical Analysis

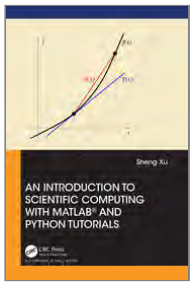


A. C. Faul

This textbook provides an accessible and concise introduction to numerical analysis for upper undergraduate and beginning graduate students from various backgrounds. It was developed from the lecture notes of four successful courses on numerical analysis taught within the MPhil of Scientific Computing at the University of Cambridge. The book is easily accessible, even to those with limited knowledge of mathematics.

Chapman & Hall
September 2020 : 308pp
Pb: 978-0-367-65856-4 : **£45.99**
Hb: 978-1-498-71218-7 : **£84.99**
eBook: 978-1-315-37021-7
* For **full contents** and more information, visit: **www.routledge.com/9780367658564**

An Introduction to Scientific Computing with MATLAB® and Python Tutorials



Sheng Xu

This book serves as a textbook for a first introductory course on scientific computing. It covers preliminary numerical concepts and techniques to get students started in scientific computing. The prerequisites are only calculus and linear algebra, so a student can take the course in the second year. Many numerical techniques, such as those for ordinary and partial differential equations, iterative methods for eigenvalue problems, and methods for constrained optimization, are not included, because specialized courses focused on these numerical techniques are available in most universities. Tutorials for MatLab and Python use are included.

Chapman & Hall
August 2024 : 397pp
Pb: 978-1-032-06318-8 : **£56.99**
Hb: 978-1-032-06315-7 : **£84.99**
eBook: 978-1-003-20169-4
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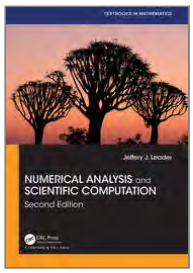
2ND EDITION

Numerical Analysis and Scientific Computation



Jeffery J. Leader

Series: Textbooks in Mathematics

The Second Edition is an introductory numerical analysis text with a more modern scientific computing flavour. The distinguishing approach is intended a.) bringing more modern methods, often taught at the beginning graduate level, down to the undergraduate level; b.) infusing the book with Matlab; and c.) developing the subject in a way that highlights how numerical analysis can be used in applied computational modelling, while still sticking with a primarily mathematical approach. The new edition includes Python, more on special functions and computer arithmetic, and new chapters on computational modelling/scientific programming principles and parallel computing.

Chapman & Hall
August 2024 : 582pp
Pb: 978-1-032-20483-3 : **£56.99**
Hb: 978-0-367-48686-0 : **£91.99**
eBook: 978-1-003-04227-3
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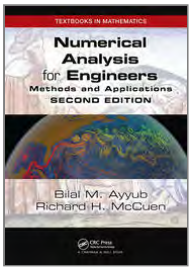
2ND EDITION

Numerical Analysis for Engineers

Methods and Applications, Second Edition



Bilal Ayyub , Richard H. McCuen

This book demonstrates the power of numerical methods in the context of solving complex engineering and scientific problems. With a wealth of exercises, it emphasizes the practical aspects of numerical methods and addresses their advantages and disadvantages. Each chapter contains many computational examples, as well as a section on applications that contains additional engineering examples.

Chapman & Hall
October 2024 : 452pp
Pb: 978-1-032-92004-7 : **£56.99**
Hb: 978-1-482-25035-0 : **£110**
eBook: 978-0-429-16212-1
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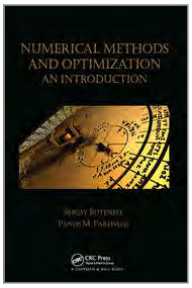
Numerical Methods and Optimization

An Introduction



Sergiy Butenko , Panos M. Pardalos

This book combines the materials from introductory numerical methods and introductory optimization courses into a single text. This classroom-tested approach enriches a standard numerical methods syllabus with optional chapters on numerical optimization and provides a valuable numerical methods background for students taking an introductory optimization or operations research course. The book includes some mathematical proofs as samples of rigorous analysis but in most cases, uses only examples to illustrate the concepts. A MATLAB® guide and code are available for download.

Chapman & Hall
October 2024 : 414pp
Pb: 978-1-032-92031-3 : **£56.99**
Hb: 978-1-466-57777-0 : **£84.99**
eBook: 978-0-429-18842-8
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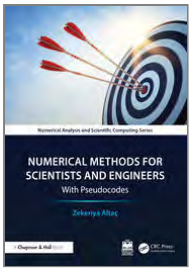
Numerical Methods for Scientists and Engineers

With Pseudocodes



Zekeriya Altaç

Series: Chapman & Hall/CRC Numerical Analysis and Scientific Computing Series

This book is designed as a primary textbook for a one-semester course on Numerical Methods for sophomore or junior-level students. It covers the fundamental numerical methods required for scientists and engineers, as well as some advanced topics which are left to the discretion of instructors. The objective of the text is to provide readers with a strong theoretical background on numerical methods encountered in science and engineering, and to explain how to apply these methods to practical, real-world problems. Readers will also learn how to convert numerical algorithms into running computer codes.

Chapman & Hall
October 2024 : 784pp
Hb: 978-1-032-75474-1 : **£89.99**
eBook: 978-1-003-47494-4
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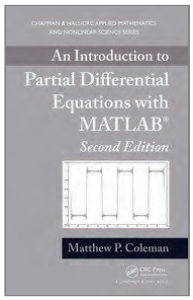
2ND EDITION

An Introduction to Partial Differential Equations with MATLAB



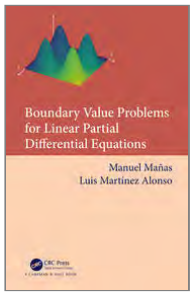
Matthew P. Coleman Fairfield University, Connecticut, USA

Series: Advances in Applied Mathematics

Updated throughout, this second edition of a bestseller illustrates the usefulness of PDEs through numerous applications and helps students appreciate the beauty of the underlying mathematics. It shows students how PDEs can model diverse problems, including the flow of heat, the propagation of sound waves, the spread of algae along the ocean's surface, the fluctuation in the price of a stock option, and the quantum mechanical behavior of a hydrogen atom. The text also contains many exercises, including standard ones and graphical problems using MATLAB®.

Chapman & Hall
June 2013 : 684pp
Hb: 978-1-439-89846-8 : **£105**
eBook: 978-0-429-11231-7
* For **full contents** and more information, visit: **www.routledge.com/9781439898468**

Boundary Value Problems for Linear Partial Differential Equations



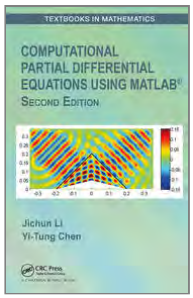
Manuel Mañas Complutense University of Madrid, Spain**, Luis Martínez Alonso**

This book provides students with the opportunity to understand and exercise the benefits of Boundary value problems and initial value problems, equipping them with realistic, practical tools to study solvable linear models of electromagnetism, fluid dynamics, geophysics, optics, thermodynamics and specifically, quantum mechanics. Emphasis is devoted to motivating the use of these methods by means of concrete examples taken from physical models.

Chapman & Hall
July 2024 : 452pp
Hb: 978-1-032-66252-7 : **£89.99**
eBook: 978-1-032-66451-4
* For **full contents** and more information, visit: **www.routledge.com/9781032662527**

2ND EDITION

Computational Partial Differential Equations Using MATLAB®



Jichun Li , Yi-Tung Chen

In this popular text for an Numerical Analysis course, the authors introduce several major methods of solving various partial differential equations (PDEs) including elliptic, parabolic, and hyperbolic equations. It covers traditional techniques including the classic finite difference method, finite element method, and state-of-the-art numercial methods.The text uniquely emphasizes both theoretical numerical analysis and practical implementation of the algorithms in MATLAB. This new edition includes a new chapter, Finite Value Method, the presentation has been tightened, new exercises and applications are included, and the text refers now to the latest release of MATLAB.

CRC Press
January 2023 : 422pp
Pb: 978-1-032-47519-6 : **£43.99**
Hb: 978-0-367-21774-7 : **£105**
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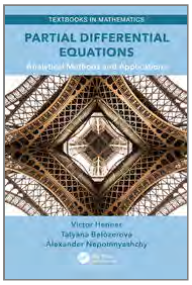
Partial Differential Equations

Analytical Methods and Applications



Victor Henner , Tatyana Belozerova , Alexander Nepomnyashchy

Partial Differential Equations: Analytical Methods and Applications exhaustively covers all the basic topics of a Partial Differential Equations (PDE) course for undergraduate students and a beginners' course for graduate students. The book is written in a simple, easy-to-read style, and it provides qualitative physical explanation of mathematical results. However, it keeps all the rigors of mathematics.

CRC Press
March 2023 : 396pp
Pb: 978-1-032-47508-0 : **£43.99**
Hb: 978-1-138-33983-5 : **£105**
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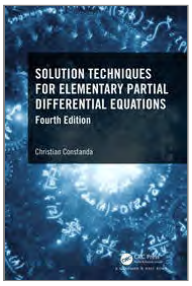
4TH EDITION

Solution Techniques for Elementary Partial Differential Equations



Christian Constanda University of Tulsa, Oklahoma, USA

This book remains a top choice for a standard, undergraduate-level course on partial differential equations (PDEs). It provides a streamlined, direct approach to developing students' competence in solving PDEs, and offers concise, easily understood explanations and worked examples that enable students to see the techniques in action.

Chapman & Hall
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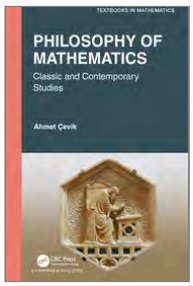
Philosophy of Mathematics

Classic and Contemporary Studies



Ahmet Cevik

Series: Textbooks in Mathematics

The author wrote this book to rekindling an interest in philosophical subjects surrounding the foundations of mathematic. To do so, he offers the mathematical motivations behind the topics debated in philosophy of mathematics. He introduces various philosophical positions ranging from the classic views to more contemporary ones, including subjects which are more engaged with mathematical logic.

Chapman & Hall
November 2021 : 352pp
Pb: 978-1-032-02268-0 : **£49.99**
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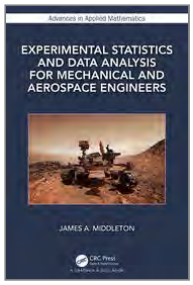
Experimental Statistics and Data Analysis for Mechanical and Aerospace Engineers



James A. Middleton

Series: Advances in Applied Mathematics

This text will introduce students to key concepts in probability and statistics with applications in mechanical and aerospace engineering. Emphasis is placed on modelling variation in observations, characterizing its distribution, and making inferences with regards to quality assurance and control. Fitting multivariate models, experimental design and hypothesis testing are all critical skills developed in the course. All topics are developed utilizing data from engineering projects, simulations, and laboratory experiences. MatLab is used throughout.

Chapman & Hall
November 2021 : 586pp
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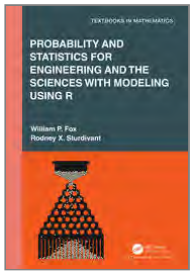
Probability and Statistics for Engineering and the Sciences with Modeling using R



William P Fox , Rodney X. Sturdivant

Series: Textbooks in Mathematics

The primary goal behind this book is offering the flexibility for instructors to build most undergraduate courses upon it. This book is designed for either a one-semester course in either introductory probability and statistics (not calculus-based) and/or a one-semester course in a calculus-based probability and statistics course. The book focuses on engineering examples and applications, while also including social sciences and more examples.

Chapman & Hall
December 2022 : 428pp
Hb: 978-1-032-33047-1 : **£91.99**
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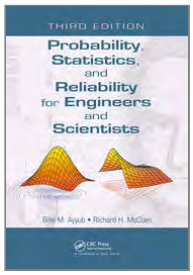
3RD EDITION

Probability, Statistics, and Reliability for Engineers and Scientists



Bilal M. Ayyub , Richard H. McCuen

The third edition of this bestselling text presents probability, statistics, reliability, and risk methods with an ideal balance of theory and applications. It places increased emphasis on simulation, particularly as a modeling tool, applying it progressively with projects that continue in each chapter. This edition also features expanded discussions of the analysis of variance and a thorough treatment of Monte Carlo simulation. The authors not only clearly establish the limitations, advantages, and disadvantages of each method, but also show that data analysis is a continuum rather than the isolated application of different methods.

CRC Press
October 2024 : 664pp
Pb: 978-1-032-91790-0 : **£56.99**
Hb: 978-1-439-80951-8 : **£150**
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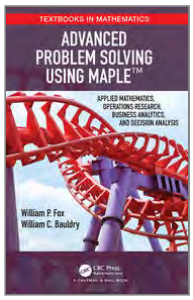
Advanced Problem Solving Using Maple

Applied Mathematics, Operations Research, Business Analytics, and Decision Analysis



William P Fox , William Bauldry

The text applies the mathematical modeling process by formulating, building, solving, analyzing, and criticizing mathematical models. Scenarios are developed within the scope of the problem solving process. The text focuses on discrete dynamical systems, optimization techniques, single-variable unconstrained optimization and applied problems, and numerical search methods. Additional coverage includes multivariable unconstrained and constrained techniques. Linear algebra techniques to model and solve problems such as the Leontief model, advanced regression technique include nonlinear, logistics and Poisson are covered. Game Theory, the Nash equilibrium, Nash arbitration are also included.

CRC Press
February 2023 : 404pp
Pb: 978-1-032-47428-1 : **£43.99**
Hb: 978-1-138-60187-1 : **£84.99**
eBook: 978-0-429-46962-6
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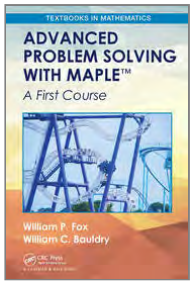
Advanced Problem Solving with Maple

A First Course



William P. Fox , William C. Bauldry

Problem Solving is essential to solve real-world problems. The text applies the mathematical modeling process by formulating, building, solving, analyzing, and criticizing mathematical models. It is intended for a course introducing students to mathematical topics they will revisit within their further studies. The authors present mathematical modeling topics using Maple as the computer algebra system for solving mathematical equations as well as obtaining plots that help us perform our analyses. The book presents cogent applications demonstrate an effective use of a Maple, provide discussions of the results obtained using Maple, and stimulate thought and analysis of additional applications

CRC Press
January 2023 : 346pp
Pb: 978-1-032-47554-7 : **£43.99**
Hb: 978-1-138-60185-7 : **£84.99**
eBook: 978-0-429-46963-3
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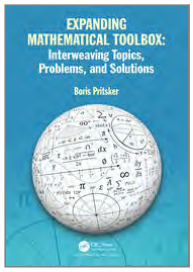
Expanding Mathematical Toolbox: Interweaving Topics, Problems, and Solutions

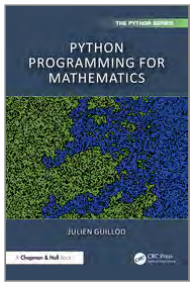


Boris Pritsker

This book offers several topics from different mathematical disciplines and show how closely they are related. The purpose of the book is to direct the attention of readers who have an interest in and talent for mathematics to engaging and thought-provoking problems that should help them change their ways of thinking, entice further exploration, and could lead to independent research and projects in mathematics. With just a few exceptions, in spite of the many problems' challenging character, solutions require no more than a basic knowledge covered in a high school math curriculum.

Chapman & Hall
February 2023 : 220pp
Pb: 978-1-032-41735-6 : **£45.99**
Hb: 978-1-032-41738-7 : **£125**
eBook: 978-1-003-35950-0
* For **full contents** and more information, visit: **www.routledge.com/9781032417356**

Python Programming for Mathematics



Julien Guillod

Series: Chapman & Hall/CRC The Python Series

This book focuses on the practical use of the Python language in a range of different areas of mathematics. Through fifty-five exercises of increasing difficulty, the book provides an expansive overview of the power of using programming to solve complex mathematical problems. This book is intended for undergraduate and graduate students who already have already learned the basics of Python programming and would like to learn how to apply that programming skill in mathematics.

Chapman & Hall
December 2024 : 248pp
Pb: 978-1-032-91011-6 : **£44.99**
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eBook: 978-1-003-56545-1
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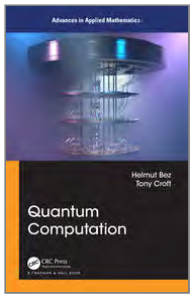
Quantum Computation



Helmut Bez , Tony Croft

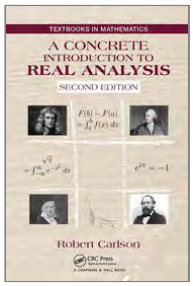
Series: Advances in Applied Mathematics

This book presents the mathematics of quantum computation. The purpose is to introduce the topic of quantum computing to students in computer science, physics and mathematics who have no prior knowledge of this field. The book is written in two parts. The primary mathematical topics required for an initial understanding of quantum computation are with in Part I: sets, functions, complex numbers and other relevant mathematical structures from linear and abstract algebra. Part II discusses quantum information, quantum measurement, and quantum algorithms. These topics provide foundations upon which more advanced topics may be approached with confidence.

Chapman & Hall
February 2023 : 391pp
Hb: 978-1-032-20648-6 : **£76.99**
eBook: 978-1-003-26456-9
* For **full contents** and more information, visit: **www.routledge.com/9781032206486**

2ND EDITION

A Concrete Introduction to Real Analysis



Robert Carlson

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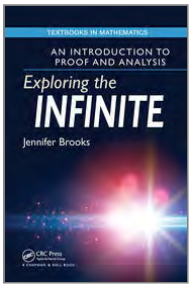
CRC Press
January 2023 : 314pp
Pb: 978-1-032-47643-8 : **£43.99**
Hb: 978-1-498-77813-8 : **£105**
eBook: 978-1-315-15272-1
* For **full contents** and more information, visit: **www.routledge.com/9781032476438**

Exploring the Infinite

An Introduction to Proof and Analysis



Jennifer Brooks

This is a textbook for an introductory course in analysis, combining topics from a transition course. At some schools, a transition course is combined over one or two semesters to introduce topics from real analysis. This allows students a more gradual approach to the difficult topics of analysis. Beginning with logic and sets, this text gradually raises the sophistication level of students coming out of calculus and proceeds into analysis topics.

CRC Press
January 2023 : 300pp
Pb: 978-1-032-47704-6 : **£43.99**
Hb: 978-1-498-70449-6 : **£84.99**
eBook: 978-1-315-37171-9
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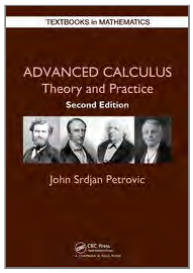
2ND EDITION

Advanced Calculus

Theory and Practice



John Petrovic

Advanced Calculus: Theory and Practice, Second Edition, expands on the material covered in elementary calculus and presents this material in a rigorous manner. The text improves students' problem-solving and proof-writing skills, familiarizes them with the historical development of calculus concepts, and helps them understand the connections among different topics. The book explains how various topics in calculus may seem unrelated but in reality have common roots. Emphasizing historical perspectives, the text gives students a glimpse into the development of calculus and its ideas from the age of Newton and Leibniz to the twentieth century. Nearly 300 examples lead to import

Chapman & Hall
February 2023 : 622pp
Pb: 978-1-032-47433-5 : **£43.99**
Hb: 978-1-138-56821-1 : **£110**
eBook: 978-0-203-70514-8
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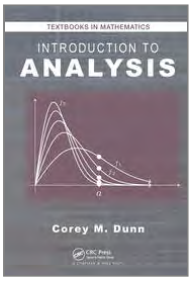
Introduction to Analysis



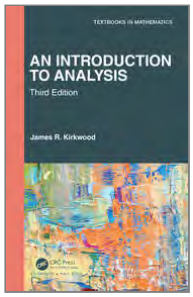
Corey M. Dunn

This text is designed for a one semester Introduction to Analysis course. One main difference is the chapter on set, functions and proofs. This book will be attractive when a Transition to Advanced Mathematics course is not offered. The first chapter covers an introduction to proofs. The text progresses into sequences and limits, continuity and differentiation. Riemann Integration, Sequences and Series Functions and the Topology of the Real Numbers round out the presentation. The author does an excellent job of connecting the material by suggesting to students where to find particular theorems, referring back to previous material while introducting new topics.

