

Essentials Of Discrete Mathematics Edition 2

Written for the one-term course, the Third Edition of Essentials of Discrete Mathematics is designed to serve computer science majors as well as students from a wide range of disciplines. The material is organized around five types of thinking: logical, relational, recursive, quantitative, and analytical. This presentation results in a coherent outline that steadily builds upon mathematical sophistication. Graphs are introduced early and referred to throughout the text, providing a richer context for examples and applications. tudents will encounter algorithms near the text, after they have acquired the skills and experience needed to analyze them. The final chapter contains in-depth case studies from a variety of fields, including biology, sociology, linguistics, economics, and music.

Both the textbook and the accompanying exercises are designed to engage students from math, statistics, economics, computer science, engineering, and finance departments) who have had a course in probability theory. It covers Markov chains in discrete and continuous time, Poisson processes, renewal processes, martingales, and option pricing. One can only learn a subject by seeing it in action, so there are a large number of examples and more than 300 carefully chosen exercises to deepen the reader's understanding. Drawing from teaching experience and student feedback, there are many new examples and problems with solutions that use TI-83 to eliminate the tedious details of solving linear equations by hand, and the collection of exercises is much improved, with many more biological examples. Originally included in previous editions, material too advanced for this first course in stochastic processes has been eliminated while treatment of other topics useful for applications has been expanded. In addition, the ordering of topics has been improved; for example, the difficult subject of martingales is delayed until its usefulness can be applied in the treatment of mathematical finance.

This stimulating textbook presents a broad and accessible guide to the fundamentals of discrete mathematics, highlighting how the techniques may be applied to various exciting areas in computing. The text is designed to motivate and inspire the reader, encouraging further study in this important field. Features: provides an introduction to the building blocks of discrete mathematics, including sets, relations and functions; describes the basics of number theory, the techniques of induction and recursion, and the applications of mathematical sequences, series, permutations, and combinations; presents the essentials of algebra; explains the fundamentals of automata theory, matrices, graph theory, cryptography, coding theory, language theory, and the concepts of computability and decidability; reviews the history of logic, discussing propositional and predicate logic, as well as advanced topics; examines the field of software engineering, describing formal methods; investigates probability and statistics.

A more intuitive approach to the mathematical foundation of computer science Discrete mathematics is the basis of much of computer science, from algorithms and automata theory to combinatorics and graph theory. This textbook covers the discrete mathematics that every computer science student needs to learn. Guiding students quickly through thirty-one short chapters that discuss one major topic each. This flexible book can be tailored to fit the syllabi for a variety of courses. Proven in the classroom, Essential Discrete Mathematics for Computer Science teaches important concepts and skills by stressing the art of proof. It is fully illustrated in color, and each chapter includes a concise summary as well as a set of exercises. The text requires only precalculus, and where calculus is needed, a quick summary of the basic facts is provided. Essential Discrete Mathematics for Computer Science is the ideal introductory textbook for standard undergraduate courses, and is also suitable for high school courses, distance education for adult learners, and self-study. The essential introduction to discrete mathematics Features thirty-one short chapters, each suitable for a single class lesson Includes more than 300 exercises Almost every formula and theorem proved in full Breadth of content makes the book adaptable to a variety of courses Each chapter includes a concise summary Solutions manual available to instructors