CRC Press
January 2023 : 418pp
Pb: 978-1-032-47677-3 : **£43.99**
Hb: 978-1-498-73201-7 : **£82.99**
eBook: 978-1-315-36995-2
* For **full contents** and more information, visit: **www.routledge.com/9781032476773**

3RD EDITION

An Introduction to Analysis



James R. Kirkwood Sweet Briar College, Virginia, USA

Series: Textbooks in Mathematics

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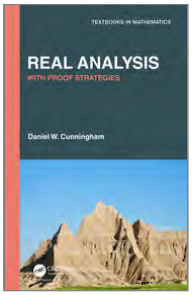
Chapman & Hall
August 2024 : 336pp
Pb: 978-1-032-02186-7 : **£56.99**
Hb: 978-0-367-70235-9 : **£84.99**
eBook: 978-1-003-14514-1
* For **full contents** and more information, visit: **www.routledge.com/9781032021867**

Real Analysis

With Proof Strategies



Daniel W. Cunningham

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Chapman & Hall
January 2023 : 281pp
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eBook: 978-1-003-09136-3
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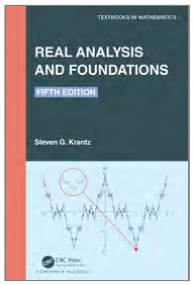
5TH EDITION

Real Analysis and Foundations



Steven G. Krantz Washington University, St. Louis, Missouri, USA

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Real analysis is a basic tool for all mathematical scientists, ranging from mathematicians to physicists to engineers to researchers in the medical profession. The primary goal of this new edition remains the same in previous editions: to make real analysis relevant and accessible to a broad audience of students with diverse backgrounds while also maintaining the integrity of the course. Many students who take a real analysis course do not have the ideal background. This new edition offers a new chapter on metric spaces and their applications. Metric spaces are important in many parts of the mathematical sciences, including data mining, web searching, and classification of images.

Chapman & Hall
August 2024 : 500pp
Pb: 978-1-032-12026-3 : **£56.99**
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eBook: 978-1-003-22268-2
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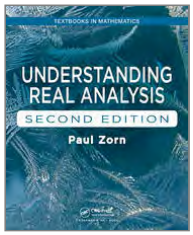
2ND EDITION

Understanding Real Analysis



Paul Zorn

Understanding Real Analysis, Second Edition offers substantial coverage of foundational material and expands on the ideas of elementary calculus to develop a better understanding of crucial mathematical ideas. The text meets students at their current level and helps them develop a foundation in real analysis. The author brings definitions, proofs, examples and other mathematical tools together to show how they work to create unified theory. These helps students grasp the linguistic conventions of mathematics early in the text. The text allows the instructor to pace the course for students of different mathematical backgrounds.

CRC Press
January 2023 : 354pp
Pb: 978-1-032-47645-2 : **£43.99**
Hb: 978-1-138-03301-6 : **£61.99**
eBook: 978-1-315-31508-9
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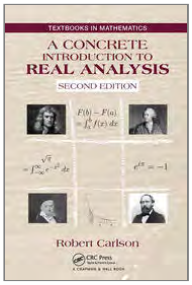
2ND EDITION

A Concrete Introduction to Real Analysis



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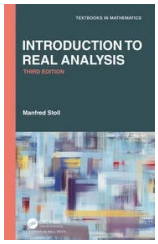


Manfred Stoll

Series: Textbooks in Mathematics

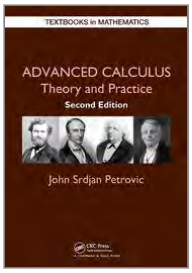
The emphasis of this now classic text is on sequences of real numbers, compact subsets of IR, as well as real-valued functions. .

Chapman & Hall
July 2023 : 582pp
Pb: 978-0-367-68393-1 : **£51.99**
Hb: 978-0-367-48688-4 : **£105**
eBook: 978-1-003-13735-1
* For **full contents** and more information, visit: **www.routledge.com/9780367683931**

2ND EDITION

Advanced Calculus

Theory and Practice



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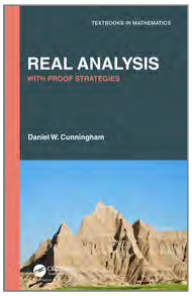

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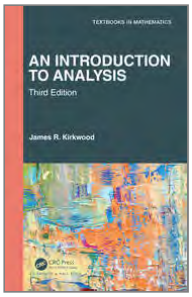

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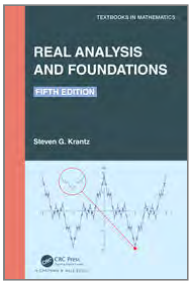

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Chapman & Hall
August 2024 : 500pp
Pb: 978-1-032-12026-3 : **£56.99**
Hb: 978-1-032-10272-6 : **£84.99**
eBook: 978-1-003-22268-2
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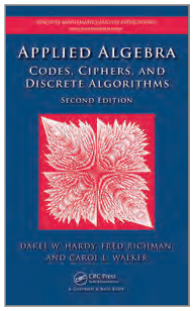
2ND EDITION

Applied Algebra

Codes, Ciphers and Discrete Algorithms, Second Edition



Darel W. Hardy Colorado State University, Fort Collins, USA**, Fred Richman** Florida Atlantic University, Boca Raton, USA**, Carol L. Walker** New Mexico State University, Las Cruces, USA

Series: Discrete Mathematics and Its Applications

Expanded to include coverage of groups and details about rings in the finite fields, the book also discusses cryptography, number theory, and error correcting codes. It presents various types of algorithms with their complexities. A thorough explanation of the Rijndael Algorithm helps students understand the recently adopted data encryption standard. The authors discuss how mathematical techniques can be used to solve practical problems. An interactive CD provides CRC codes, clearer proof presentation, and exercises. Selected Contents: Integers and Computer Algebra. Codes. Euclidean Algorithms. Ciphers. Error Control Codes. Chinese Remainder Theorem. Theorems of Fermat and Euler. Public Key Ciphers. Finite Fields. Error Correcting Codes. Advanced Encryption Standard. Polynomial Algorithms and Fast Fourier Transforms. Appendix A: Hints for Using Technology. Appendix B: Solutio

Chapman & Hall
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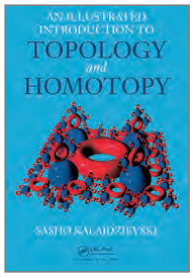
Hb: 978-1-420-07142-9 : **£135**
eBook: 978-0-429-18461-1
* For **full contents** and more information, visit: **www.routledge.com/9781420071429**

An Illustrated Introduction to Topology and Homotopy



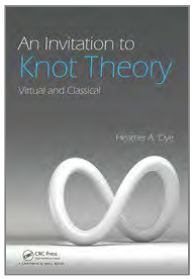
Sasho Kalajdzievski University of Manitoba, Winnipeg, Canada

This self-contained book explores the beauty of topology and homotopy theory in a direct and engaging manner while illustrating the power of the theory through many, often surprising, applications. It takes a visual and rigorous approach that incorporates both extensive illustrations and full proofs. Requiring only some familiarity with group theory, the text incorporates nearly 600 figures as well as various examples that show how the theory can be applied. It also includes roughly 750 exercises, many of which are relatively new.

Chapman & Hall
March 2015 : 488pp
Hb: 978-1-439-84815-9 : **£115**
eBook: 978-0-429-16155-1
* For **full contents** and more information, visit: **www.routledge.com/9781439848159**

An Invitation to Knot Theory

Virtual and Classical



Heather A. Dye McKendree University, Lebanon, Illinois, USA

This text gives advanced undergraduate students a gentle introduction to the field of virtual knot theory and mathematical research, covering virtual knots, counted invariants, Jones polynomial, algebraic invariants, and applications of virtual knots. It provides the foundation for students to research knot theory and read journal articles on their own. Each chapter includes numerous examples, problems, projects, and suggested readings from research papers. The proofs are written as simply as possible using combinatorial approaches, equivalence classes, and linear algebra.

Chapman & Hall
March 2016 : 288pp
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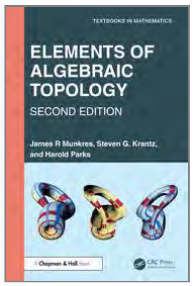
2ND EDITION

Elements of Algebraic Topology



James R Munkres , Steven G. Krantz , Harold Parks

Series: Textbooks in Mathematics

Elements of Algebraic Topology provides the most concrete approach to the subject. With coverage of homology and cohomology theory, universal coefficient theorems, Kunneth theorem, duality in manifolds, and applications to classical theorems of point-set topology, this book is perfect for communicating complex topics and the fun nature of algebraic topology for beginners. This edition retains the essential features of the original book. Most of the notation and terminology is the same. There are some useful additions. There is a new introduction to homotopy theory. A new Index of Notation is included. Many new exercises are added.

Chapman & Hall
May 2025 : 580pp
Hb: 978-1-032-76554-9 : **£96.99**
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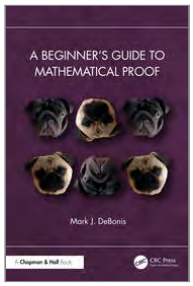
A Beginner's Guide to Mathematical Proof

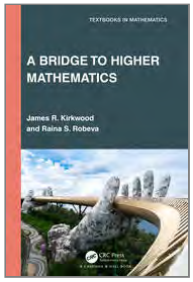


Mark J. DeBonis Manhattan College, USA

A Beginner's Guide to Mathematical Proof prepares mathematics majors for the transition to abstract mathematics, as well as introducing a wider readership of quantitative science students, such as engineers, to the mathematical structures underlying more applied topics. The text is designed to be easily utilized by both instructor and student, with an accessible, step-by-step approach requiring minimal mathematical prerequisites. The book builds towards more complex ideas as it progresses, but never makes assumptions of the reader beyond the material already covered.

Chapman & Hall
April 2025 : 170pp
Pb: 978-1-032-68770-4 : **£49.99**
Hb: 978-1-032-68619-6 : **£130**
* For **full contents** and more information, visit: **www.routledge.com/9781032687704**

A Bridge to Higher Mathematics



James R. Kirkwood Sweet Briar College, Sweet Briar, VA 24595**, Raina S. Robeva** Randolph-Macon College, Ashland, VA USA

Series: Textbooks in Mathematics

The goal of this unique text is to provide an "experience" that would facilitate a better transition for mathematics majors to the advanced proof-based courses required for their major. If you "love mathematics, but I hate proofs" this book is for you. Example-based courses such as introductory Calculus transition somewhat abruptly, and without a warning label, to proof-based courses, and may leave students with the unpleasant feeling that a subject they loved has turned into material they find hard to understand.

Chapman & Hall
May 2024 : 258pp
Pb: 978-1-032-61184-6 : **£41.99**
Hb: 978-1-032-62385-6 : **£105**
eBook: 978-1-032-62384-9
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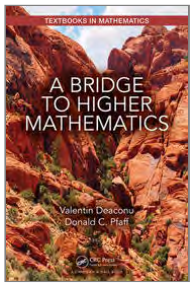

Valentin Deaconu University of Nevada, Reno, USA**, Donald C. Pfaff** University of Nevada, Reno, USA

Series: Textbooks in Mathematics

This is an introduction to proofs book for the course offering a transition to more advanced mathematics. It contains logic, sets, functions, relations, the construction of rational, real and complex numbers and their properties. It also has a chapter on cardinality and a chapter on counting techniques. The book explains various proof techniques and has many examples which help with the transition to more advanced classes like Real Analysis, Groups, rings and fields or topology.

Chapman & Hall
December 2016 : 218pp
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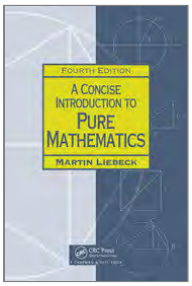
4TH EDITION

A Concise Introduction to Pure Mathematics



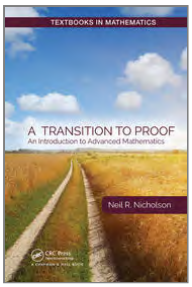
Martin Liebeck Imperial College, London, UK

Accessible to all students with a sound background in high school mathematics, this popular text presents some of the most fundamental and beautiful ideas in pure mathematics. Along with numerous new exercises, this edition includes two new chapters that serve as an introduction to abstract algebra via the theory of groups, covering abstract reasoning as well as many examples and applications. It also contains new material on inequalities, counting methods, the inclusion-exclusion principle, and Euler's phi function.

Chapman & Hall
November 2015 : 320pp
Pb: 978-1-498-72292-6 : **£47.99**
Hb: 978-1-138-46683-8 : **£185**
eBook: 978-1-315-38251-7
* For **full contents** and more information, visit: **www.routledge.com/9781498722926**

A Transition to Proof

An Introduction to Advanced Mathematics

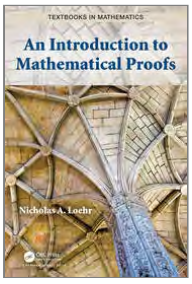


Neil R. Nicholson

A Transition to Proof: An Introduction to Advanced Mathematics describes writing proofs as a creative process. There is a lot that goes into creating a mathematical proof before writing it. Ample discussion of how to figure out the "nuts and bolts'" of the proof takes place: thought processes, scratch work and ways to attack problems. Readers will learn not just how to write mathematics but also how to do mathematics. They will then learn to communicate mathematics effectively.

CRC Press
January 2023 : 464pp
Pb: 978-1-032-47572-1 : **£43.99**
Hb: 978-0-367-20157-9 : **£86.99**
eBook: 978-0-429-25983-8
* For **full contents** and more information, visit: **www.routledge.com/9781032475721**

An Introduction to Mathematical Proofs



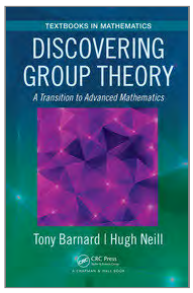
Nicholas A. Loehr

The text contains an introduction to mathematical proofs, constituting the standard core material in a course for mathematics majors. The book is divided into approximately fifty brief lectures. Each lecture corresponds to a single class meeting. The lecture format has several advantages. New material is presented in smaller chunks that are easier to digest in a single reading or class meeting. The book retains the conversational style of a lecture, while maintaining the level of precision and rigor. Every lecture ends with a review of the main points, and review lectures give summaries of each major section. Heavy emphasis is placed on proof templates, proof outlines for complex statements.

CRC Press
January 2023 : 412pp
Pb: 978-1-032-47522-6 : **£43.99**
Hb: 978-0-367-33823-7 : **£91.99**
eBook: 978-0-429-32258-7
* For **full contents** and more information, visit: **www.routledge.com/9781032475226**

Discovering Group Theory

A Transition to Advanced Mathematics



Tony Barnard , Hugh Neill

Series: Textbooks in Mathematics

This book presents group theory to students taking a course to transition to advanced mathematics with the goal of preparing them for higher level mathematical study. The book covers the usual material which is found in a first course on groups with both preliminary chapters and examples of groups, results about integers, study cosets, and isomorphism theorem.

CRC Press
December 2016 : 231pp
Pb: 978-1-138-03016-9 : **£39.99**
Hb: 978-1-138-43084-6 : **£185**
eBook: 978-1-315-40578-0
* For **full contents** and more information, visit: **www.routledge.com/9781138030169**

Proofs 101

An Introduction to Formal Mathematics

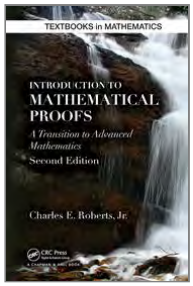
Joseph Kirtland

Proofs 101: An Introduction to Formal Mathematics serves as an introduction to proofs for mathematics majors who have completed the calculus sequence (at least Calculus I and II) and Linear Algebra. It prepares students for the proofs they will need to analyse and write, the axiomatic nature of mathematics, and the rigors of upper-level mathematics courses. Basic number theory, relations, functions, cardinality, and set theory will provide the material for the proofs and lay the foundation for a deeper understanding of mathematics, which students will need to carry with them throughout their future studies

Chapman & Hall
November 2020 : 196pp
Pb: 978-0-367-53681-7 : **£49.99**
Hb: 978-0-367-53693-0 : **£135**
eBook: 978-1-003-08292-7
* For **full contents** and more information, visit: **www.routledge.com/9780367536817**

2ND EDITION

Introduction to Mathematical Proofs

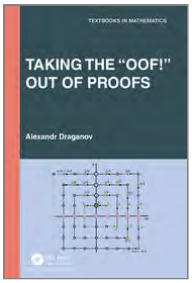


Charles Roberts

This book is designed to prepare students for higher mathematics by focusing on the development of theorems and proofs. Beginning with logic, the text discusses deductive mathematical systems and the systems of natural numbers, integers, rational numbers, and real numbers. It covers elementary topics in set theory, explores various properties of relations and functions, and proves several theorems using induction. The final chapters introduce the concept of cardinalities of sets and the concepts and proofs of real analysis and group theory.

Chapman & Hall
October 2024 : 414pp
Pb: 978-1-032-92023-8 : **£56.99**
Hb: 978-1-482-24687-2 : **£96.99**
eBook: 978-0-429-16149-0
* For **full contents** and more information, visit: **www.routledge.com/9781032920238**

Taking the "Oof!" Out of Proofs



Alexandr Draganov

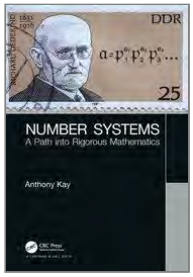
Series: Textbooks in Mathematics

This book introduces readers to the art of doing mathematical proofs. Proofs are the glue that holds mathematics together. They make connections between math concepts and show why things work the way they do. This book teaches the art of proofs using familiar high school concepts, such as numbers, polynomials, functions, and trigonometry. It retells math as a story, where the next chapter follows from the previous one.

Chapman & Hall
April 2024 : 296pp
Pb: 978-1-032-59598-6 : **£47.99**
Hb: 978-1-032-59902-1 : **£130**
eBook: 978-1-003-45676-6
* For **full contents** and more information, visit: **www.routledge.com/9781032595986**

Number Systems

A Path into Rigorous Mathematics



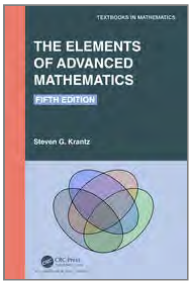
Anthony Kay

This book aims to introduce number systems to an undergraduate audience in a way that emphasises the importance of rigour, and with a focus on providing detailed but accessible explanations of theorems and their proofs. The book continually seeks to build upon students' intuitive ideas of how numbers and arithmetic work, and to guide them towards the means to embed this natural understanding into a more structured framework of understanding.

Chapman & Hall
September 2021 : 316pp
Pb: 978-0-367-18061-4 : **£58.99**
Hb: 978-0-367-18065-2 : **£150**
eBook: 978-0-429-05935-3
* For **full contents** and more information, visit: **www.routledge.com/9780367180614**

5TH EDITION

The Elements of Advanced Mathematics



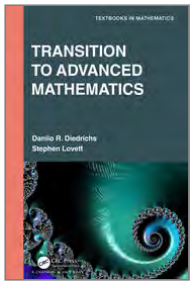
Steven G. Krantz Washington University, St. Louis, Missouri, USA

Series: Textbooks in Mathematics

The Fifth Edition is the latest edition of the author's bestselling series of texts. Expanding on previous editions, the new edition continues to provide students with a better understanding of proofs, a core concept for higher level mathematics. To meet the needs of instructors, the text is aligned directly with course requirements. The author connects computationally and theoretically based mathematics, helping students develop a foundation for higher level mathematics. The fourth edition offered a new chapter on elementary number theory. In this edition, a chapter on group theory is moved up. The previous chapter five has been eliminated to better level the depth of presentation.

Chapman & Hall
August 2024 : 312pp
Pb: 978-1-032-10279-5 : **£56.99**
Hb: 978-1-032-10275-7 : **£84.99**
eBook: 978-1-003-21456-4
* For **full contents** and more information, visit: **www.routledge.com/9781032102795**

Transition to Advanced Mathematics



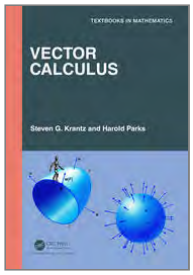
Danilo R. Diedrichs , Stephen Lovett Wheaton College, Illinois, USA

Series: Textbooks in Mathematics

This unique and contemporary text not only offers an introduction to proofs with a view towards algebra and analysis, a standard fare for a transition course, but also presents practical skills for upper-level mathematics coursework and exposes undergraduate students to the context and culture of contemporary mathematics. The authors implement the practice recommended by the Committee on the Undergraduate Program in Mathematics (CUPM) curriculum guide, that a modern mathematics program should include cognitive goals and offer a broad perspective of the discipline.

Chapman & Hall
August 2024 : 552pp
Pb: 978-1-032-26100-3 : **£56.99**
Hb: 978-0-367-49444-5 : **£84.99**
eBook: 978-1-003-04620-2
* For **full contents** and more information, visit: **www.routledge.com/9781032261003**

Vector Calculus



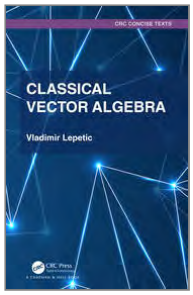
Steven G. Krantz Washington University, St. Louis, Missouri, USA**, Harold Parks**

Series: Textbooks in Mathematics

A calculus book must tell the truth.This book is carefully written in the accepted language of mathematics in a readable exposition. It includes useful and fascinating applications, acquaints students with the history of the subject and offers a sense of what mathematics is all about. Technique is presented, yet so are ideas. The author helps students to master basic methods and how to discover and build their own concepts in a scientific subject. There is an emphasis on using modeling and numerical calculation.

Chapman & Hall
May 2024 : 681pp
Hb: 978-1-032-30266-9 : **£110**
eBook: 978-1-003-30424-1
* For **full contents** and more information, visit: **www.routledge.com/9781032302669**

Classical Vector Algebra



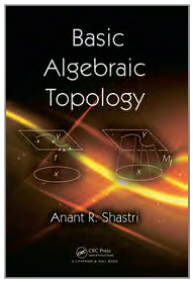
Vladimir Lepetic

Series: Textbooks in Mathematics

Classic Vector Algebra should be viewed as a prerequisite, an introduction, for other mathematical courses dealing with vectors, following typical form and appropriate rigor of more advanced mathematics texts. Vector algebra discussed in this book briefly addresses vectors in general 3-dimensional Euclidian space, and then, in more detail, vectors in Cartesian ⊠3 space. These vectors are easier to visualize, their operational techniques are relatively simple, but they are necessary for the study of Vector Analysis. In addition, this could also serve as a good intuition build up for more abstract structures of ⊠-dimensional vector spaces.

Chapman & Hall
December 2022 : 154pp
Pb: 978-1-032-38099-5 : **£39.99**
Hb: 978-1-032-38100-8 : **£96.99**
eBook: 978-1-003-34348-6
* For **full contents** and more information, visit: **www.routledge.com/9781032380995**

Basic Algebraic Topology



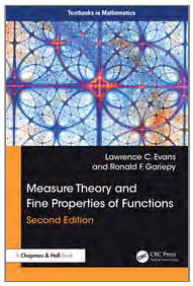
Anant R. Shastri

Thoroughly classroom-tested, this self-contained text provides plenty of material for a two-semester first course in algebraic topology, taking students all the way to becoming algebraic topologists. It covers many important results, concepts, and applications in standard algebraic topology—including topics not typically covered in introductory texts. Historical remarks throughout the text make the subject more meaningful to students. Also suitable for researchers, the book provides references for further reading, presents full proofs of all results, and includes numerous exercises.

Chapman & Hall
October 2013 : 551pp
Hb: 978-1-466-56243-1 : **£110**
eBook: 978-0-429-10047-5
* For **full contents** and more information, visit: **www.routledge.com/9781466562431**

2ND EDITION

Measure Theory and Fine Properties of Functions



Lawrence C. Evans University of California, Berkeley, USA

Series: Textbooks in Mathematics

This popular textbook provides a detailed examination of the central assertions of measure theory in n-dimensional Euclidean space. The book emphasizes the roles of Hausdorff measure and capacity in characterizing the fine properties of sets and functions. This book gathers together the essentials of real analysis on Rn, with particular emphasis on integration and differentiation. This widely popular treatment has been updated to address all needed corrections and minor edits from the previous Revised Edition. The book includes many interesting topics working mathematical analysts need to know, but ones rarely taught.

Chapman & Hall
March 2025 : 339pp
Hb: 978-1-032-94644-3 : **£74.99**
* For **full contents** and more information, visit: **www.routledge.com/9781032946443**

Origami 5

Fifth International Meeting of Origami Science, Mathematics, and Education

Edited by **Patsy Wang-Iverson , Robert J. Lang** http://www.langorigami.com, Alamo, California, USA**, Mark YIM** GRASP Lab, University of Pennsylvania

Series: AK Peters/CRC Recreational Mathematics Series

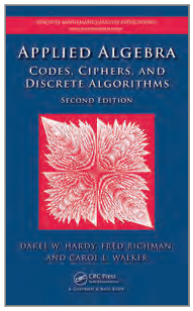
While many individuals have discovered discrete connections among origami, mathematics, science, technology, and education during the twentieth century, the field really took off when previously isolated individuals began to make stronger connections with each other, exploring the links between origami and "the outside world." This volume brings together an unprecedented number of researchers who discuss topics ranging from mathematics to technology to educational uses of origami to fine art to computer programs for the design of origami.

A K Peters/CRC Press
June 2011 : 668pp
Pb: 978-1-568-81714-9 : **£76.99**
Hb: 978-1-138-44228-3 : **£180**
eBook: 978-0-429-10657-6
* For **full contents** and more information, visit: **www.routledge.com/9781568817149**

2ND EDITION

Applied Algebra

Codes, Ciphers and Discrete Algorithms, Second Edition



Darel W. Hardy Colorado State University, Fort Collins, USA**, Fred Richman** Florida Atlantic University, Boca Raton, USA**, Carol L. Walker** New Mexico State University, Las Cruces, USA

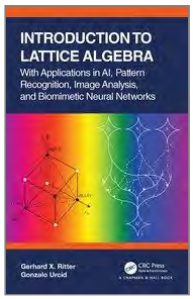
Series: Discrete Mathematics and Its Applications

Expanded to include coverage of groups and details about rings in the finite fields, the book also discusses cryptography, number theory, and error correcting codes. It presents various types of algorithms with their complexities. A thorough explanation of the Rijndael Algorithm helps students understand the recently adopted data encryption standard. The authors discuss how mathematical techniques can be used to solve practical problems. An interactive CD provides CRC codes, clearer proof presentation, and exercises. Selected Contents: Integers and Computer Algebra. Codes. Euclidean Algorithms. Ciphers. Error Control Codes. Chinese Remainder Theorem. Theorems of Fermat and Euler. Public Key Ciphers. Finite Fields. Error Correcting Codes. Advanced Encryption Standard. Polynomial Algorithms and Fast Fourier Transforms. Appendix A: Hints for Using Technology. Appendix B: Solutio

Chapman & Hall
February 2009 : 424pp
Hb: 978-1-420-07142-9 : **£135**
eBook: 978-0-429-18461-1
* For **full contents** and more information, visit: **www.routledge.com/9781420071429**

Introduction to Lattice Algebra

With Applications in AI, Pattern Recognition, Image Analysis, and Biomimetic Neural Networks



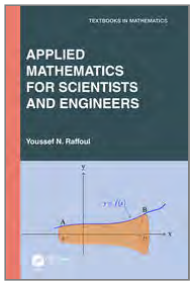
Gerhard X. Ritter , Gonzalo Urcid

Series: Chapman & Hall/CRC Mathematics and Artificial Intelligence Series

This book lays emphasis on two subjects, the first being lattice algebra and the second the practical applications of that algebra. This textbook is intended to be used for a special topics course in artificial intelligence with focus on pattern recognition, multispectral image analysis, and biomimetic artificial neural networks. The book is self-contained and – depending on the student's major – can be used at a senior undergraduate level or a first-year graduate level course. The book is also an ideal self-study guide for researchers and professionals in the above-mentioned disciplines.

Chapman & Hall
September 2023 : 432pp
Pb: 978-0-367-72295-1 : **£46.99**
Hb: 978-0-367-72029-2 : **£105**
eBook: 978-1-003-15424-2
* For **full contents** and more information, visit: **www.routledge.com/9780367722951**

Applied Mathematics for Scientists and Engineers



Youssef Raffoul

Series: Textbooks in Mathematics

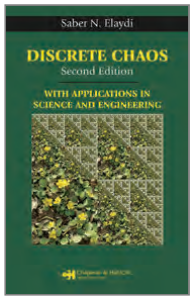
Mathematicians, physicists, engineers, biologists, and other scientists who study in related fields frequently use differential equations, linear algebra, calculus of variations, and integral equations. The purpose of the book is to provide a concise and well-organized study of the theoretical foundations for the development of mathematics and problem-solving methods. A wide range of solution strategies are shown for real-world challenges.

Chapman & Hall
October 2023 : 441pp
Pb: 978-1-032-58394-5 : **£74.99**
Hb: 978-1-032-58257-3 : **£195**
eBook: 978-1-003-44988-1
* For **full contents** and more information, visit: **www.routledge.com/9781032583945**

2ND EDITION

Discrete Chaos

With Applications in Science and Engineering



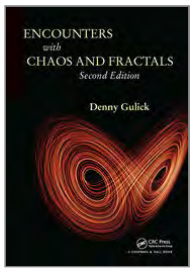
Saber N. Elaydi Trinity University, San Antonio, Texas, USA

While maintaining the lucidity of the first edition, this book now includes many recent results on global stability, bifurcation, chaos, and fractals. The first five chapters provide the most comprehensive material on discrete dynamical systems, including trace-determinant stability, bifurcation analysis, and the detailed analysis of the center manifold theory. This edition also covers L-systems and the periodic structure of the bulbs in the Mandelbrot set as well as new applications in biology, chemistry, and physics. The principal improvements to this book are the additions of PHASER software on an accompanying CD-ROM and the Maple™ and Mathematica® code available for download online.

Chapman & Hall
November 2007 : 440pp
Hb: 978-1-584-88592-4 : **£96.99**
eBook: 978-0-429-14919-1
* For **full contents** and more information, visit: **www.routledge.com/9781584885924**

2ND EDITION

Encounters with Chaos and Fractals



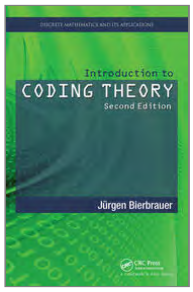
Denny Gulick

Revised and updated, this second edition provides an accessible introduction to both chaotic dynamics and fractal geometry for readers with a calculus background. This edition contains new and expanded material on fractals that illustrates how to obtain computer renderings of them and covers Julia and Mandelbrot sets. It also includes a substantial number of new exercises at the end of each section and MATLAB® programs in the appendix, with selected solutions at the back of the book.

Chapman & Hall
October 2024 : 388pp
Pb: 978-1-032-92075-7 : **£56.99**
Hb: 978-1-584-88517-7 : **£86.99**
eBook: 978-0-429-09735-5
* For **full contents** and more information, visit: **www.routledge.com/9781032920757**

2ND EDITION

Introduction to Coding Theory



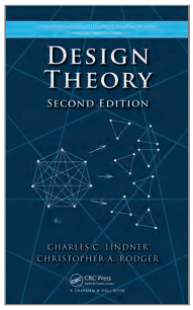
Jurgen Bierbrauer

This book is designed to be usable as a textbook for an undergraduate course or for an advanced graduate course in coding theory as well as a reference for researchers in discrete mathematics, engineering and theoretical computer science. This second edition has three parts: an elementary introduction to coding, theory and applications of codes, and algebraic curves. The latter part presents a brief introduction to the theory of algebraic curves and its most important applications to coding theory.

CRC Press
January 2023 : 538pp
Pb: 978-1-032-47719-0 : **£43.99**
Hb: 978-1-482-29980-9 : **£86.99**
eBook: 978-1-315-37199-3
* For **full contents** and more information, visit: **www.routledge.com/9781032477190**

2ND EDITION

Design Theory



Charles C. Lindner Auburn University, Alabama, USA**,**
Christopher A. Rodger Auburn University, Alabama, USA

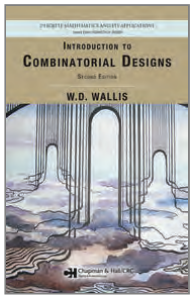
Series: Discrete Mathematics and Its Applications

The second edition of a basic text on design theory, this book examines some of the most important techniques used for constructing combinatorial designs. Focusing on several basic designs such as Steiner Triple Systems, Latin Squares, and finite projective and affine planes, the authors add interesting properties such as resolvability and orthogonality. This new edition adds material on embedding designs, algorithms for producing disjoint designs, and algebraic connections between quasigroups and graph decompositions. In addition, several of the more complicated structures, such as the Steiner quadruple systems are also included. The book is supplemented with problem sets and examples.

Chapman & Hall
October 2008 : 284pp
Hb: 978-1-420-08296-8 : **£115**
eBook: 978-1-315-10723-3
* For **full contents** and more information, visit: **www.routledge.com/9781420082968**

2ND EDITION

Introduction to Combinatorial Designs



W.D. Wallis

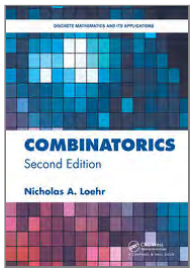
Series: Discrete Mathematics and Its Applications

This new edition presents a comprehensive look at combinatorial designs. It coversclassical designs such as Latin squares, balanced incomplete block designs, and finite projective and affine planes as well as more contemporary designs that include one-factorizations, Room squares, tournament designs, and nested designs. The book featuresapplications in cryptography, computer science, experimental design, communications theory, and more. With every topic, it includes instructive examples and theorems. The text also provides exercises in each section, select answers in the back of the book, and more complete solutions on the author's website.

Chapman & Hall
May 2007 : 328pp
Hb: 978-1-584-88838-3 : **£105**
eBook: 978-0-429-13661-0
* For **full contents** and more information, visit: **www.routledge.com/9781584888383**

2ND EDITION

Combinatorics



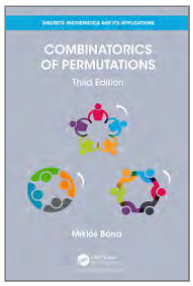
Nicholas Loehr

Bijective proofs are some of the most elegant and powerful techniques in all of mathematics. Suitable for readers without prior background in algebra or combinatorics, the book presents an introduction to enumerative and algebraic combinatorics emphasizing bijective methods. The text develops mathematical tools, such as basic counting rules, recursions, inclusion-exclusion techniques, generating functions, bijective proofs, and linear-algebraic methods to solve enumeration problems. The tools are used to analyze combinatorial structures, words, permutations, subsets, functions, compositions, integer partitions, graphs, trees, lattice paths, multisets, rook placements, and set partitions.

CRC Press
January 2023 : 642pp
Pb: 978-1-032-47671-1 : **£43.99**
Hb: 978-1-498-78025-4 : **£110**
eBook: 978-1-315-15336-0
* For **full contents** and more information, visit: **www.routledge.com/9781032476711**

3RD EDITION

Combinatorics of Permutations



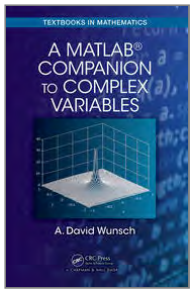
Miklos Bona University of Florida, Gainesville, USA

Series: Discrete Mathematics and Its Applications

The first editions of this award-winning book were recognized by CHOICE magazine as "Outstanding" titles and recommended by the MAA for academic libraries. The book is widely considered the primary source for graduate level courses on the topic and is also useful to researchers. This new edition is thoroughly updated with better and newer results. The area of universal permutations has undergone a lot of recent progress. There is tremendous progress in pattern avoidance. A new technique from extremal combinatorics disproving a long-standing conjecture is considered. Significant progress in the analytic combinatorics of permutations is incorporated.

Chapman & Hall
August 2024 : 528pp
Pb: 978-1-032-22350-6 : **£56.99**
Hb: 978-0-367-22258-1 : **£105**
eBook: 978-0-429-27410-7
* For **full contents** and more information, visit: **www.routledge.com/9781032223506**

A MatLab® Companion to Complex Variables



A. David Wunsch University of Massachusetts Lowell, USA

Series: Textbooks in Mathematics

A MATLAB® Companion to Complex Variables provides students with a clear understanding of the utility of MATLAB in complex arithmetic. An ideal adjunct to standard texts on the functions of complex variables, the book allows professors to quickly find and assign MATLAB programming problems that will strengthen students' knowledge of the language and concepts of complex variable theory. The book shows students how MATLAB can be a powerful companion in such staples of complex variable theory as conformal mapping, infinite series, contour integration, and Laplace and Fourier transforms.

CRC Press
April 2016 : 360pp
Pb: 978-1-498-75567-2 : **£68.99**
Hb: 978-1-138-44165-1 : **£185**
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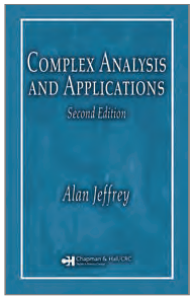
* For **full contents** and more information, visit: **www.routledge.com/9781498755672**

2ND EDITION

Complex Analysis and Applications

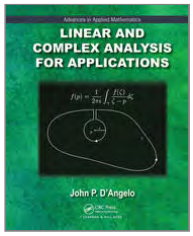


Alan Jeffrey University of Newcastle upon Tyne, UK

Complex Analysis and Applications, Second Edition explains complex analysis, its geometrical interpretation of, and its application to Dirichlet and Neumann boundary value problems. A discussion of complex analysis now forms the first three chapters of the book, and a description of conformal mapping and its application to boundary value problems for the two-dimensional Laplace equation forms the final two chapters. This new structure enables students to study theory and applications separately. To maintain brevity and clarity, the text limits the application of complex analysis to two-dimensional boundary value problems related to temperature distribution, fluid flow, and electrostatics.

Chapman & Hall
November 2005 : 592pp
Pb: 978-1-584-88553-5 : **£110**
eBook: 978-0-429-11474-8
* For **full contents** and more information, visit: **www.routledge.com/9781584885535**

Linear and Complex Analysis for Applications

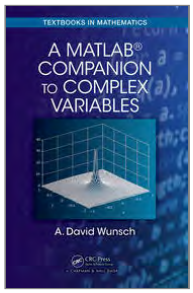


John P. D'Angelo

This book develops an understanding of sophisticated tools by using them. Complex variable theory is developed. The first three chapters and selected topics make a nice course. This course should appeal to faculty who want an integrated treatment of linear algebra and complex analysis, including applications and also reviewing vector analysis. Students can continue with the Hilbert space chapter and conclude with probability and quantum mechanics. The first five chapters together with the last section of Chapter 7 make an applied complex variables course. Such a course would be ideal for many graduate students.

CRC Press
January 2023 : 274pp
Pb: 978-1-032-47702-2 : **£43.99**
Hb: 978-1-498-75610-5 : **£84.99**
eBook: 978-1-315-11884-0
* For **full contents** and more information, visit: **www.routledge.com/9781032477022**

A MatLab® Companion to Complex Variables



A. David Wunsch University of Massachusetts Lowell, USA

Series: Textbooks in Mathematics

A MATLAB® Companion to Complex Variables provides students with a clear understanding of the utility of MATLAB in complex arithmetic. An ideal adjunct to standard texts on the functions of complex variables, the book allows professors to quickly find and assign MATLAB programming problems that will strengthen students' knowledge of the language and concepts of complex variable theory. The book shows students how MATLAB can be a powerful companion in such staples of complex variable theory as conformal mapping, infinite series, contour integration, and Laplace and Fourier transforms.

CRC Press
April 2016 : 360pp
Pb: 978-1-498-75567-2 : **£68.99**
Hb: 978-1-138-44165-1 : **£185**
eBook: 978-1-315-38033-9
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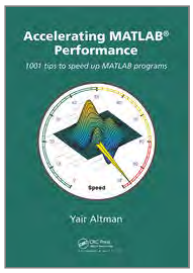
Accelerating MATLAB Performance

1001 tips to speed up MATLAB programs

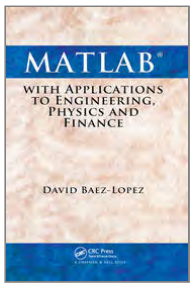


Yair M. Altman

This book describes MATLAB performance in a scale and depth never before published. It takes a comprehensive approach to MATLAB performance, illustrating numerous ways to attain the desired speedup. The book explains how to profile MATLAB code to identify performance hotspots and discusses various tradeoffs in MATLAB performance tuning. It covers vectorization, parallelization, distributed computing, caching, optimization, memory management, GUI, graphics, and I/O. The book includes numerous code examples and online references, and is supported by an active website.