Essentials of Discrete Mathematics
Math Mutation Classics

Precalculus with Calculus Previews
Fundamental Approach To Discrete Mathematics

Mathematics for Machine Learning
This richly illustrated textbook explores the amazing interaction between combinatorics, geometry, number theory, and analysis which arises in the interplay between polyhedra and lattices. Highly accessible to advanced undergraduates, as well as beginning graduate students, this second edition is perfect for a capstone course, and adds two new chapters, many new exercises, and updated open problems. For scientists, this text can be utilized as a self-contained tooling device. The topics include a friendly invitation to Ehrhart's theory of counting lattice points in polytopes, finite Fourier analysis, the Frobenius coin-exchange problem, Dedekind sums, solid angles, Euler-Maclaurin summation for polytopes, the combinatorial geometry, magic squares, zonotopes, and more. With more than 300 exercises and open research problems, the reader is an active participant, carried through diverse but tightly woven mathematical fields that are inspired by an innocently elementary question: What are the relationships between the continuous volume of a polytope and its discrete volume? Reviews of the first edition: "You owe it to yourself to pick up a copy of Computing the Continuous Discretely to read about a number of interesting problems in geometry, number theory, and combinatorics." – MA Reviews "The book is written as an accessible and engaging textbook, with many examples, historical notes, pithy quotes, commentary integrating the mate rial, exercises, open problems and an extensive bibliography." – Zentralblatt MATH "This beautiful book presents, at a level suitable for advanced undergraduates, a fairly complete introduction to the problem of counting lattice points inside a convex polyhedron." – CHOICE "Students can see the tools they have acquired come together in some satisfying way. Beck and Robins have written the perfect text for such a course." – CHOICE This is the ebook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the bound book. Stein/Drysdale/Bogart's Discrete Mathematics for Computer Scientists is ideal for computer science students taking the discrete math course. Written specifically for computer science students, this unique textbook directly addresses their needs by providing a foundation in discrete math while using motivating, relevant CS applications. This text takes an active-learning approach where activities are presented as exercises and the material is then fleshed out through explanations and extensions of the exercises.

Containing data on number theory, encryption schemes, and cyclic codes, this highly successful textbook, proven by the authors in a popular two-quarter course, presents coding theory, construction, encoding, and decoding of specific code families in an "easy-to-use" manner appropriate for students with only a basic background in mathematics offerin Use math in unique ways to analyze things you observe in life and use proof to attain the unexpected. There is quite a wide diversity of topics here and so all age levels and ability levels will enjoy the discussions. You'll see how the author's unique viewpoint puts a mathematical spin on everything from politicians to hippos. Along the way, you will enjoy the different point of view and hopefully it will open you up to a slightly more out-of-the-box way of thinking. Did you know that sometimes 2+2 equals 5? That wheels don't always have to be round? That you can mathematically prove there is a hippopotamus in your basement? Or how to spot four-dimensional beings as they pass through your kitchen? If not, then you need to read this book! Math Mutation Classics is a collection of Erik Seligman's blog articles from Math Mutation at MathMutation.com. Erik has been creating podcasts and converting them in his blog for many years. Now, he has collected what he believes to be the most interesting among them, and has edited and organized them into a book that is often thought provoking, challenging, and fun. What You Will Learn View the world and problems in different ways through math. Apply mathematics to things you thought unimaginable. Abstract things that are not taught in school. Who this Book is For Teenagers, college level students, and adults who can gain from the many different ways of looking at problems and feed their interest in mathematics.

An Open Introduction

Fundamentals of Discrete Structures

Fundamental Structures of Algebra and Discrete Mathematics

Essentials of Mathematical Thinking

Coding Theory and Cryptography

Susanna Epp's DISCRETE MATHEMATICS WITH APPLICATIONS, FOURTH EDITION provides a clear introduction to discrete mathematics. Renowned for her lucid, accessible prose, Epp explains complex, abstract concepts with clarity and precision. This book presents not only the major themes of discrete mathematics, but also the reasoning that underlies mathematical thought. Students develop the ability to think abstractly as they study the ideas of logic and proof. While learning about such concepts as logic circuits and computer addition, algorithm analysis, recursive thinking, computability, automata, cryptography, and combinatorics, students discover that the ideas of discrete mathematics underlie and are essential to the science and technology of the computer age. Overall, Epp's emphasis on reasoning provides students with a strong foundation for computer science and upper-level mathematics courses. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Distills key concepts from linear algebra, geometry, matrices, calculus, optimization, probability and statistics that are used in machine learning.