Chapman & Hall
October 2024 : 786pp
Pb: 978-1-032-91752-8 : **£64.99**
Hb: 978-1-482-21129-0 : **£96.99**
eBook: 978-0-429-18874-9
* For **full contents** and more information, visit: **www.routledge.com/9781032917528**

MATLAB with Applications to Engineering, Physics and Finance



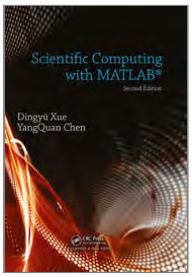
David Baez-Lopez

This book explains how to perform complex mathematical tasks with MATLAB® programs. The author first describes simple functions such as differentiation, integration, and plotting. He then addresses advanced topics, including programming, producing executables, publishing results directly from MATLAB programs, and creating graphical user interfaces. The text also presents examples of Simulink® for system modeling and simulation. It explores the use of MATLAB in digital signal processing, chemical and food engineering, astronomy, optics, financial derivatives, and much more. MATLAB examples and programs can be downloaded from the book's website and a solutions manual is available for qualifying instructors.

CRC Press
October 2019 : 428pp
Pb: 978-0-367-38498-2 : **£61.99**
Hb: 978-1-439-80697-5 : **£175**
eBook: 978-0-429-13157-8
* For **full contents** and more information, visit: **www.routledge.com/9780367384982**

2ND EDITION

Scientific Computing with MATLAB

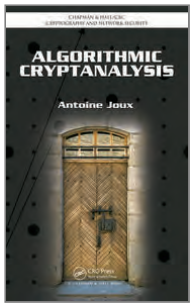


Dingyu Xue , YangQuan Chen

Improving students' ability to tackle mathematical problems, this second edition retains the structure of its predecessor while expanding and updating the content of each chapter. The text helps students understand the mathematical background and find reliable and accurate solutions to mathematical problems with the use of MATLAB®, avoiding the tedious and complex technical details of mathematics. Students can effortlessly experiment with the MATLAB scripts for a deep, hands-on exploration. Problems in each chapter also strengthen understanding of the material.

Chapman & Hall
March 2021 : 604pp
Pb: 978-0-367-78313-6 : **£45.99**
Hb: 978-1-498-75777-5 : **£96.99**
eBook: 978-1-315-36785-9
* For **full contents** and more information, visit: **www.routledge.com/9780367783136**

Algorithmic Cryptanalysis



Antoine Joux Universite de Versailles Saint-Quentin-en-Yvelines, France

Series: Chapman & Hall/CRC Cryptography and Network Security Series

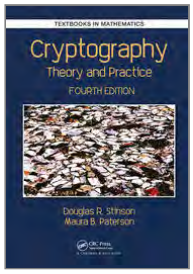
Focusing on both private- and public-key cryptographic algorithms, this book describes algorithmic methods with cryptographically relevant examples. After introducing modern cryptography and elementary number theory and algebra, it covers linear algebra, sieving, brute force, algorithms based on the birthday paradox, Hadamard–Fourier–Walsh transforms, lattice reduction, and Gröbner bases. The author also presents advanced applications, such as LFSR-based stream ciphers, lattice methods for cryptanalysis, elliptic curves, and index calculus methods. He includes some hints and solutions to the exercises as well as C code on the book's website.

Chapman & Hall
June 2009 : 520pp
Hb: 978-1-420-07002-6 : **£135**
eBook: 978-0-429-14562-9
* For **full contents** and more information, visit: **www.routledge.com/9781420070026**

4TH EDITION

Cryptography

Theory and Practice



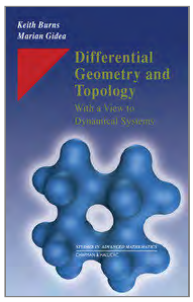
Douglas Robert Stinson , Maura Paterson

Through three editions, Cryptography: Theory and Practice, has been embraced by instructors and students alike. It offers a comprehensive primer for the subject's fundamentals while presenting the most current advances in cryptography.The authors offer comprehensive, in-depth treatment of the methods and protocols that are vital to safeguarding the seemingly infinite and increasing amount of information circulating around the world.

CRC Press
January 2023 : 598pp
Pb: 978-1-032-47604-9 : **£43.99**
Hb: 978-1-138-19701-5 : **£86.99**
eBook: 978-1-315-28249-7
* For **full contents** and more information, visit: **www.routledge.com/9781032476049**

Differential Geometry and Topology

With a View to Dynamical Systems



Keith Burns Northwestern University, Evanston, Illinois, USA**, Marian Gidea** Northeastern Illinois University, Chicago, USA

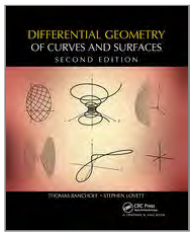
Series: Studies in Advanced Mathematics

Accessible, concise, and self-contained, this book offers an outstanding introduction to three related subjects: differential geometry, differential topology, and dynamical systems. The authors' intuitive approach forms a treatment that is comprehensible to relative beginners, yet rigorous enough for professional mathematicians. Smooth manifolds, Riemannian metrics, affine connections, the curvature tensor, differential forms, integration on manifolds, and intersection theory provide the foundation for many applications in dynamical systems and mechanics. Topics of special interest addressed in the book include Brouwer's fixed point theorem, Morse Theory, and the geodesic flow.

Chapman & Hall
May 2005 : 400pp
Hb: 978-1-584-88253-4 : **£145**
eBook: 978-0-429-12400-6
* For **full contents** and more information, visit: **www.routledge.com/9781584882534**

2ND EDITION

Differential Geometry of Curves and Surfaces



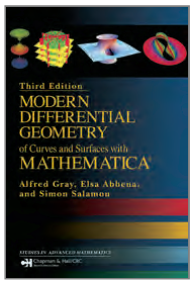
Thomas F. Banchoff , Stephen Lovett

This self-contained text takes both an analytical/theoretical approach and a visual/intuitive approach to the local and global properties of curves and surfaces. It develops students' geometric intuition through interactive computer graphics applets supported by sound theory. This edition includes more exercises and project ideas, reorganized material on the Gauss–Bonnet theorem, and a new chapter on curves and surfaces in Rn. New sections cover applications to cartography and problems in spherical and hyperbolic geometry.

Chapman & Hall
October 2024 : 430pp
Pb: 978-1-032-91998-0 : **£56.99**
Hb: 978-1-482-24734-3 : **£71.99**
eBook: 978-0-429-15622-9
* For **full contents** and more information, visit: **www.routledge.com/9781032919980**

3RD EDITION

Modern Differential Geometry of Curves and Surfaces with Mathematica



Elsa Abbena University di Torino, Italy**, Simon Salamon** Politecnico of Torino, Torino, Italy**, Alfred Gray** University of Maryland, College Park, MD

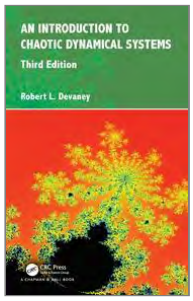
Series: Textbooks in Mathematics

This third edition of Alfred Gray's famous textbook continues to offer an outstanding presentation of how to define and compute standard geometric functions along with a dialect of Mathematica for constructing new curves and surfaces from existing ones. Since Gray's death, authors Abbena and Salamon have stepped in to bring the book up to date. While maintaining Gray's intuitive approach, they have reorganized the material to provide a clearer division between the text and the Mathematica code, added a Mathematica notebook as an appendix to each chapter, and addressed important new topics, such as quaternions. More than 400 illustrations of curves and surfaces help readers visualize the concepts.

Chapman & Hall
June 2006 : 1016pp
Hb: 978-1-584-88448-4 : **£145**
eBook: 978-1-315-27603-8
* For **full contents** and more information, visit: **www.routledge.com/9781584884484**

3RD EDITION

An Introduction To Chaotic Dynamical Systems



Robert L. Devaney

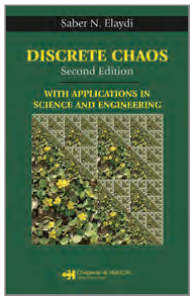
This widely used graduate text introduces modern topics in dynamical systems. The author includes new material on complex dynamics leading to key revisions. In its Third Edition, the author presents a through rewriting, includes revising both Chapters 2 and 3 to reflect modern results and advances, especially in the field of complex dynamics. Updates include new exercises, and updated references. Striking color photos illustrating both Julia and Mandelbrot sets are included. This book assumes no prior acquaintance with advanced mathematical topics such as measure theory, topology, and differential geometry. The author leads the reader to the point of current research.

Chapman & Hall
August 2024 : 434pp
Pb: 978-0-367-23615-1 : **£56.99**
Hb: 978-1-032-15046-8 : **£84.99**
eBook: 978-0-429-28080-1
* For **full contents** and more information, visit: **www.routledge.com/9780367236151**

2ND EDITION

Discrete Chaos

With Applications in Science and Engineering



Saber N. Elaydi Trinity University, San Antonio, Texas, USA

While maintaining the lucidity of the first edition, this book now includes many recent results on global stability, bifurcation, chaos, and fractals. The first five chapters provide the most comprehensive material on discrete dynamical systems, including trace-determinant stability, bifurcation analysis, and the detailed analysis of the center manifold theory. This edition also covers L-systems and the periodic structure of the bulbs in the Mandelbrot set as well as new applications in biology, chemistry, and physics. The principal improvements to this book are the additions of PHASER software on an accompanying CD-ROM and the Maple™ and Mathematica® code available for download online.

Chapman & Hall
November 2007 : 440pp
Hb: 978-1-584-88592-4 : **£96.99**
eBook: 978-0-429-14919-1
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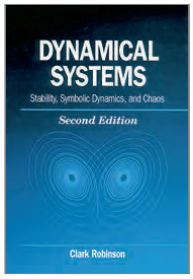
2ND EDITION

Dynamical Systems

Stability, Symbolic Dynamics, and Chaos



Clark Robinson Northwestern University, Evanston, Illinois, USA

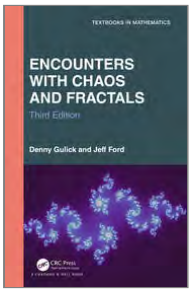
Series: Studies in Advanced Mathematics

The second edition of this popular text continues to treat dynamical systems from a mathematical perspective centering on multidimensional systems of real variables. At a level accessible to beginning graduate students, it addresses the dynamics of both the iteration of functions and solutions of ordinary differential equations. This edition includes material on horsehoes, an additional chapter on Hamiltonian systems, a revised discussion of the saddle node bifurcation, and proof of the ergodicity of a hyperbolic toral automorphism. Numerous exercises help readers understand the theorems presented and master the techniques of the proofs and topics under consideration.

CRC Press
November 1998 : 524pp
Hb: 978-0-849-38495-0 : **£190**
eBook: 978-0-429-16165-0
* For **full contents** and more information, visit: **www.routledge.com/9780849384950**

3RD EDITION

Encounters with Chaos and Fractals



Denny Gulick , Jeff Ford Gustavus Adolphus Collete

Series: Textbooks in Mathematics

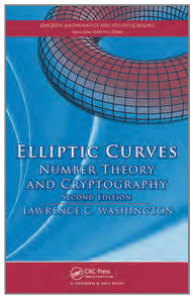
Encounters with Chaos and Fractals, Third Edition provides an accessible introduction to chaotic dynamics and fractal geometry. It incorporates important mathematical concepts and backs up the definitions and results with motivation, examples, and applications. The Third Edition updates this classic book for a modern audience. New applications on contemporary topics, like data science and mathematical modelling, appear throughout. Coding activities are transitioned to open-source programming languages, including Python.

Chapman & Hall
May 2024 : 410pp
Hb: 978-1-032-67786-6 : **£81.99**
eBook: 978-1-032-67875-7
* For **full contents** and more information, visit: **www.routledge.com/9781032677866**

2ND EDITION

Elliptic Curves

Number Theory and Cryptography, Second Edition



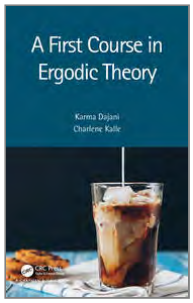
Lawrence C. Washington University of Maryland, College Park, USA

Series: Discrete Mathematics and Its Applications

Like its bestselling predecessor, this second edition develops the theory of elliptic curves to provide a basis for both number theoretic and cryptographic applications. It now includes new chapters on isogenies and hyperelliptic curves, a more complete treatment of the Tate–Lichtenbaum pairing, alternative coordinate systems and related computational issues, and Doud's analytic method for computing torsion on elliptic curves over Q. This edition also discusses how to perform computations with elliptic curves in several popular computer algebra systems. Basic exercises appear at the end of each chapter.

Chapman & Hall
April 2008 : 532pp
Hb: 978-1-420-07146-7 : £190
eBook: 978-0-429-14080-8
* For **full contents** and more information, visit: **www.routledge.com/9781420071467**

A First Course in Ergodic Theory



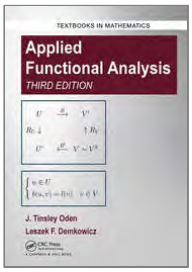
Karma Dajani Utrecht University, The Netherlands**,**
Charlene Kalle Leiden University, The Netherlands

This book provides readers with an intro course in Ergodic Theory. This textbook has been developed from the authors' own notes on the subject, which they have been teaching since the 1990s. Over the years they have added topics, theorems, examples and explanations from various sources. The result is a book that is easy to teach from and easy to learn from — designed to require only minimal prerequisites.

Chapman & Hall
July 2023 : 268pp
Pb: 978-1-032-02184-3 : **£46.99**
Hb: 978-0-367-22620-6 : **£120**
eBook: 978-0-429-27601-9
* For **full contents** and more information, visit: **www.routledge.com/9781032021843**

3RD EDITION

Applied Functional Analysis



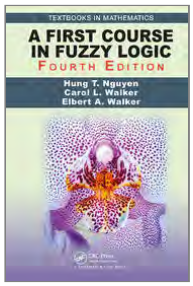
J. Tinsley Oden , Leszek Demkowicz

The textbook for Funcational Analysis provides not only solid mathematical foundations for the subject but, with many examples drawing from mechanics and science, motivates an engineering or science student to study the subject, and provides the necessary connections with applications. The first part covers an intro to modern mathematics, linear algebra, Lebesque measure and integration theory, and topology with metric spaces. The last two chapters cover the actual subject - theory of Banach and Hilbert spaces, finishing with a short introduction to Spectral Theory.

CRC Press
January 2023 : 632pp
Pb: 978-1-032-47637-7 : **£43.99**
Hb: 978-1-498-76114-7 : **£135**
eBook: 978-1-315-11948-9
* For **full contents** and more information, visit: **www.routledge.com/9781032476377**

4TH EDITION

A First Course in Fuzzy Logic



Hung T. Nguyen , Carol Walker , Elbert A. Walker

A First Course in Fuzzy Logic, Fourth Edition is an expanded version of the successful third edition. It provides a comprehensive introduction to the theory and applications of fuzzy logic. This popular text offers a firm mathematical basis for the calculus of fuzzy concepts necessary for designing intelligent systems and a solid background for readers to pursue further studies and real-world applications.

Chapman & Hall
January 2023 : 458pp
Pb: 978-1-032-47594-3 : **£43.99**
Hb: 978-1-138-58508-9 : **£120**
eBook: 978-0-429-50554-6
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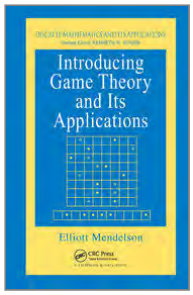
Introducing Game Theory and its Applications



Elliott Mendelson Queens College, Flushing, New York, USA

Series: Advances in Applied Mathematics

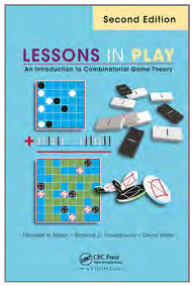
The mathematical study of games is an intriguing endeavor with applications that reach beyond chess and poker to economics, business, and even biology. This book presents an easy-to-read introduction to the basic ideas and techniques of game theory. It begins by discussing combinatorial games--a topic often neglected in other texts--then moves to two-person zero-sum games. The final chapter explores the concepts and tools of non-zero-sum games and games with more than two players. Suitable as a textbook, for self-study, and as a reference, this introduction prepares readers for more advanced study of game theory's applications in economics, business, and the physical, biological, and social sciences.

Chapman & Hall
July 2004 : 272pp
Hb: 978-1-584-88300-5 : **£96.99**
eBook: 978-0-429-17575-6
* For **full contents** and more information, visit: **www.routledge.com/9781584883005**

2ND EDITION

Lessons in Play

An Introduction to Combinatorial Game Theory, Second Edition

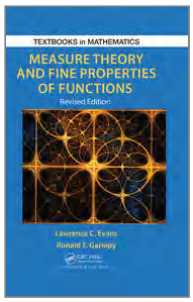


Michael Albert , Richard Nowakowski , David Wolfe

A thorough revision of a popular text in combinatorial game theory, this second edition reorganizes presentation to make it more widely accessible. The beginning focuses less on technical and more on conceptual material and applications. Still written in a textbook style with supporting evidence and proofs, the authors add many more exercises and examples and implement a two-step approach for some aspects of the material involving an initial introduction, examples, and basic results to be followed later by more technical and abstract results.

A K Peters/CRC Press
January 2023 : 346pp
Pb: 978-1-032-47566-0 : **£43.99**
Hb: 978-1-482-24303-1 : **£68.99**
eBook: 978-1-482-24304-8
* For **full contents** and more information, visit: **www.routledge.com/9781032475660**

Measure Theory and Fine Properties of Functions, Revised Edition



Lawrence C. Evans University of California, Berkeley, USA

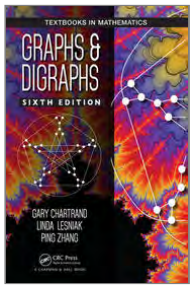
Series: Textbooks in Mathematics

This book emphasizes the roles of Hausdorff measure and the capacity in characterizing the fine properties of sets and functions. The book covers theorems and differentiation in ⊠n , Hausdorff measures, area and coarea formulas for Lipschitz mappings and related change-of-variable formulas, and Sobolev functions and functions of bounded variation. This second edition includes countless improvements in notation, format, and clarity of exposition. Also new are several sections describing the π-λ theorem, weak compactness criteria in L1, and Young measure methods for weak convergence. In addition, the bibliography has been updated.

Chapman & Hall
April 2015 : 314pp
Hb: 978-1-482-24238-6 : **£84**
eBook: 978-0-429-16148-3
* For **full contents** and more information, visit: **www.routledge.com/9781482242386**

6TH EDITION

Graphs & Digraphs



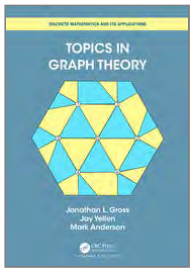
Gary Chartrand Western Michigan University, Kalamazoo, USA**, Linda Lesniak** Western Michigan University, Kalamazoo, Michigan, USA**, Ping Zhang** Western Michigan University, Kalamazoo, Michigan, USA

Series: Discrete Mathematics and Its Applications

This book masterfully employs student-friendly exposition, clear proofs, abundant examples, and numerous exercises to provide an essential understanding of the concepts, theorems, history, and applications of graph theory. Fully updated and thoughtfully reorganized, the sixth edition of this bestselling, classroom-tested text adds 160+ new exercises, several conjectures and open problems, many new theorems and examples, new material on graph decompositions, a proof of the perfect graph theorem, material on Hamiltonian extension, and a new chapter on the probabilistic method in graph theory and random graphs.

Chapman & Hall
December 2015 : 640pp
Hb: 978-1-498-73576-6 : **£105**
* For **full contents** and more information, visit: **www.routledge.com/9781498735766**

Topics in Graph Theory



Jonathan L Gross , Jay Yellen Rollins College, Winter Park, Florida, USA**, Mark Anderson**

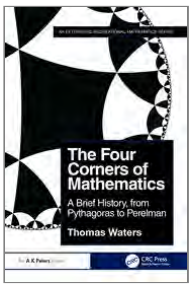
Series: Discrete Mathematics and Its Applications

The interplay between graph theory and a wide variety of models and applications in mathematics, computer science, operations research, and the natural and social sciences continues to grow. This book is geared toward the more mathematically mature student. The first two chapters provide the basic definitions and theorems of graph theory and the remaining chapters introduce a variety of topics and directions for research. These topics draw on numerous areas of theoretical and applied mathematics, including combinatorics, probability, linear algebra, group theory, topology, operations research, and computer science.

Chapman & Hall
July 2023 : 525pp
Hb: 978-0-367-50787-9 : **£81.99**
eBook: 978-1-003-05123-7
* For **full contents** and more information, visit: **www.routledge.com/9780367507879**

The Four Corners of Mathematics

A Brief History, from Pythagoras to Perelman



Thomas Waters

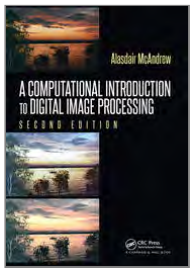
Series: AK Peters/CRC Recreational Mathematics Series

The Four Corners of Mathematics: A Brief History, from Pythagoras to Perelman describes the historical development of the 'big ideas' in mathematics in an accessible and intuitive manner. In delivering this bird's-eye view of the history of mathematics, the author uses engaging diagrams and images to communicate complex concepts while also exploring the details of the main results and methods of high-level mathematics. As such, this book involves some equations and terminology, but the only assumption on the readers' knowledge is A-level or high school mathematics.

A K Peters/CRC Press
December 2024 : 294pp
Pb: 978-1-032-59498-9 : **£19.99**
Hb: 978-1-032-59651-8 : **£120**
eBook: 978-1-003-45559-2
* For **full contents** and more information, visit: **www.routledge.com/9781032594989**

2ND EDITION

A Computational Introduction to Digital Image Processing

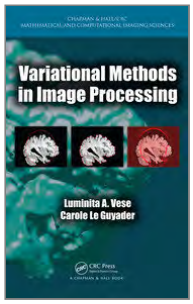


Alasdair McAndrew

This bestseller explores the nature and use of digital images and shows how they can be obtained, stored, and displayed. Along with MATLAB®, this second edition now includes GNU Octave and Python. Programs are written as modular as possible, allowing for greater flexibility, code reuse, and conciseness. This edition also contains new images, redrawn diagrams, and new discussions of edge-preserving blurring filters, ISODATA thresholding, Radon transform, corner detection, retinex algorithm, LZW compression, and other topics.

Chapman & Hall
March 2021 : 560pp
Pb: 978-0-367-78333-4 : **£46.99**
Hb: 978-1-482-24732-9 : **£99.99**
eBook: 978-0-429-16180-3
* For **full contents** and more information, visit: **www.routledge.com/9780367783334**

Variational Methods in Image Processing



Luminita A. Vese University of California, Los Angeles, USA**, Carole Le Guyader** National Institute of Applied Sciences (INSA) Rouen, France

Series: Chapman & Hall/CRC Mathematical and Computational Imaging Sciences Series

Filled with tables, illustrations, algorithms, and exercises, this self-contained textbook presents the principles, techniques, and applications of variational image processing. It focuses on variational models, their corresponding Euler–Lagrange equations, and numerical implementations for image processing. The book balances traditional computational models with more modern techniques that solve the latest challenges introduced by new image acquisition devices. It includes the necessary mathematical background and covers the most important problems in image processing.

Chapman & Hall
December 2015 : 410pp
Hb: 978-1-439-84973-6 : **£84.99**
eBook: 978-0-429-10994-2
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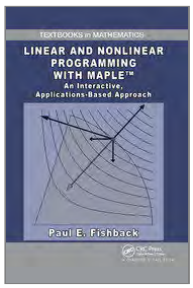
Linear and Nonlinear Programming with Maple

An Interactive, Applications-Based Approach

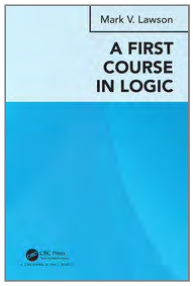


Paul E. Fishback

Integrating a hands-on learning approach, a strong linear algebra focus, Maple™ software, and real-world applications, this text introduces the mathematical concepts and principles underlying linear and nonlinear programming. It draws on the simplex method to develop the major ideas of duality and sensitivity analysis and provides applications and exercises from zoology, chemistry, and game theory to illustrate how linear and nonlinear programming are invaluable problem solving tools. The text solves problems using Maple and includes explicit Maple instructions, important commands, and sample worksheets. Maple worksheets and code are available on the book's website.

Chapman & Hall
October 2019 : 413pp
Pb: 978-0-367-38477-7 : **£61.99**
Hb: 978-1-420-09064-2 : **£175**
eBook: 978-0-429-12601-7
* For **full contents** and more information, visit: **www.routledge.com/9780367384777**

A First Course in Logic



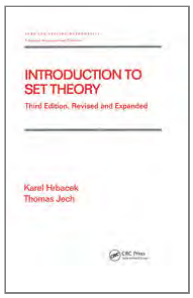
Mark Verus Lawson

A First Course in Logic is an introduction to first-order logic suitable for first and second year mathematicians and computer scientists. There are three components to this course: propositional logic; Boolean algebras; and predicate/first-order, logic. Logic is the basis of proofs in mathematics — how do we know what we say is true? — and also of computer science — how do I know this program will do what I think it will?

CRC Press
November 2018 : 250pp
Pb: 978-0-815-38665-0 : **£61.99**
Hb: 978-0-815-38664-3 : **£150**
eBook: 978-1-351-17538-8
* For **full contents** and more information, visit: **www.routledge.com/9780815386650**

3RD EDITION

Introduction to Set Theory, Revised and Expanded



Karel Hrbacek City College of New York, USA**, Thomas Jech** Pennsylvania State University, State College, USA

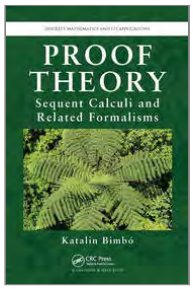
Series: Chapman & Hall/CRC Pure and Applied Mathematics

Thoroughly revised, updated, expanded, and reorganized to serve as a primary text for mathematics courses, Introduction to Set Theory, Third Edition covers the basics: relations, functions, orderings, finite, countable, and uncountable sets, and cardinal and ordinal numbers. It also provides five additional self-contained chapters, consolidates the material on real numbers into a single updated chapter affording flexibility in course design, supplies end-of-section problems, with hints, of varying degrees of difficulty, includes new material on normal forms and Goodstein sequences, and adds important recent ideas including filters, ultrafilters, closed unbounded and stationary sets, and partitions.

CRC Press
June 1999 : 310pp
Hb: 978-0-824-77915-3 : **£100**
eBook: 978-1-315-27409-6
* For **full contents** and more information, visit: **www.routledge.com/9780824779153**

Proof Theory

Sequent Calculi and Related Formalisms



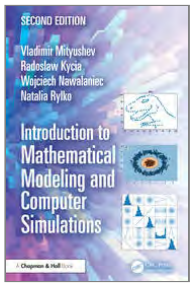
Katalin Bimbo

Although sequent calculi constitute an important category of proof systems, they are not as well known as axiomatic and natural deduction systems. Addressing this deficiency, this book presents a comprehensive treatment of sequent calculi, including a wide range of variations. It focuses on sequent calculi for various non-classical logics, from intuitionistic logic to relevance logic, linear logic, and modal logic. The author presents a variety of proof systems for classical and non-classical logics and devotes chapters to proofs of cut theorems and decidability theorems.

Chapman & Hall
October 2024 : 386pp
Pb: 978-1-032-92077-1 : **£56.99**
Hb: 978-1-466-56466-4 : **£105**
eBook: 978-0-429-09969-4
* For **full contents** and more information, visit: **www.routledge.com/9781032920771**

2ND EDITION

Introduction to Mathematical Modeling and Computer Simulations

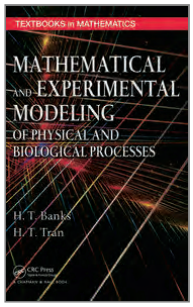


Vladimir Mityushev , Radoslaw Antoni Kycia , Wojciech Nawalaniec , Natalia Rylko

This book continues to serve as an engaging and accessible textbook for undergraduates studying mathematical modeling and computer simulations. The book is heavily focussed on applications, and so may have a particular appeal to applied mathematicians, engineers, and others working in applied quantitative disciplines. The book may also be useful as a reference text for reference text for early-career stage practitioners.

Chapman & Hall
December 2024 : 348pp
Hb: 978-1-032-66151-3 : **£84.99**
eBook: 978-1-032-68428-4
* For **full contents** and more information, visit: **www.routledge.com/9781032661513**

Mathematical and Experimental Modeling of Physical and Biological Processes



H.T. Banks North Carolina State University, Raleigh, USA North Carolina State University, Raleigh, USA**, H.T. Tran** North Carolina State University, Raleigh, USA North Carolina State University, Raleigh, USA

Series: Textbooks in Mathematics

Written by highly experienced instructors, this text provides readers with a fundamental understanding of how mathematics is applied to problems in science and engineering. Taking a case study approach, the authors consider problems that arise in industrial and scientific research laboratory applications. For each problem, the authors discuss why a mathematical model is needed and what is to be accomplished with the model. The book emphasizes the design of experiments that can be used to validate the development of mathematical models. In this context, both hardware and software tools are described in detail, so that the experiments can be duplicated by the interested reader.

Chapman & Hall
January 2009 : 298pp
Hb: 978-1-420-07337-9 : **£96.99**
eBook: 978-0-429-13653-5
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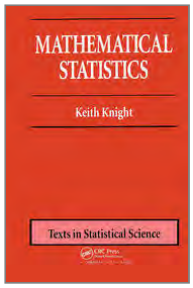
Mathematical Statistics



Keith Knight University of Toronto, Toronto, Ontario, Canada

Series: Chapman & Hall/CRC Texts in Statistical Science

Traditional texts in mathematical statistics can seem heavily weighted with optimality theory of the various flavors developed in the 1940s and50s, and not particularly relevant to statistical practice. Mathematical Statistics stands apart. While mathematically rigorous, its focus is on providing a set of useful tools that allow readers to understand the theoretical underpinnings of statistical methodology. Emphasizing inferential procedures within the framework of parametric models, this treatment reaches beyond "nice" mathematics to provide a balanced, practical text that brings life and relevance to a subject so often perceived as irrelevant and dry.

Chapman & Hall
November 1999 : 498pp
Hb: 978-1-584-88178-0 : **£155**
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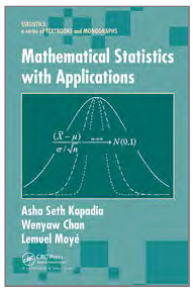
Mathematical Statistics With Applications



Asha Seth Kapadia , Wenyaw Chan , Lemuel A. Moyé

Students with a background that is less focused on rigorous mathematical theory but more applied in their chosen field often have a difficult time with the theoretical gravity of a course in mathematical statistics. Unfortunately for these students, most textbooks supply only a cursory, if any, review of the prerequisite topics for the course. Mathematical Statistics with Applications provides a thorough grounding in the prerequisite material along with an extensive link to the applications of the theory to the student's area of interest. This is a crucial resource for students who are not applied statisticians, but who wish to apply statistics to enrich their field of interest.

CRC Press
January 2023 : 644pp
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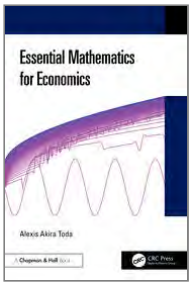
Essential Mathematics for Economics

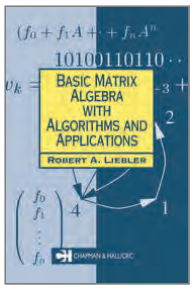


Alexis Akira Toda

Essential Mathematics for Economics covers mathematical topics that are essential for economic analysis in a concise but rigorous fashion. The book covers selected topics such as linear algebra, real analysis, convex analysis, constrained optimization, dynamic programming, and numerical analysis in a single volume. The book is entirely self-contained, and almost all propositions are proved.

Chapman & Hall
October 2024 : 308pp
Pb: 978-1-032-69894-6 : **£49.99**
Hb: 978-1-032-68030-9 : **£130**
eBook: 978-1-032-69895-3
* For **full contents** and more information, visit: **www.routledge.com/9781032698946**

Basic Matrix Algebra with Algorithms and Applications



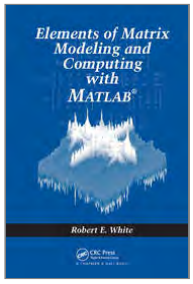
Robert A. Liebler Colorado State University, Fort Collins, Colorado, USA

Series: Chapman Hall/CRC Mathematics Series

Classroom tested with great success, this text builds the foundation in matrix algebra needed by freshman students in mathematics, physics, and computer science and by upper-level business and social science students. The author presents the material with outstanding pedagogical clarity, many figures and diagrams, and interrelated examples. The presentation relies heavily on the use of a graphing calculator, includes section summaries, and provides exercises in each chapter. Organized into bite-sized objectives, this relatively gentle treatment prepares readers well for the advanced studies their fields will require. Supporting material, including Maple worksheets, are available for download from the Internet.

Chapman & Hall
December 2002 : 260pp
Pb: 978-1-584-88333-3 : **£64.99**
Hb: 978-1-138-44244-3 : **£180**
eBook: 978-1-315-27309-9
* For **full contents** and more information, visit: **www.routledge.com/9781584883333**

Elements of Matrix Modeling and Computing with MATLAB



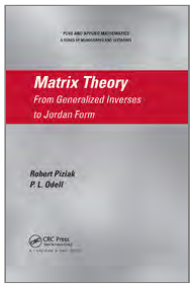
Robert E. White North Carolina State University, Raleigh, USA

This book covers a number of topics in linear algebra that are often not covered in first-year calculus, such as complex numbers and functions, matrices, algebraic systems, curve fitting, elements of linear differential equations, transform methods, and tools of computation. It introduces 2- and 3-D vectors and their products, connecting them to multivariate calculus using geometric and algebraic approaches. The author illuminates concepts through several applications, including steady state models, mixing tanks, heat diffusion, and pin-jointed structures. The text also incorporates exercises and MATLAB to help with more complex calculations.

Chapman & Hall
September 2006 : 402pp
Hb: 978-1-584-88627-3 : **£105**
eBook: 978-0-429-12109-8
* For **full contents** and more information, visit: **www.routledge.com/9781584886273**

Matrix Theory

From Generalized Inverses to Jordan Form



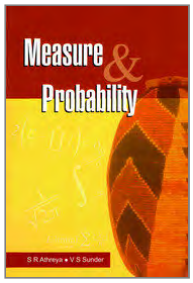
Robert Piziak Baylor University, Texas, USA**, P.L. Odell** Baylor University, Texas, USA

Series: Chapman & Hall/CRC Pure and Applied Mathematics

Designed for a second-semester course in linear algebra, this classroom-tested text creates a bridge from linear algebra concepts to more advanced abstract algebra and matrix theory. It focuses on the development of the Moore-Penrose inverse and uses concrete examples to make arguments clear. The authors provide MATLAB® examples and exercises throughout as well as numerous homework problems and suggestions for further reading. The appendices present basic linear algebra topics and related prerequisites. Delving into elementary linear algebra ideas at a deeper level, this book prepares readers for further study in matrix theory and abstract algebra.

Chapman & Hall
September 2019 : 568pp
Pb: 978-0-367-38943-7 : **£61.99**
Hb: 978-1-584-88625-9 : **£135**
eBook: 978-0-429-12107-4
* For **full contents** and more information, visit: **www.routledge.com/9780367389437**

Measure and Probability



Siva Athreya Indian Academy of Sciences, Bangalore, India**, V. S. Sunder** Institute of Mathematical Sciences, Chennai, India

This book covers the fundamentals of measure theory and probability theory. It begins with the construction of Lebesgue measure via Caratheodory's outer measure approach and goes on to discuss integration and standard convergence theorems and contains an entire chapter devoted to complex measures, Lp spaces, Radon–Nikodym theorem, and the Riesz representation theorem. It presents the elements of probability theory, the law of large numbers, and central limit theorem. The book then discusses discrete time Markov chains, stationary distributions and limit theorems. The appendix covers many basic topics such as metric spaces, topological spaces and the Stone–Weierstrass theorem.

CRC Press
February 2019 : 232pp
Pb: 978-1-138-11418-0 : **£71.99**
Hb: 978-1-439-80126-0 : **£195**
* For **full contents** and more information, visit: **www.routledge.com/9781138114180**

Origami 5

Fifth International Meeting of Origami Science, Mathematics, and Education

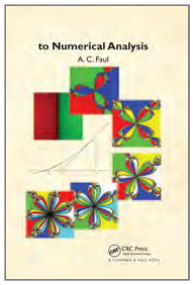
Edited by **Patsy Wang-Iverson , Robert J. Lang** http://www.langorigami.com, Alamo, California, USA**, Mark YIM** GRASP Lab, University of Pennsylvania

Series: AK Peters/CRC Recreational Mathematics Series

While many individuals have discovered discrete connections among origami, mathematics, science, technology, and education during the twentieth century, the field really took off when previously isolated individuals began to make stronger connections with each other, exploring the links between origami and "the outside world." This volume brings together an unprecedented number of researchers who discuss topics ranging from mathematics to technology to educational uses of origami to fine art to computer programs for the design of origami.

A K Peters/CRC Press
June 2011 : 668pp
Pb: 978-1-568-81714-9 : **£76.99**
Hb: 978-1-138-44228-3 : **£180**
eBook: 978-0-429-10657-6
* For **full contents** and more information, visit: **www.routledge.com/9781568817149**

A Concise Introduction to Numerical Analysis



A. C. Faul

This textbook provides an accessible and concise introduction to numerical analysis for upper undergraduate and beginning graduate students from various backgrounds. It was developed from the lecture notes of four successful courses on numerical analysis taught within the MPhil of Scientific Computing at the University of Cambridge. The book is easily accessible, even to those with limited knowledge of mathematics.

Chapman & Hall
September 2020 : 308pp
Pb: 978-0-367-65856-4 : **£45.99**
Hb: 978-1-498-71218-7 : **£84.99**
eBook: 978-1-315-37021-7
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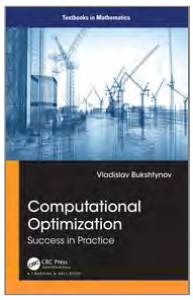
Computational Optimization

Success in Practice



Vladislav Bukshtynov

Series: Textbooks in Mathematics

This textbook offers a guided tutorial reviewing the theoretical fundamentals while going through the practical examples used for constructing the computational frame, applied to various real-life models. This book will lead the readers through the entire process. They will start from the simple calculus examples of fitting data and basics of optimal control methods and end up by constructing a multi-component framework for running PDE-constrained optimization. This framework will be assembled piece by piece; the readers may apply this process at the level of complexity matching their current projects or research needs.

Chapman & Hall
February 2023 : 414pp
Hb: 978-1-032-22947-8 : **£86.99**
eBook: 978-1-003-27516-9
* For **full contents** and more information, visit: **www.routledge.com/9781032229478**

Exploring Operations Research with R

Jim Duggan

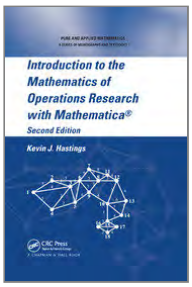
Series: Chapman & Hall/CRC Series in Operations Research

This book shows how the R Programming language can be a valuable tool – and way of thinking – that can be successfully applied to the field of operations research (OR). The core aim of the book is to provide a self-contained introduction to R (both Base R and the tidyverse) and show how this knowledge can be applied to a range of OR challenges in the domains of public health, infectious diseases, and energy generation, and so provide a platform to develop actionable insights to support decision making.