Salient Features * Mathematical Logic, Fundamental Concepts, Proofs And Mathematical Induction (Chapter 1) * Set Theory, Fundamental Concepts, Theorems, Proofs, Venn Diagrams, Product Of Sets, Application Of Set Theory And Fundamental Products (Chapter 2) * An Introduction To Binary Relations And Concepts, Graphs, Arrow Diagrams, Relation Matrix, Composition Of Relations, Types Of Relation, Partial Order Relations, Total Order Relation, Closure Of Relations, Poset, Equivalence Classes And Partitions. (Chapter 3) * An Introduction To Functions And Basic Concepts, Graphs, Composition Of Functions, Floor And Ceiling Function, Characteristic Function, Remainder Function, Signum Function And Introduction To Hash Function. (Chapter 4) * The Algebraic Structure Includes Group Theory And Ring Theory. Group Theory Includes Group, Subgroups, Cyclic Group, Cosets, Homomorphism, Introduction To Codes And Group Codes And Error Correction For Block Code. The Ring Theory Includes General Definition, Fundamental Concepts, Integral Domain, Division Ring, Subring, Homomorphism, An Isomorphism And Pigeonhole Principle (Chapters 5, 6 And 7) * A Treatment Of Boolean Algebras That Emphasizes The Relation Of Boolean Algebras To Combinatorial Circuits. (Chapter 8) * An Introduction To Lattices And Basic Concepts (Chapter 9) * A Brief Introduction To Graph Theory Is Discussed. Elements Of Graph Theory Are Indispensable In Almost All Computer Science Areas. Examples Are Given Of Its Use In Such Areas As Minimum Spanning Tree, Shortest Path Problems (Dijkstra'S Algorithm And Floyd-Warshall Algorithm) And Traveling Salesman Problem. The Computer Representation And Manipulation Of Graphs Are Also Discussed So That Certain Important Algorithms Can Be Included.(Chapters 10 And 11) * A Strong Emphasis Is Given On Understanding The Theorems And Its Applications * Numbers Of Illustrations Are Used Throughout The Book For Explaining The Concepts And Its Applications * Figures And Tables Are Used To Illustrate Concepts, To Elucidate Proofs And To Motivate The Material. The Captions Of These Figures Provide Additional Explanation. Besides This, A Number Of Exercises Are Given For Practice

Chartrand and Zhang's Discrete Mathematics presents a clearly written, student-friendly introduction to discrete mathematics. The authors draw from their background as researchers and educators to offer lucid discussions and descriptions fundamental to the subject of discrete mathematics. Unique among discrete mathematics textbooks for its treatment of proof techniques and graph theory, topics discussed also include logic, relations and functions (especially equivalence relations and bijective functions), algorithms and analysis of algorithms, induction to number theory, combinatorics (counting, the Pascal triangle, and the binomial theorem), discrete probability, partially ordered sets, lattices and Boolean algebras, cryptography, and finite-state machines. This highly versatile text provides mathematical background used in a wide variety of disciplines, including mathematics and mathematics education, computer science, biology, chemistry, engineering, communications, and business. Some of the major features and strengths of this textbook Numerous, carefully explained examples and applications facilitate learning. More than 1,600 exercises, ranging from elementary to challenging, are included with hints/answers to all odd-numbered exercises. Descriptions of proof techniques are accessible and lively. Students benefit from the historical discussions throughout the textbook.

Studyguide for Essentials of Discrete Mathematics by Hunter, David J., ISBN 9781449604424

Proofs, Structures and Applications, Third Edition

Discrete Mathematics for Computer Scientists

Discrete Mathematics and Its Applications

Schaum's Easy Outline of Discrete Mathematics

Discrete mathematics is a compulsory subject for undergraduate computer scientists. This new edition includes new chapters on statements and proof, logical framework, natural numbers and the integers and updated exercises from the previous edition.

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. Features Designed to be especially useful for courses at the community-college level Ideal as a first- or second-year textbook for computer science majors, or as a general introduction to discrete mathematics Written to be accessible to those with a limited mathematics background, and to aid with the transition to abstract thinking Filled with over 200 worked examples, boxed for easy reference, and over 200 practice problems with answers Contains approximately 40 simple algorithms to aid students in becoming proficient with algorithm control structures and pseudocode Includes an appendix on basic circuit design which provides a real-world motivational example for computer science majors by drawing on multiple topics covered in the book to design a circuit that adds two eight-digit binary numbers Jon Pierre Fortney graduated from the University of Pennsylvania in 1996 with a BA in Mathematics and Actuarial Science and a BSE in Chemical Engineering. Prior to returning to graduate school, he worked as both an environmental engineer and as an actuarial analyst. He graduated from Arizona State University in 2008 with a PhD in Mathematics, specializing in Geometric Mechanics. Since 2012, he has worked at Zayed University in Dubai. This is his second mathematics textbook.