Chapman & Hall
May 2024 : 395pp
Pb: 978-1-032-27716-5 : **£63.99**
Hb: 978-1-032-27754-7 : **£165**
eBook: 978-1-003-29391-0
* For **full contents** and more information, visit: **www.routledge.com/9781032277165**

2ND EDITION

Introduction to the Mathematics of Operations Research with Mathematica®



Kevin J. Hastings

Revised and updated to reflect recent advances, Introduction to the Mathematics of Operations Research with Mathematica®, Second Edition focuses on the topics of graph theory, linear programming, stochastic processes, and dynamic programming. Integrating technology into the development, this second edition features a CD-ROM with Mathematica, the program used throughout the text. It also offers new material in areas such as simulation, Brownian motion, and famous graph theory problems such as the traveling salesman problem. Further enhancing the interactive approach of the book, the author emphasizes problem solving with longer investigations, self-check questions, problem sets, and an appendix of solutions for selected problems.

Chapman & Hall
September 2019 : 588pp
Pb: 978-0-367-39078-5 : **£61.99**
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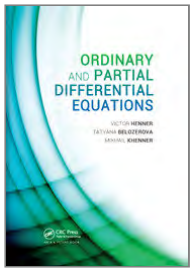
Ordinary and Partial Differential Equations



Victor Henner , Tatyana Belozerova , Mikhail Khenner

This text provides a complete and accessible course on ODEs and PDEs using many examples and exercises as well as intuitive, easy-to-use software. The book includes all the topics that form the core of a modern undergraduate or beginning graduate course in differential equations. It also discusses other optional but important topics such as integral equations, Fourier series, and special functions. Requiring no user programming, the accompanying computer software allows readers to fully investigate problems.

A K Peters/CRC Press
September 2019 : 644pp
Pb: 978-0-367-38037-3 : **£61.99**
Hb: 978-1-466-51500-0 : **£105**
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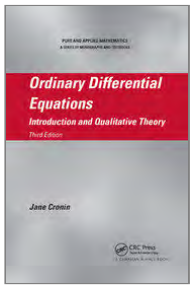
3RD EDITION

Ordinary Differential Equations

Introduction and Qualitative Theory, Third Edition



Jane Cronin Highland Park, New Jersey, USA

Series: Chapman & Hall/CRC Pure and Applied Mathematics

Exploring the qualitative aspects of periodic solutions of ODEs, this edition extends the treatment of two-dimensional systems as well as periodic solutions in small parameter problems. It illustrates existence theorems with various examples, provides a detailed account of the Bendixson theory of solutions of two-dimensional autonomous systems, and presents a unified treatment of the perturbation problem for periodic solutions. The text also shows how topological degree is used to obtain significant extensions of perturbation theory and describes how the averaging method is used to study periodic solutions. It contains numerous exercises as well as a solutions manual for qualifying instructors.

CRC Press
September 2019 : 408pp
Pb: 978-0-367-38796-9 : **£61.99**
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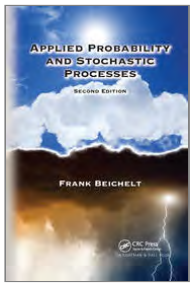
2ND EDITION

Applied Probability and Stochastic Processes



Frank Beichelt

This text presents a self-contained introduction to elementary probability theory and stochastic processes with a special emphasis on their applications in science, engineering, finance, computer science, and operations research. This edition provides a completely rewritten and expanded part on probability theory. Along with additional examples, exercises, and figures, it includes new sections on time series analysis, random walks, branching processes, and spectral analysis of stationary stochastic processes. It also offers numerical discussions of examples, which replace theoretically challenging sections from the first edition.

Chapman & Hall
September 2020 : 576pp
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eBook: 978-1-315-37233-4
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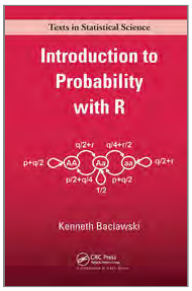
Introduction to Probability with R



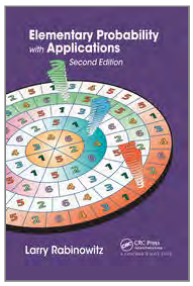
Kenneth Baclawski

This text presents R programs and animations to provide an intuitive yet rigorous understanding of how to model natural phenomena from a probabilistic point of view. It centers on viewing probability as a way to look at the world and shows how to combine and link stochastic processes to form more complex processes that are better models of natural phenomena. The text also covers the Poisson process, transforms, Bayesian networks, entropy and information, and Markov chains. Each chapter includes a short biographical note about a contributor to probability theory, exercises, and selected answers. Ancillary material is accessible online.

CRC Press
January 2023 : 380pp
Pb: 978-1-032-47780-0 : **£43.99**
Hb: 978-1-420-06521-3 : **£110**
eBook: 978-0-429-13970-3
* For **full contents** and more information, visit: **www.routledge.com/9781032477800**

2ND EDITION

Elementary Probability with Applications



Larry Rabinowitz

This text shows students how probability has practical uses in many different fields, such as business, politics, and sports. It requires minimal mathematics training and no previous knowledge of probability. In the book, students learn about probability concepts from real-world examples rather than theory. The text explains how probability models with underlying assumptions are used to model actual situations. By studying the book, students will appreciate the subject of probability and its applications and develop their problem-solving and reasoning skills.

Chapman & Hall
September 2020 : 218pp
Pb: 978-0-367-65828-1 : **£47.99**
Hb: 978-1-498-77132-0 : **£84.99**
eBook: 978-1-315-36714-9
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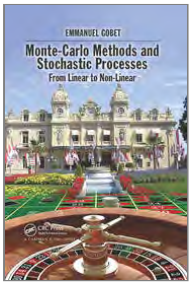
Monte-Carlo Methods and Stochastic Processes

From Linear to Non-Linear



Emmanuel Gobet

This text focuses on the simulation of stochastic processes in continuous time and their link with PDEs. It covers linear and nonlinear problems in biology, finance, geophysics, mechanics, chemistry, and other application areas. The text also thoroughly develops the problem of numerical integration and computation of expectation by the Monte-Carlo method. It presents basic tools for stochastic simulation and analysis of algorithm convergence, describes Monte-Carlo methods for the simulation of stochastic differential equations, and discusses the simulation of non-linear dynamics.

Chapman & Hall
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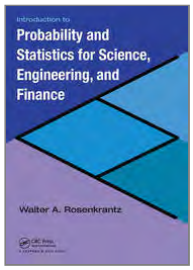
Introduction to Probability and Statistics for Science, Engineering, and Finance



Walter A. Rosenkrantz

Integrating interesting and widely used concepts of financial engineering into traditional statistics courses, this introduction illustrates the role and scope of statistics and probability in various fields. Linking probability theory with statistical inference, it presents many application examples from engineering, computer performance analysis, public health, and finance. The text provides technical details for the derivation of various theorems, including the famous Black–Scholes option pricing formula, contains over 650 exercises, and offers a solutions manual for qualifying instructors. It also includes a CD-ROM with all of the data sets used in the book.

CRC Press
January 2023 : 680pp
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eBook: 978-0-429-14204-8
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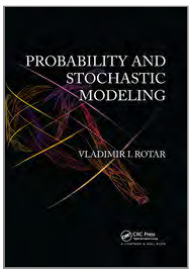
Probability and Stochastic Modeling



Vladimir I. Rotar

Probability and Stochastic Modeling not only covers all the topics found in a traditional introductory probability course, but also emphasizes stochastic modeling, including Markov chains, birth-death processes, and reliability models. Unlike most undergraduate-level probability texts, the book also focuses on increasingly important areas, such as martingales, classification of dependency structures, and risk evaluation.

Chapman & Hall
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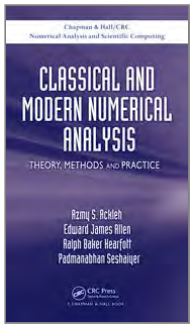
Classical and Modern Numerical Analysis

Theory, Methods and Practice



Azmy S. Ackleh University of Louisiana, LaFayette, Louisiana, USA**, Edward James Allen** Texas Tech University, Lubbock, Texas, USA**, R. Baker Kearfott** University of Louisiana, LaFayette, Louisiana, USA**, Padmanabhan Seshaiyer** George Mason University, Fairfax, Virginia, USA

Series: Chapman & Hall/CRC Numerical Analysis and Scientific Computing Series

Helping readers prepare for doctoral examinations in numerical analysis, this graduate-level text provides a sound introduction to the theory and application of computational methods for applied mathematics problems. It also assists readers in understanding the mathematical literature in this area. The authors present the most important advanced aspects of numerical linear algebra, finite element theory, approximation theory, optimization, and integral equations. They also cover interval computation methods in numerical analysis and include fully worked out solutions for selected problems.

Chapman & Hall
July 2009 : 628pp
Hb: 978-1-420-09157-1 : **£145**
eBook: 978-0-429-14206-2
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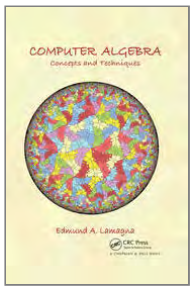
Computer Algebra

Concepts and Techniques



Edmund A. Lamagna

The goal of Computer Algebra: Concepts and Techniques is to demystify computer algebra systems for a wide audience, including students, faculty, and professionals in scientific fields such as computer science, mathematics, engineering, and physics. Unlike previous books, the only prerequisites are knowledge of first year calculus and a little programming experience — a background that can be assumed of the intended audience. The book is written in a lean and lively style, with numerous examples to illustrate the issues and techniques discussed. It presents the principal algorithms and data structures, while also discussing the inherent and practical limitations of these systems.

CRC Press
March 2020 : 372pp
Pb: 978-0-367-51045-9 : **£45.99**
Hb: 978-1-138-09314-0 : **£120**
eBook: 978-1-315-10701-1
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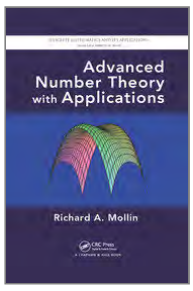
Advanced Number Theory with Applications



Richard A. Mollin University of Calgary, Alberta, Canada

Series: Discrete Mathematics and Its Applications

By covering a wide range of algebraic, analytic, combinatorial, cryptographic, and geometric aspects of number theory, this text provides the most up-to-date and comprehensive material for a second course in this field. With numerous examples and exercises, it begins with coverage of algebraic number theory, binary quadratic forms, Diophantine approximation, arithmetic functions, p-adic analysis, Dirichlet characters, density, and primes. The author then applies these tools to Diophantine equations, before developing elliptic curves and modular forms. He also presents Fermat's Last Theorem, the ABC conjecture, and sieve methods. A solutions manual is available for qualifying instructors.

Chapman & Hall
June 2017 : 480pp
Pb: 978-1-138-11325-1 : **£71.99**
Hb: 978-1-420-08328-6 : **£210**
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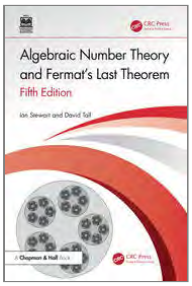
5TH EDITION

Algebraic Number Theory and Fermat's Last Theorem



Ian Stewart , David Tall University of Warwick, UK

Updated to reflect current research and extended to cover more advanced topics as well as the basics, this book introduces fundamental ideas of algebraic numbers and explores one of the most intriguing stories in the history of mathematics—the quest for a proof of Fermat's Last Theorem. The authors use this celebrated theorem to motivate a general study of the theory of algebraic numbers, initially from a relatively concrete point of view. Students will see how Wiles's proof of Fermat's Last Theorem opened many new areas for future work.

Chapman & Hall
December 2024 : 504pp
Pb: 978-1-032-61093-1 : **£49.99**
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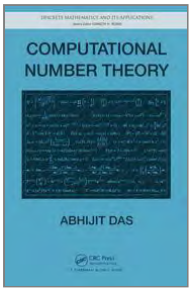
Computational Number Theory



Abhijit Das

Series: Discrete Mathematics and Its Applications

Developed from the author's popular graduate-level course, this self-contained text presents a complete treatment of number-theoretic algorithms. Avoiding advanced algebra and requiring no prior experience with number theory or sophisticated algebraic tools, the book covers many computational aspects of number theory and highlights important and interesting engineering applications. With an emphasis on implementation issues, it uses the freely available number-theory calculator GP/PARI to demonstrate complex arithmetic computations. The text includes numerous examples and exercises throughout and omits lengthy proofs, making the material accessible to students and practitioners.

Chapman & Hall
March 2013 : 614pp
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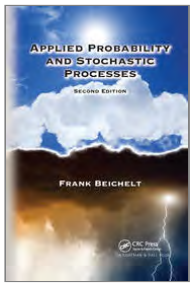
2ND EDITION

Applied Probability and Stochastic Processes



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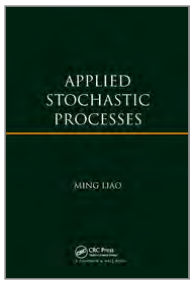
Applied Stochastic Processes



Ming Liao

This text presents a concise, graduate-level treatment of the subject, emphasizing applications and practical computation. It also establishes the complete mathematical theory in an accessible way. After reviewing basic probability, the text covers Poisson processes, renewal processes, discrete- and continuous-time Markov chains, and Brownian motion. It also offers an introduction to stochastic differential equations. While the main applications described are queues, the book also considers other examples, such as the mathematical model of a single stock market.

Chapman & Hall
September 2019 : 208pp
Pb: 978-0-367-37977-3 : **£61.99**
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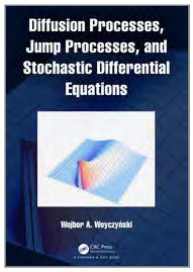
Diffusion Processes, Jump Processes, and Stochastic Differential Equations



Wojbor A. Woyczyński

This book provides a compact exposition of the results explaining interrelations between diffusion stochastic processes, stochastic differential equations and the fractional infinitesimal operators. The draft of this book has been extensively classroom tested by the author at Case Western Reserve University in a course that enrolled seniors and graduate students majoring in mathematics, statistics, engineering, physics, chemistry, economics and mathematical finance. The last topic proved to be particularly popular among students looking for careers on Wall Street and in research organizations devoted to financial problems.

Chapman & Hall
May 2024 : 138pp
Pb: 978-1-032-10727-1 : **£47.99**
Hb: 978-1-032-10067-8 : **£84.99**
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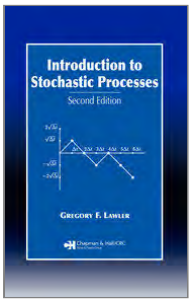
2ND EDITION

Introduction to Stochastic Processes



Gregory F. Lawler University of Chicago, Illinois, USA

Series: Chapman & Hall/CRC Probability Series

Focusing on mathematical ideas rather than proofs, this book provides access to important fundamentals of stochastic processes. This second edition features additional material on stochastic integration, with expanded discussion of Girsanov transformation, an introduction to the Feynman-Kac formula, and an exposition on the Black-Scholes formula with applications from the field of mathematical finance. This new edition also includes new and expanded topics such as Doob's maximal inequality in the chapter on martingales and self similarity in the chapter on Brownian motion. It remains an ideal reference for professional mathematicians and statisticians as well as students.

Chapman & Hall
May 2006 : 248pp
Hb: 978-1-584-88651-8 : **£100**
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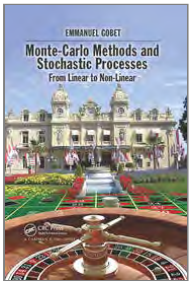
Monte-Carlo Methods and Stochastic Processes

From Linear to Non-Linear



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Chapman & Hall
September 2020 : 336pp
Pb: 978-0-367-65846-5 : **£45.99**
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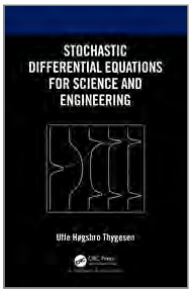
Stochastic Differential Equations for Science and Engineering

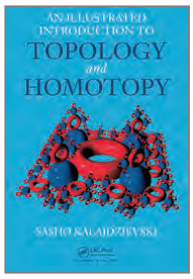


Uffe Høgsbro Thygesen

The book describes the mathematical construction of stochastic differential equations with a level of detail suitable to the audience, while also discussing applications to estimation, stability analysis, and control. The book includes numerous examples and challenging exercises. Computational aspects are central to the approach taken in the book, so the text is accompanied by a repository on GitHub containing a toolbox in R which implements algorithms described in the book, code that regenerates all figures, and solutions to exercises.

Chapman & Hall
June 2023 : 380pp
Hb: 978-1-032-23217-1 : **£100**
eBook: 978-1-003-27756-9
* For **full contents** and more information, visit: **www.routledge.com/9781032232171**

An Illustrated Introduction to Topology and Homotopy



Sasho Kalajdzievski University of Manitoba, Winnipeg, Canada

This self-contained book explores the beauty of topology and homotopy theory in a direct and engaging manner while illustrating the power of the theory through many, often surprising, applications. It takes a visual and rigorous approach that incorporates both extensive illustrations and full proofs. Requiring only some familiarity with group theory, the text incorporates nearly 600 figures as well as various examples that show how the theory can be applied. It also includes roughly 750 exercises, many of which are relatively new.

Chapman & Hall
March 2015 : 488pp
Hb: 978-1-439-84815-9 : **£115**
eBook: 978-0-429-16155-1
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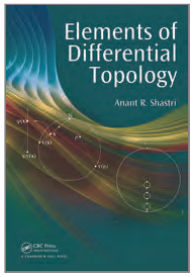
Elements of Differential Topology

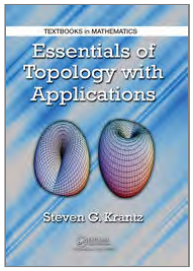


Anant R. Shastri

Exploring the vast and elegant theories in topology, this text ensures a smooth transition from calculus-level mathematical maturity to the level required to understand abstract manifolds and topology. It begins with differential and integral calculus, leads you through the intricacies of manifold theory, and concludes with discussions on algebraic topology, algebraic/differential geometry, and Lie groups. The book contains all standard results as well as several equivalent definitions of the Euler characteristic. Exercises are included in each chapter, with solutions and hints at the back of the book.

CRC Press
March 2011 : 320pp
Hb: 978-1-439-83160-1 : **£175**
eBook: 978-0-429-18933-3
* For **full contents** and more information, visit: **www.routledge.com/9781439831601**

Essentials of Topology with Applications



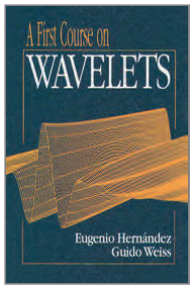
Steven G. Krantz Washington University, St. Louis, Missouri, USA

Series: Textbooks in Mathematics

Supported by many examples in mathematics, physics, economics, engineering, and other disciplines, this text provides a clear, insightful, and thorough introduction to the basics of modern topology. It presents the traditional concepts of topological space, open and closed sets, separation axioms, and more, along with applications of the ideas in Morse, manifold, homotopy, and homology theories. The text includes a thorough treatment of algebraic topology and contains material on graph theory and dynamical systems, both of which are insightful applications of topological ideas.

Chapman & Hall
May 2017 : 424pp
Pb: 978-1-138-11445-6 : **£76.99**
Hb: 978-1-420-08974-5 : **£195**
eBook: 978-0-429-13847-8
* For **full contents** and more information, visit: **www.routledge.com/9781138114456**

A First Course on Wavelets



Eugenio Hernandez Universidad Autonoma de Madrid, Madrid, Spain**, Guido Weiss** Washington University, St. Louis, Missouri, USA

Series: Studies in Advanced Mathematics

Assuming minimal prerequisites, A First Course on Wavelets is an outstanding introduction to the basic properties of wavelets, from background mathematics to powerful applications. The authors adopt the approach that all orthonormal wavelets are completely characterized by two simple equations, and that most properties and constructions of wavelets can be developed using these two equations. They detail these elementary methods for constructing wavelets and present several new classes of wavelets. The text includes many graphic displays of constructed wavelets and explores applications to harmonic analysis and other branches of analysis.

CRC Press
September 1996 : 512pp
Hb: 978-0-849-38274-1 : **£190**
* For **full contents** and more information, visit: **www.routledge.com/9780849382741**

2ND EDITION

A Primer on Wavelets and Their Scientific Applications

James S. Walker University of Wisconsin, Eau Claire, USA

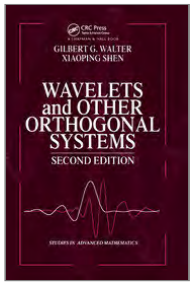
Series: Studies in Advanced Mathematics

An easily accessible introduction to wavelet analysis, this book explains the subject using algebra and some basic calculus and stresses applications, such as speech compression, removing noise from audio and images, image compression, and image enhancement. The author offers downloadable software that permits recording, playing, and modifying sound files using wavelet techniques, plus a facility for displaying, printing, and modifying standard IEEE gray field images. New sections include Biorthogonal Wavelets, The JPEG200 Image Compression Standard, Spectrograms, Analyzing Speech and Music with Spectrograms, Wavelet-Based Denoising of Images, and Thresholding Spectrograms for Denoising.

Chapman & Hall
January 2008 : 318pp
Pb: 978-1-584-88745-4 : **£54.99**
Hb: 978-1-138-44243-6 : **£185**
eBook: 978-0-429-14258-1
* For **full contents** and more information, visit: **www.routledge.com/9781584887454**

2ND EDITION

Wavelets and Other Orthogonal Systems



Gilbert G. Walter , Xiaoping Shen

Series: Studies in Advanced Mathematics

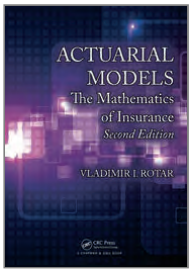
A bestselling text and reference in its first edition, Wavelets and Other Orthogonal Systems, Second Edition was fully updated and expanded to reflect the phenomenal growth and development of this field, especially in the area of multiwavelets. The authors incorporated more examples and numerous illustrations to help clarify concepts. They also added a considerable amount of new material, including sections addressing impulse trains, an alternate approach to periodic wavelets, and positive wavelets. Other discussions new to this edition address irregular sampling in wavelet subspaces, hybrid wavelet sampling, interpolating multiwavelets, and several additional statistics topics.

CRC Press
September 2019 : 392pp
Pb: 978-0-367-39781-4 : **£61.99**
Hb: 978-1-584-88227-5 : **£120**
eBook: 978-1-315-27371-6
* For **full contents** and more information, visit: **www.routledge.com/9780367397814**

2ND EDITION

Actuarial Models

The Mathematics of Insurance, Second Edition



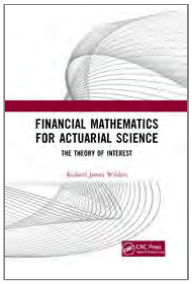
Vladimir I. Rotar San Diego State University, California, USA

Preparing students to take their actuarial exams, this text covers the basic models of insurance processes and presents the mathematical frameworks and methods used in actuarial modeling. It contains the standard material taught in actuarial modeling courses as well as several advanced topics. This second edition revises all chapters, especially material on the surplus process, and takes into account recent developments in teaching actuarial modeling. It includes a new chapter on pension models and new problems from Casualty Actuarial Society exams.

Chapman & Hall
August 2014 : 656pp
Hb: 978-1-482-22706-2 : **£100**
eBook: 978-0-429-17027-0
* For **full contents** and more information, visit: **www.routledge.com/9781482227062**

Financial Mathematics For Actuarial Science

The Theory of Interest

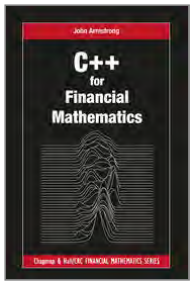


Richard James Wilders

Financial Mathematics for Actuarial Science: The Theory of Interest is concerned with the measurement of interest and the various ways interest affects what is often called the time value of money (TVM). Interest is most simply defined as the compensation that a borrower pays to a lender for the use of capital. The goal of this book is to provide the mathematical understandings of interest and the time value of money needed to succeed on the actuarial examination covering interest theory.

CRC Press
September 2021 : 396pp
Pb: 978-1-032-17507-2 : **£39.99**
Hb: 978-0-367-25308-0 : **£105**
eBook: 978-0-429-28710-7
* For **full contents** and more information, visit: **www.routledge.com/9781032175072**

C++ for Financial Mathematics



John Armstrong

Series: Chapman and Hall/CRC Financial Mathematics Series

If you know a little bit about financial mathematics but don't yet know a lot about programming, then C++ for Financial Mathematics is for you.C++ is an essential skill for many jobs in quantitative finance, but learning it can be a daunting prospect. This book gathers together everything you need to know to price derivatives in C++ without unnecessary complexities or technicalities. It leads the reader step-by-step from programming novice to writing a sophisticated and flexible financial mathematics library. At every step, each new idea is motivated and illustrated with concrete financial examples.

Chapman & Hall
June 2021 : 410pp
Pb: 978-1-032-09721-3 : **£45.99**
Hb: 978-1-498-75005-9 : **£84.99**
eBook: 978-1-315-36838-2
* For **full contents** and more information, visit: **www.routledge.com/9781032097213**

2ND EDITION

Computational Methods in Finance

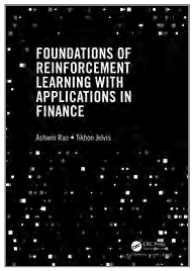
Ali Hirsa Columbia University, New York, USA

Series: Chapman and Hall/CRC Financial Mathematics Series

Computational Methods in Finance is a book developed from the author's courses at Columbia University and the Courant Institute of New York University. This self-contained text is designed for graduate students in financial engineering and mathematical finance, as well as practitioners in the financial industry. It will help readers accurately price a vast array of derivatives.This new edition has been thoroughly revised throughout to bring it up to date with recent developments. It features numerous new exercises and examples, as well as two entirely new chapters on machine learning.

Chapman & Hall
August 2024 : 644pp
Hb: 978-1-498-77860-2 : **£68.99**
eBook: 978-0-429-09474-3
* For **full contents** and more information, visit: **www.routledge.com/9781498778602**

Foundations of Reinforcement Learning with Applications in Finance



Ashwin Rao Stanford University, USA**, Tikhon Jelvis**

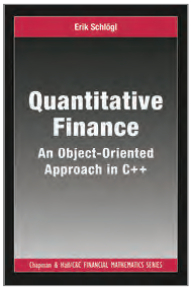
Series: Chapman & Hall/CRC Mathematics and Artificial Intelligence Series

This book aims to demystify Reinforcement Learning, and to make it a practically useful tool for those studying and working in applied areas — especially finance. RL is emerging as a viable and powerful technique for solving a variety of complex problems across industries that involve Sequential Optimal Decisioning under Uncertainty. Its penetration in high-profile problems like self-driving cars, robotics, and strategy games points to a future where Reinforcement Learning algorithms will have decisioning abilities far superior to humans. This book introduces the foundations of RL in a way that balances depth of understanding with clear, minimally technical delivery.

Chapman & Hall
December 2022 : 522pp
Hb: 978-1-032-12412-4 : **£76.99**
eBook: 978-1-003-22919-3
* For **full contents** and more information, visit: **www.routledge.com/9781032124124**

Quantitative Finance

An Object-Oriented Approach in C++



Erik Schlogl University of Technology, Sydney, Australia

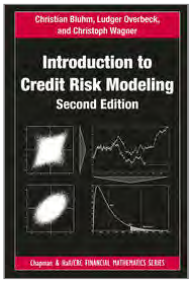
Series: Chapman and Hall/CRC Financial Mathematics Series

This text provides readers with a foundation in the key methods and models of quantitative finance. Through an approach based on C++ classes and templates, the text highlights the basic principles common to various methods and models while the algorithmic implementation guides readers to a more thorough, hands-on understanding. It also presents recipes and extensible code building blocks for some of the most widespread methods in risk management and option pricing. C++ code and other materials are available on the author's website.

Chapman & Hall
November 2013 : 354pp
Hb: 978-1-584-88479-8 : **£86.99**
eBook: 978-1-315-36543-5
* For **full contents** and more information, visit: **www.routledge.com/9781584884798**

2ND EDITION

Introduction to Credit Risk Modeling

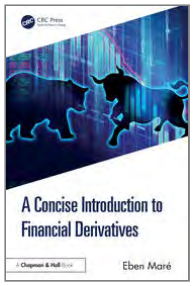


Christian Bluhm , Ludger Overbeck , Christoph Wagner

While continuing to focus on common mathematical approaches to model credit portfolios, this second edition presents updates on model developments that have occurred since the publication of the best-selling first edition. It contains a new section on multi-period models and discusses recent developments in structured credit. Along with many worked out examples and numerical results, this edition also includes an expanded section on techniques for the generation of loss distributions as well as discussions of new topics, such as spectral risk measures, an axiomatic approach to capital allocation, and nonhomogeneous Markov chains.

Chapman & Hall
October 2024 : 384pp
Pb: 978-1-032-92079-5 : **£45.99**
Hb: 978-1-584-88992-2 : **£175**
eBook: 978-0-429-14340-3
* For **full contents** and more information, visit: **www.routledge.com/9781032920795**

A Concise Introduction to Financial Derivatives



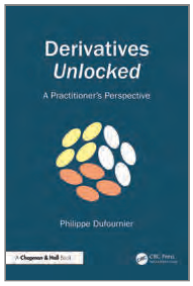
Eben Maré

A Concise Introduction to Financial Derivatives seeks to present financial derivatives in a manner that requires minimal mathematical background. Readers will obtain, in a quick and engaging way, a working knowledge of the field and a collection of practical working insights. The book would be ideal for aspiring young practitioners, advanced undergraduates and masters-level students who require a concise and practice-led introduction to financial derivatives.

Chapman & Hall
November 2024 : 218pp
Hb: 978-1-032-63085-4 : **£74.99**
eBook: 978-1-032-63709-9
* For **full contents** and more information, visit: **www.routledge.com/9781032630854**

Derivatives Unlocked

A Practitioner's Perspective

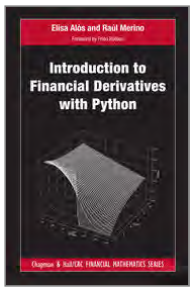


Philippe Dufournier

This book offers the reader a practical explanation of the key concepts underpinning financial derivatives. Resolutely selective and user-friendly, this book constitutes an introduction to the basic pricing, design and use cases of derivatives products in modern global finance. The book is articulated around two parallel streams of content. On the one hand, the Derivatives Toolbox comes as a set of calculation and pricing rules behind the building blocks of most derivatives products. On the other hand, the Case Studies, largely inspired by real European corporate finance and risk management situations, allow the reader to make explicit use of the design and pricing principles learned.

Chapman & Hall
December 2024 : 344pp
Pb: 978-1-032-78006-1 : **£59.99**
Hb: 978-1-032-78009-2 : **£150**
eBook: 978-1-003-48584-1
* For **full contents** and more information, visit: **www.routledge.com/9781032780061**

Introduction to Financial Derivatives with Python



Elisa Alòs Universitat Pompeu Frabra, Spain**, Raúl Merino**

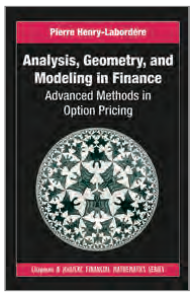
Series: Chapman and Hall/CRC Financial Mathematics Series

Introduction to Financial Derivatives with Python is an ideal textbook for an undergraduate course on derivatives, whether on a finance, economics, or financial mathematics programme. As well as covering all of the essential topics one would expect to be covered, the book also includes the basis of the numerical techniques most used in the financial industry, and their implementation in Python.

Chapman & Hall
December 2022 : 252pp
Hb: 978-1-032-21103-9 : **£76.99**
eBook: 978-1-003-26673-0
* For **full contents** and more information, visit: **www.routledge.com/9781032211039**

Analysis, Geometry, and Modeling in Finance

Advanced Methods in Option Pricing



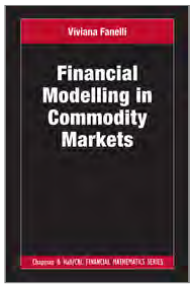
Pierre Henry-Labordère Societe Generale, Paris, France

Series: Chapman and Hall/CRC Financial Mathematics Series

This is the first book that applies advanced analytical and geometrical methods used in recent mathematics and physics to the financial field. The author obtains new results updating those where only approximate and partial solutions were previously available. Focusing on the problem of option pricing, he presents powerful methods and tools, such as differential geometry, spectral decomposition, and supersymmetry, that can be applied to concrete problems in mathematical finance. Throughout the text, the author supplies both theoretical and numerical results, using Mathematica® and C++ for the numerical implementations. Background material is provided to make the book self-contained.

Chapman & Hall
September 2008 : 402pp
Hb: 978-1-420-08699-7 : **£180**
eBook: 978-0-429-14791-3
* For **full contents** and more information, visit: **www.routledge.com/9781420086997**

Financial Modelling in Commodity Markets



Viviana Fanelli

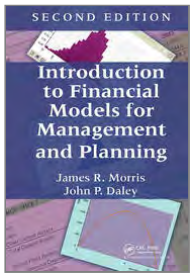
Series: Chapman and Hall/CRC Financial Mathematics Series

Financial Modelling in Commodity Markets provides a basic and self-contained introduction to the ideas underpinning financial modelling of products in commodity markets. The book offers a concise and operational vision of the main models used to represent, assess and simulate real assets and financial positions related to the commodity markets. It discusses statistical and mathematical tools important for estimating, implementing and calibrating quantitative models used for pricing and trading commodity-linked products and for managing basic and complex portfolio risks.

Chapman & Hall
December 2019 : 144pp
Pb: 978-0-367-44286-6 : **£45.99**
Hb: 978-1-138-73910-9 : **£135**
eBook: 978-1-315-18437-1
* For **full contents** and more information, visit: **www.routledge.com/9780367442866**

2ND EDITION

Introduction to Financial Models for Management and Planning

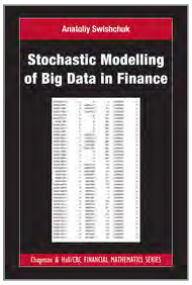


James R. Morris , John P. Daley

A properly structured financial model can provide decision makers with a powerful planning tool that helps them identify the consequences of their decisions before they are put into practice. Introduction to Financial Models for Management and Planning enables professionals and students to learn how to develop and use computer-based models for financial planning. Providing critical tools for the financial toolbox, this volume shows how to use these tools to build successful models.

CRC Press
January 2023 : 668pp
Pb: 978-1-032-47683-4 : **£43.99**
Hb: 978-1-498-76503-9 : **£110**
eBook: 978-1-315-11996-0
* For **full contents** and more information, visit: **www.routledge.com/9781032476834**

Stochastic Modelling of Big Data in Finance



Anatoliy Swishchuk University of Calgary, Alberta, Canada

Series: Chapman and Hall/CRC Financial Mathematics Series

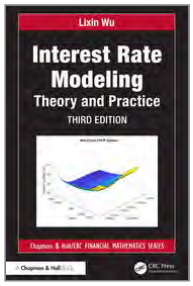
This book provides a rigorous overview and exploration of stochastic modelling of big data in finance (BDF). The book describes various stochastic models, including multivariate models, to deal with big data in finance. This includes data in high-frequency and algorithmic trading, specifically in limit order books (LOB), and shows how those models can be applied to different datasets to describe the dynamics of LOB, and to figure out which model is the best with respect to a specific data set. The results of the book may be used to also solve acquisition, liquidation and market making problems, and other optimization problems in finance.

Chapman & Hall
November 2022 : 304pp
Hb: 978-1-032-20926-5 : **£76.99**
eBook: 978-1-003-26598-6
* For **full contents** and more information, visit: **www.routledge.com/9781032209265**

3RD EDITION

Interest Rate Modeling

Theory and Practice



Lixin Wu

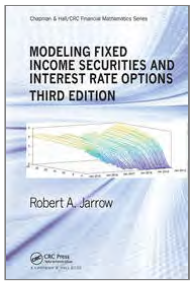
Series: Chapman and Hall/CRC Financial Mathematics Series

Containing many results that are new, or which exist only in recent research articles, this thoroughly revised third edition of Interest Rate Modeling: Theory and Practice, Third Edition portrays the theory of interest rate modeling as a three-dimensional object of finance, mathematics, and computation. It introduces all models with financial-economical justifications, develops options along the martingale approach, and handles option evaluations with precise numerical methods.

Chapman & Hall
August 2024 : 439pp
Hb: 978-1-032-48355-9 : **£81.99**
eBook: 978-1-003-38910-1
* For **full contents** and more information, visit: **www.routledge.com/9781032483559**

3RD EDITION

Modeling Fixed Income Securities and Interest Rate Options



Robert Jarrow

Series: Chapman and Hall/CRC Financial Mathematics Series

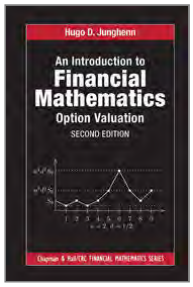
Modelling Fixed Income Securities and Interest Rate Options, 3rd Edition presents the basics of fixed-income securities in a way that, unlike competitive texts, requires a minimum of prerequisites. While other books focus heavily on institutional details of the bond market, all of which could easily be learned "on the job," the third edition of this classic textbook is more focused with presenting a coherent theoretical framework for understanding all basic models.

CRC Press
January 2023 : 384pp
Pb: 978-1-032-47526-4 : **£43.99**
Hb: 978-1-138-36099-0 : **£84.99**
eBook: 978-0-429-43284-2
* For **full contents** and more information, visit: **www.routledge.com/9781032475264**

2ND EDITION

An Introduction to Financial Mathematics

Option Valuation



Hugo D. Junghenn

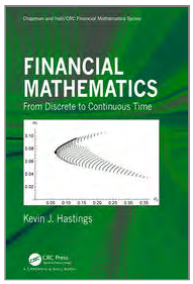
Series: Chapman and Hall/CRC Financial Mathematics Series

Designed for readers having a background in standard multivariable calculus, Introduction to Financial Mathematics: Option Valuation, Second Edition is a well-rounded primer to the mathematics and models used in the valuation of financial derivatives. New examples and exercises have been added in this second edition as well as tables and graphs generated by Microsoft Excel VBA modules available on the author's website.

Chapman & Hall
January 2023 : 318pp
Pb: 978-1-032-47575-2 : **£43.99**
Hb: 978-0-367-20882-0 : **£105**
eBook: 978-0-429-26393-4
* For **full contents** and more information, visit: **www.routledge.com/9781032475752**

Financial Mathematics

From Discrete to Continuous Time



Kevin J. Hastings Knox College, Galesburg, Illinois, USA

Series: Chapman and Hall/CRC Financial Mathematics Series

This book is for advanced undergraduates, MBA, or other students in quantitative finance programs. It is a study of the mathematical ideas and techniques of two main arms of the area of Financial Mathematics: portfolio optimization and derivative valuation. The approach is mathematically correct but informal, sometimes omitting proofs of the more difficult results and stressing practical results and interpretation. The text includes examples requiring the numerical and graphical power of the machine. It will illustrate simulation techniques to stand in for analytical techniques when the latter are impractical. The text follows up on the author's Introduction to Mathematical Finance.

Chapman & Hall
December 2022 : 429pp
Hb: 978-1-498-78040-7 : **£84.99**
eBook: 978-0-429-11365-9
* For **full contents** and more information, visit: **www.routledge.com/9781498780407**

Financial Mathematics

A Comprehensive Treatment in Discrete Time

Giuseppe Campolieti Wilfrid Laurier University, Waterloo, Ontario, Canada**, Roman N. Makarov** Wilfrid Laurier University, Waterloo, Ontario, Canada

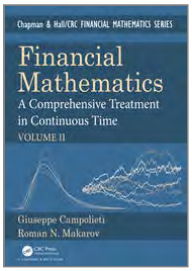
Series: Chapman and Hall/CRC Financial Mathematics Series

The book has been tested and refined through years of classroom teaching experience. With an abundance of examples, problems, and fully worked out solutions, the text introduces the financial theory and relevant mathematical methods in a mathematically rigorous yet engaging way. This textbook provides complete coverage of discrete-time financial models that form the cornerstones of financial derivative pricing theory. Unlike similar texts in the field, this one presents multiple problem-solving approaches, linking related comprehensive techniques for pricing different types of financial derivatives.