Discrete Mathematics and Its Applications, Sixth Edition, is intended for one- or two-term introductory discrete mathematics courses taken by students from a wide variety of majors, including computer science, mathematics, and engineering. This renowned best-selling text, which has been used at over 500 institutions around the world, gives a focused introduction to the primary themes in a discrete mathematics course and demonstrates the relevance and practicality of discrete mathematics to a wide a wide variety of real-world applications...from computer science to data networking, to psychology, to chemistry, to engineering, to linguistics, to biology, to business, and to many other important fields.

Rosen's Discrete Mathematics and Its Applications presents a precise, relevant, comprehensive approach to mathematical concepts. This world-renowned best-selling text was written to accommodate the needs across a variety of majors and departments, including mathematics, computer science, and engineering. As the market leader, the book is highly flexible, comprehensive and a proven pedagogical teaching tool for instructors.

Discrete Mathematics with Ducks

Integer-Point Enumeration in Polyhedra

Facts, Models, Theory

An Example-Based Introduction

Essentials of Discrete Mathematics, 2nd Edition

Essentials of Mathematical Thinking addresses the growing need to better comprehend mathematics today. Increasingly, our world is driven by mathematics in all aspects of life. The book is an excellent introduction to the world of mathematics for students not majoring in mathematical studies. The author has written this book in an enticing, rich manner that will engage students and introduce new paradigms of thought. Careful readers will develop critical thinking skills which will help them compete in today's world. The book explains: What goes behind a Google search algorithm How to calculate the odds in a lottery The value of Big Data How the nefarious Ponzi scheme operates Instructors will treasure the book for its ability to make the field of mathematics more accessible and alluring with relevant topics and helpful graphics. The author also encourages readers to see the beauty of mathematics and how it relates to their lives in meaningful ways.

Essentials of Discrete Mathematics, Second Edition is the ideal text for a one-term discrete mathematics course to serve computer science majors as well as students from a wide range of other disciplines. It introduces students to the mathematical way of thinking, and also to many important modern applications. The material is organized around five types of thinking: logical, relational, recursive, quantitative, and analytical. This presentation results in a coherent outline that steadily builds upon mathematical sophistication. Graphs are introduced early and referred to throughout the text, providing a richer context for examples and applications. Students will encounter algorithms near the end of the text, after they have acquired the skills and experience needed to analyze them. The final chapter contains in-depth case studies from a variety of fields, including biology, sociology, linguistics, economics, and music. Clear and concise, Essentials of Discrete Mathematics presents a unified and complete picture of discrete mathematics that instructors can cover in a single semester.

Known for its accessible, precise approach, Epp's DISCRETE MATHEMATICS WITH APPLICATIONS, 5th Edition, introduces discrete mathematics with clarity and precision. Coverage emphasizes the major themes of discrete mathematics as well as the reasoning that underlies mathematical thought. Students learn to think abstractly as they study the ideas of logic and proof. While learning about logic, circuit addition, algorithm analysis, recursive thinking, computability, automata, cryptography and combinatorics, students discover that ideas of discrete mathematics underlie and are essential to today's science and technology. The author's emphasis on reasoning provides a foundation for computer science and upper-level mathematics courses. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

This title is part of the Pearson Modern Classics series. Pearson Modern Classics are acclaimed titles at a value price. Please visit www.pearsonhighered.com/math-classes-series for a complete list of titles. An ever-increasing percentage of mathematic applications involve discrete rather than continuous models. Driving this trend is the integration of the computer into virtually every aspect of modern society. Intended for a one-semester introductory course, the strong algorithmic emphasis of Discrete Mathematics is independent of a specific programming language, allowing students to concentrate on foundational problem-solving and analytical skills. Instructors get the topical breadth and organizational flexibility to tailor the course to the level and interests of their students.

The Essentials, Second Edition

Guide to Discrete Mathematics

Theory and Examples

Fundamentals of Actuarial Mathematics

An Accessible Introduction to the History, Theory, Logic and Applications

Taking an approach to the subject that is suitable for a broad readership, Discrete Mathematics: Proofs, Structures, and Applications, Third Edition provides a rigorous yet accessible exposition of discrete mathematics, including the core mathematical foundation of computer science. The approach is comprehensive yet maintains an easy-to-follow progression from the basic mathematical ideas to the more sophisticated concepts examined later in the book. This edition preserves the philosophy of its predecessors while updating and revising some of the content. New to the Third Edition In the expanded first chapter, the text includes a new section on the formal proof of the validity of arguments in propositional logic before moving on to predicate logic. This edition also contains a new chapter on elementary number theory and congruences. This chapter explores groups that arise in modular arithmetic and RSA encryption, a widely used public key encryption scheme that enables practical and secure means of encrypting data. This third edition also offers a detailed solutions manual for qualifying instructors. Exploring the relationship between mathematics and computer science, this text continues to provide a secure grounding in the theory of discrete mathematics and to augment the theoretical foundation with salient applications. It is designed to help readers develop the rigorous logical thinking required to adapt to the demands of the ever-evolving discipline of computer science.

This book provides a comprehensive introduction to actuarial mathematics, covering both deterministic and stochastic models of life contingencies, as well as more advanced topics such as risk theory, credibility theory and multi-state models. This new edition includes additional material on credibility theory, continuous time multi-state models, more complex types of contingent insurances, flexible contracts such as universal life, the risk measures VaR and TVaR. Key Features: Covers much of the syllabus material on the modeling examinations of the Society of Actuaries, Canadian Institute of Actuaries and the Casualty Actuarial Society. (SOA-CIA exams MLC and C, CSA exams 3L and 4.) Extensively revised and updated with new material. Orders the topics specifically to facilitate learning. Provides a streamlined approach to actuarial notation. Employs modern computational methods. Contains a variety of exercises, both computational and theoretical, together with answers, enabling use for self-study. An ideal text for students planning for a professional career as actuaries, providing a solid preparation for the modeling examinations of the major North American actuarial associations. Furthermore, this book is highly suitable reference for those wanting a sound introduction to the subject, and for those working in insurance, annuities and pensions.

This classic introduction to probability theory for beginning graduate students covers laws of large numbers, central limit theorems, random walks, martingales, Markov chains, ergodic theorems, and Brownian motion. It is a comprehensive treatment concentrating on the results that are the most useful for applications. Its philosophy is that the best way to learn probability is to see it in action, so there are 200 examples and 450 problems. The fourth edition begins with a short chapter on measure theory to orient readers new to the subject.

Note: This is the 3rd edition. If you need the 2nd edition for a course you are taking, it can be found as a "other format" on amazon, or by searching its isbn: 1534970746 This gentle introduction to discrete mathematics is written for first and second year math majors, especially those who intend to teach. The text began as a set of lecture notes for the discrete mathematics course at the University of Northern Colorado. This course serves both as an introduction to topics in discrete math and as the "introduction to proof" course for math majors. The course is usually taught with a large amount of student inquiry, and this text is written to help facilitate this. Four main topics are covered: counting, sequences, logic, and graph theory. Along the way proofs are introduced, including proofs by contradiction, proofs by induction, and combinatorial proofs. The book contains over 470 exercises, including 275 with solutions and over 100 with hints. There are also investigate! activities throughout the text to support active, inquiry based learning. While there are many fine discrete math textbooks available, this text has the following advantages: It is written to be used in an inquiry rich course. It is written to be used in a course for future math teachers. It is open source, with low cost print editions and free electronic editions. This third edition brings improved exposition, a new section on trees, and a bunch of new and improved exercises. For a complete list of changes, and to view the free electronic version of the text, visit the book's website at discrete.openmathbooks.org

Discrete Mathematics for Computer Science

Discrete Mathematics (Classic Version)

Discrete Mathematics (eighth Edition)