Chapman & Hall
August 2024 : 589pp
Pb: 978-1-032-02307-6 : **£56.99**
Hb: 978-1-138-58787-8 : **£91.99**
eBook: 978-0-429-50366-5
* For **full contents** and more information, visit: **www.routledge.com/9781032023076**

Financial Mathematics

A Comprehensive Treatment in Continuous Time Volume II



Giuseppe Campolieti Wilfrid Laurier University, Waterloo, Ontario, Canada**, Roman N. Makarov** Wilfrid Laurier University, Waterloo, Ontario, Canada

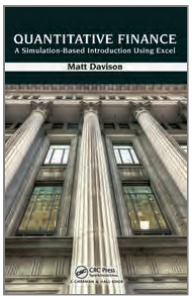
Series: Textbooks in Mathematics

The book has been tested and refined through years of classroom teaching experience. With an abundance of examples, problems, and fully worked out solutions, the text introduces the financial theory and relevant mathematical methods in a mathematically rigorous yet engaging way. This textbook provides complete coverage of discrete-time financial models that form the cornerstones of financial derivative pricing theory. Unlike similar texts in the field, this one presents multiple problem-solving approaches, linking related comprehensive techniques for pricing different types of financial derivatives.

Chapman & Hall
December 2022 : 510pp
Hb: 978-1-138-60363-9 : **£86.99**
eBook: 978-0-429-46888-9
* For **full contents** and more information, visit: **www.routledge.com/9781138603639**

Quantitative Finance

A Simulation-Based Introduction Using Excel



Matt Davison University of Western Ontario, London, Canada

Accessible to students with a relatively modest level of mathematical background, this book guides them in becoming successful quants. The text not only enables students to practice with the basic techniques of financial mathematics, but it also helps them gain significant intuition about what the techniques mean, how they work, and what happens when they stop working. It uses both hand calculations and Excel spreadsheets to analyze plenty of examples from simple bond portfolios. The spreadsheets are available on the book's CRC Press web page.

Chapman & Hall
May 2014 : 532pp
Hb: 978-1-439-87168-3 : **£89**
eBook: 978-0-429-19496-2
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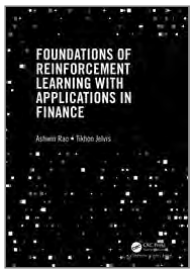
Foundations of Reinforcement Learning with Applications in Finance



Ashwin Rao Stanford University, USA**, Tikhon Jelvis**

Series: Chapman & Hall/CRC Mathematics and Artificial Intelligence Series

This book aims to demystify Reinforcement Learning, and to make it a practically useful tool for those studying and working in applied areas — especially finance. RL is emerging as a viable and powerful technique for solving a variety of complex problems across industries that involve Sequential Optimal Decisioning under Uncertainty. Its penetration in high-profile problems like self-driving cars, robotics, and strategy games points to a future where Reinforcement Learning algorithms will have decisioning abilities far superior to humans. This book introduces the foundations of RL in a way that balances depth of understanding with clear, minimally technical delivery.

Chapman & Hall
December 2022 : 522pp
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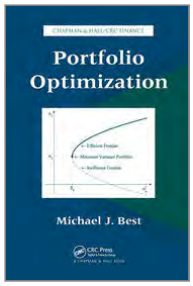
Portfolio Optimization

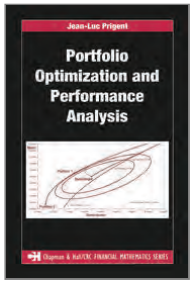


Michael J. Best

Eschewing a more theoretical approach, Portfolio Optimization shows how the mathematical tools of linear algebra and optimization can quickly and clearly formulate important ideas on the subject. This practical book extends the concepts of the Markowitz "budget constraint only" model to a linearly constrained model. It explains how the basic portfolio optimization problem can help determine the optimal investment of an investor's wealth in each asset owned. Along with end-of-chapter exercises, the text includes MATLAB® to help with problem solving and offers the programs on a CD-ROM. A solutions manual is available for qualifying instructors.

Chapman & Hall
October 2024 : 238pp
Pb: 978-1-032-92596-7 : **£56**
Hb: 978-1-420-08584-6 : **£100**
eBook: 978-0-429-18479-6
* For **full contents** and more information, visit: **www.routledge.com/9781032925967**

Portfolio Optimization and Performance Analysis



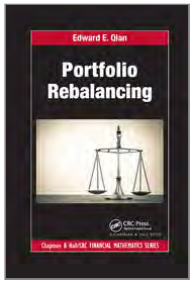
Jean-Luc Prigent University of Cergy-Pontoise, France

Series: Chapman and Hall/CRC Financial Mathematics Series

Taking into account the different features of portfolio management theory, this book promotes a thorough understanding for students and professionals in the field. It presents both standard and novel results on the axiomatics of the individual choice in an uncertain framework, contains a precise overview of standard portfolio optimization, provides a review of the main results for static and dynamic cases, and shows how theoretical results can be applied to practical and operational portfolio optimization. The book uses mathematical tools to solve dynamic optimization and makes the literature of stochastic optimization applied to mathematical finance accessible to nonspecialists.

Chapman & Hall
May 2007 : 456pp
Hb: 978-1-584-88578-8 : **£190**
eBook: 978-0-429-13958-1
* For **full contents** and more information, visit: **www.routledge.com/9781584885788**

Portfolio Rebalancing



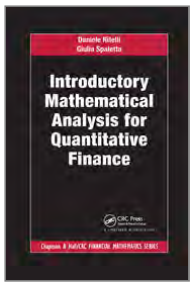
Edward E. Qian

Series: Chapman and Hall/CRC Financial Mathematics Series

The goal of Portfolio Rebalancing is to provide mathematical and empirical analysis of the effects of portfolio rebalancing on portfolio returns and risks. The mathematical analysis answers the question of when and why fixed-weight portfolios might outperform buy-and-hold portfolios based on volatilities and returns. The empirical analysis, aided by mathematical insights, will examine the effects of portfolio rebalancing in capital markets for asset allocation portfolios and portfolios of stocks, bonds, and commodities.

Chapman & Hall
December 2020 : 262pp
Pb: 978-0-367-73283-7 : **£45.99**
Hb: 978-1-498-73244-4 : **£86.99**
eBook: 978-1-315-12067-6
* For **full contents** and more information, visit: **www.routledge.com/9780367732837**

Introductory Mathematical Analysis for Quantitative Finance



Daniele Ritelli , Giulia Spaletta

Series: Chapman and Hall/CRC Financial Mathematics Series

Introductory Mathematical Analysis for Quantitative Finance is a textbook designed to enable students with little knowledge of mathematical analysis to fully engage with modern quantitative finance. A basic understanding of dimensional Calculus and Linear Algebra is assumed. The exposition of the topics is as concise as possible, since the chapters are intended to represent a preliminary contact with the mathematical concepts used in Quantitative Finance. The aim is that this book can be used as a basis for an intensive one-semester course.

Chapman & Hall
June 2022 : 324pp
Pb: 978-1-032-33657-2 : **£39.99**
Hb: 978-0-815-37254-7 : **£120**
eBook: 978-1-351-24511-1
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Quantitative Finance with Python

A Practical Guide to Investment Management, Trading, and Financial Engineering

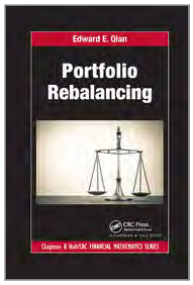
Chris Kelliher Fidelity Investments. USA

Series: Chapman and Hall/CRC Financial Mathematics Series

This book bridges the gap between the theory of mathematical finance and the practical applications of these concepts for derivative pricing and portfolio management. The book provides students with a very hands-on, rigorous introduction to foundational topics in quant finance, such as options pricing, portfolio optimization and machine learning. Simultaneously, the reader benefits from a strong emphasis on the practical applications of these concepts for institutional investors.

Chapman & Hall
May 2022 : 697pp
Hb: 978-1-032-01443-2 : **£99.99**
eBook: 978-1-003-18097-5
* For **full contents** and more information, visit: **www.routledge.com/9781032014432**

Portfolio Rebalancing



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Chapman & Hall
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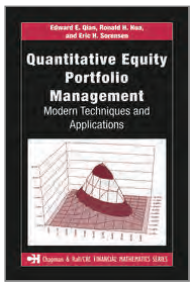
Quantitative Equity Portfolio Management

Modern Techniques and Applications



Edward E. Qian PanAgora Asset Management, Boston, Massachusetts, USA**, Ronald H. Hua** Goldman Sachs Asset Management, New York, New York, USA**, Eric H. Sorensen** PanAgora Asset Management, Boston, Massachusetts, USA

Series: Chapman and Hall/CRC Financial Mathematics Series

This text reviews quantitative investment strategies and factors that are commonly used in practice, including value, momentum, and quality, accompanied by their academic origins. It presents advanced techniques and applications in return forecasting models, risk management, portfolio construction, and portfolio implementation that include examples such as optimal multi-factor models, contextual and nonlinear models, factor timing techniques, portfolio turnover control, Monte Carlo valuation of firm values, and optimal trading. In many cases, the book frames related problems in mathematical terms and illustrates the mathematical concepts and solutions with numerical and empirical examples.

Chapman & Hall
May 2007 : 464pp
Hb: 978-1-584-88558-0 : **£110**
eBook: 978-0-429-14421-9
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Chris Kelliher Fidelity Investments. USA

Series: Chapman and Hall/CRC Financial Mathematics Series

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Chapman & Hall
May 2022 : 697pp
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2ND EDITION

Risk Analysis in Finance and Insurance

Alexander Melnikov

Reorganized and expanded, this updated book introduces the main ideas, techniques, and stochastic models of financial mathematics. It focuses on the foundations and key concepts of the modern methodology of quantitative financial analysis, explores the problems of managing insurance risks, and examines the multiple intrinsic connections between insurance risks and financial risks. With more examples and problems, this edition contains an expanded section on the foundations of probability and stochastic analysis and covers new topics, including financial markets with stochastic volatility, risk measures, risk-adjusted performance measures, and equity-linked insurance.

Chapman & Hall
September 2019 : 328pp
Pb: 978-0-367-38286-5 : **£61.99**
Hb: 978-1-420-07052-1 : **£175**
eBook: 978-0-429-12595-9
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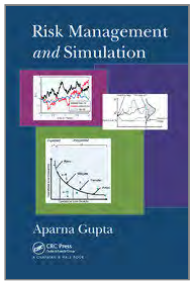
Risk Management and Simulation



Aparna Gupta

The challenges of the financial environment have revealed the need for a new generation of professionals who combine training in traditional finance disciplines with an understanding of sophisticated quantitative and analytical tools. This book shows how simulation modeling and analysis can help you solve problems of risk management related to market, credit, operational, business, and strategic risk. Making simulation accessible, the author walks you through the concepts, models, and computational techniques. Topics covered include developing and validating models, designing simulation experiments, and conducting analysis.

CRC Press
September 2019 : 528pp
Pb: 978-0-367-37988-9 : **£61.99**
Hb: 978-1-439-83594-4 : **£175**
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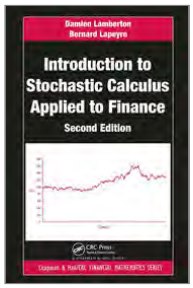
2ND EDITION

Introduction to Stochastic Calculus Applied to Finance



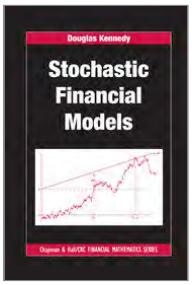
Damien Lamberton , Bernard Lapeyre

Series: Chapman and Hall/CRC Financial Mathematics Series

Maintaining the lucid style of its popular predecessor, this concise and accessible introduction covers the probabilistic techniques required to understand the most widely used financial models. Along with additional exercises, this edition presents fully updated material on stochastic volatility models and option pricing as well as a new chapter on credit risk modeling. It contains many numerical experiments and real-world examples taken from the authors' own experiences. The book also provides all of the necessary stochastic calculus theory and implements some of the algorithms using SciLab.

CRC Press
January 2023 : 254pp
Pb: 978-1-032-47781-7 : **£46**
Hb: 978-1-584-88626-6 : **£89**
eBook: 978-0-429-12108-1
* For **full contents** and more information, visit: **www.routledge.com/9781032477817**

Stochastic Financial Models



Douglas Kennedy Trinity College, Cambridge, UK

Series: Chapman and Hall/CRC Financial Mathematics Series

Developed from the esteemed author's advanced undergraduate and graduate courses at the University of Cambridge, this text provides a hands-on, sound introduction to mathematical finance. Assuming no prior knowledge of stochastic calculus or measure-theoretic probability, the author includes the relevant mathematical background as well as many exercises with solutions. He first presents the classical topics of utility and the mean-variance approach to portfolio choice. Focusing on derivative pricing, the text then covers the binomial model, the general discrete-time model, Brownian motion, the Black–Scholes model and various interest-rate models.

Chapman & Hall
September 2018 : 264pp
Pb: 978-1-138-38145-2 : **£61.99**
Hb: 978-1-420-09345-2 : **£84.99**
eBook: 978-0-429-18478-9
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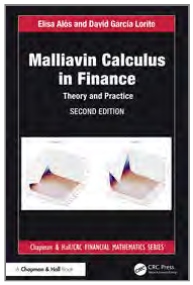
2ND EDITION

Malliavin Calculus in Finance

Theory and Practice



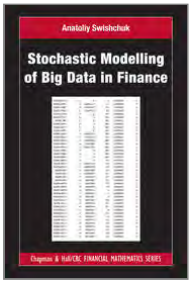
Elisa Alos Universitat Pompeu Frabra, Spain**, David Garcia Lorite**

Series: Chapman and Hall/CRC Financial Mathematics Series

Malliavin Calculus in Finance: Theory and Practice, Second Edition introduces the study of stochastic volatility (SV) models via Malliavin Calculus. This book aims to bridge the gap between theory and practice and demonstrate the practical value of Malliavin calculus. It offers readers the chance to discover an easy-to-apply tool that allows us to recover, unify, and generalize several previous results in the literature on stochastic volatility modeling related to the vanilla, the forward, and the VIX implied volatility surfaces.

Chapman & Hall
December 2024 : 394pp
Hb: 978-1-032-63630-6 : **£100**
eBook: 978-1-032-63638-2
* For **full contents** and more information, visit: **www.routledge.com/9781032636306**

Stochastic Modelling of Big Data in Finance



Anatoliy Swishchuk University of Calgary, Alberta, Canada

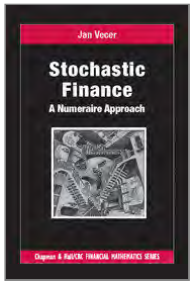
Series: Chapman and Hall/CRC Financial Mathematics Series

This book provides a rigorous overview and exploration of stochastic modelling of big data in finance (BDF). The book describes various stochastic models, including multivariate models, to deal with big data in finance. This includes data in high-frequency and algorithmic trading, specifically in limit order books (LOB), and shows how those models can be applied to different datasets to describe the dynamics of LOB, and to figure out which model is the best with respect to a specific data set. The results of the book may be used to also solve acquisition, liquidation and market making problems, and other optimization problems in finance.

Chapman & Hall
November 2022 : 304pp
Hb: 978-1-032-20926-5 : **£76.99**
eBook: 978-1-003-26598-6
* For **full contents** and more information, visit: **www.routledge.com/9781032209265**

Stochastic Finance

A Numeraire Approach



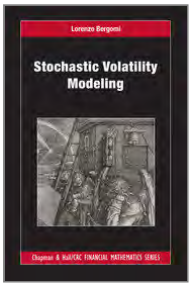
Jan Vecer Columbia University, New York, New York, USA

Series: Chapman and Hall/CRC Financial Mathematics Series

This classroom-tested text provides a deep understanding of derivative contracts. Unlike much of the existing literature, the book treats price as a number of units of one asset needed for an acquisition of a unit of another asset instead of expressing prices in dollar terms exclusively. This numeraire approach leads to simpler pricing options for complex products, such as barrier, lookback, quanto, and Asian options. With many examples and exercises, the text relies on intuition and basic principles, rather than technical computations.

CRC Press
June 2017 : 342pp
Pb: 978-1-138-11641-2 : **£71.99**
Hb: 978-1-439-81250-1 : **£190**
eBook: 978-0-429-09240-4
* For **full contents** and more information, visit: **www.routledge.com/9781138116412**

Stochastic Volatility Modeling



Lorenzo Bergomi Société Générale, Paris, France

Series: Chapman and Hall/CRC Financial Mathematics Series

Written by a leading contributor to volatility modeling and Risk's 2009 Quant of the Year, this book explains how stochastic volatility is used to tackle practical issues arising in the modeling of derivatives. With many unpublished results and insights, the book addresses the practicalities of modeling local volatility, local-stochastic volatility, and multi-asset stochastic volatility. It covers forward-start options, variance swaps, options on realized variance, timer options, VIX futures and options, and daily cliquets.

Chapman & Hall
January 2016 : 522pp
Hb: 978-1-482-24406-9 : **£87**
eBook: 978-0-429-17046-1
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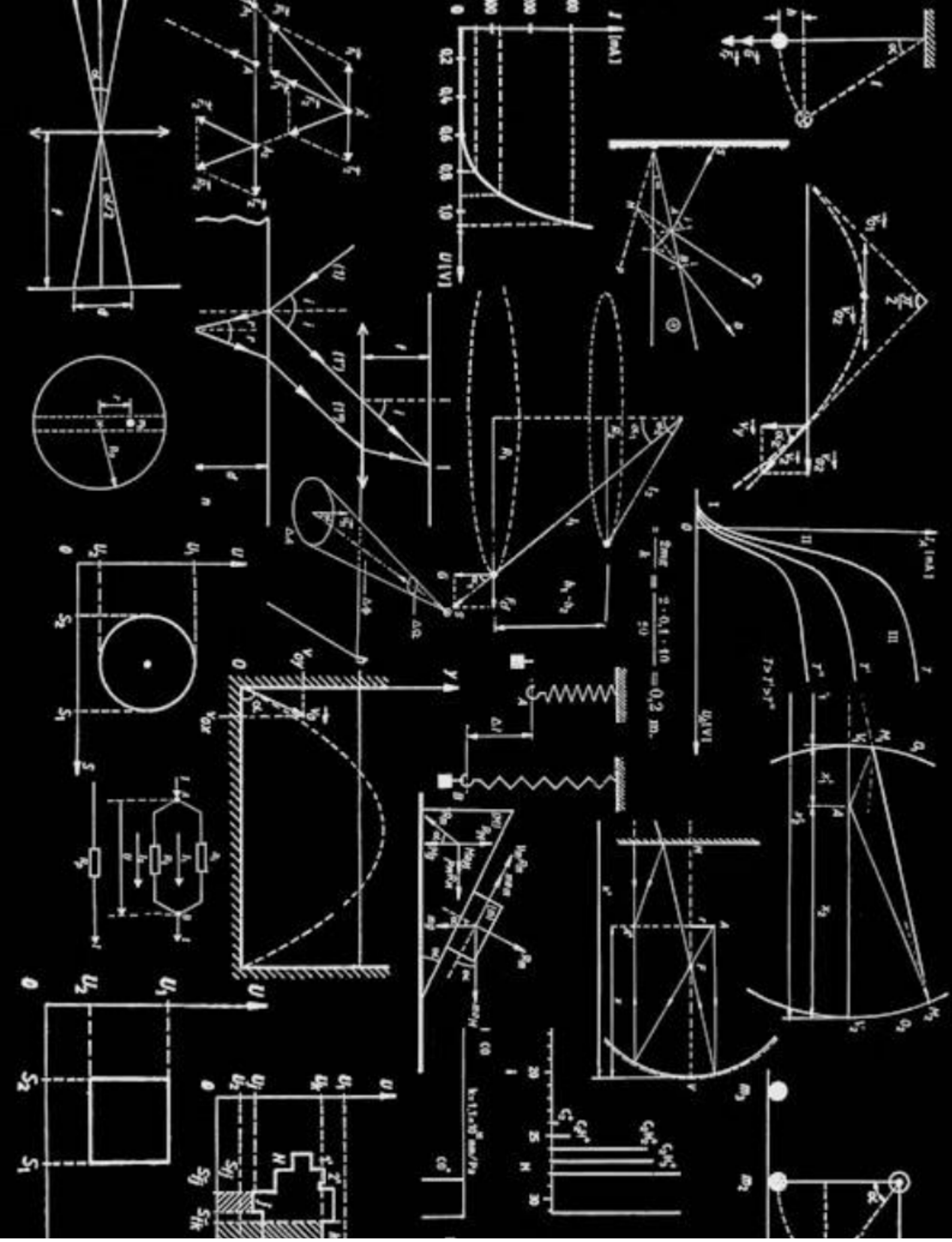

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