Essentials of Discrete Mathematics with WebAssign

Essentials of Stochastic Finance

Normal 0 false false false EN-US X-NONE X-NONE Selecting a mathematics textbook that meets the needs of a diverse student body can be a challenge. Some have too much information for a beginner; some have too little. The authors of "Fundamentals of Discrete Structures," frustrated by their search for the perfect text, decided to write their own. The result provides an excellent introduction to discrete mathematics that is both accessible to liberal arts majors satisfying their core mathematics requirements, and also challenging enough to engage math and computer science majors. To engage students who may not be comfortable with traditional mathematics texts, the book uses a light tone when introducing new concepts. While there is an emphasis on computation, it avoids mathematical formalism and formal proofs, thus making it easier for the average student to understand. Unlike other textbooks in this field, "Fundamentals of Discrete Structures" strikes just the right balance: it illuminates the essentials of discrete mathematics while still providing a comprehensive treatment of the subject matter.

Never HIGHLIGHT a Book Again! Virtually all of the testable terms, concepts, persons, places, and events from the textbook are included. Cram101 Just the FACTS101 studyguides give all of the outlines, highlights, notes, and quizzes for your textbook with optional online comprehensive practice tests. Only Cram101 is Textbook Specific. Accompanys: 9781449604424 .

"Essentials of Discrete Mathematics is designed for the one-semester undergraduat,e discrete math course. This course geared towards math and computer science majors. The textbook is organized around five types of mathematical thinking, with each chapter addressing a different type of thinking: logical, relational, recursive, quantitative, and analytical. The final chapter, "Thinking Through Applications" looks at different ways that discrete math thinking can be applied. Applications are included throughout the textbook and are sourced from a variety of disciplines, including biology, economics, music, and more"

Boiled-down essentials of the top-selling Schaum's Outline series for the student with limited time What could be better than the bestselling Schaum's Outline series? For students looking for a quick nuts-and-bolts overview, it would have to be Schaum's Easy Outline series. Every book in this series is a pared-down, simplified, and tightly focused version of its predecessor. With an emphasis on clarity and brevity, each new title features a streamlined and updated format and the absolute essence of the subject, presented in a concise and readily understandable form. Graphic elements such as sidebars, reader-alert icons, and boxed highlights stress selected points from the text, illuminate keys to learning, and give students quick pointers to the essentials. Designed to appeal to underprepared students and readers turned off by dense text Cartoons, sidebars, icons, and other graphic pointers get the material across fast Concise text focuses on the essence of the subject Delivers expert help from teachers who are authorities in their fields Perfect for last-minute test preparation So small and light that they fit in a backpack!

Discrete Mathematics with Applications

Essential Discrete Mathematics for Computer Science

Essential Logic for Computer Science

Discrete Mathematics Using a Computer

Probability

Susanna Epp's DISCRETE MATHEMATICS: A FIRST COURSE TO MATHEMATICAL REASONING, provides the same clear introduction to discrete mathematics and mathematical reasoning as her highly acclaimed DISCRETE MATHEMATICS WITH APPLICATIONS, but in a compact form that focuses on core topics and omits certain applications usually taught in other courses. The book is appropriate for use in a discrete mathematics course that emphasizes essential topics or in a mathematics major or minor course that serves as a transition to abstract mathematical thinking. The ideas of discrete mathematics underlie and are essential to the science and technology of the computer age. This book offers a synergistic union of the major themes of discrete mathematics together with the reasoning that underlies mathematical thought. Renowned for her lucid, accessible prose, Epp explains complex, abstract concepts with clarity and precision, helping students develop the ability to think abstractly as they study each topic. In doing so, the book provides students with a strong foundation both for computer science and for other upper-level mathematics courses. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Instructors are always faced with the dilemma of too much material and too little time. Perfect for the one-term course, Precalculus with Calculus Previews, Fourth Edition provides a complete, yet manageable, introduction to precalculus concepts while focusing on important topics that will be of direct and immediate use in most calculus courses. Consistent with Professor Zill's eloquent writing style, this four-color text offers numerous exercise sets and examples to aid in students' learning and understanding, while graphs and figures throughout serve to illuminate key concepts. The exercise sets include engaging problems that focus on algebra, graphing, and function theory, the sub-text of so many calculus problems. The authors are careful to use the terminology of calculus in an informal and comprehensible way to facilitate the student's successful transition into future calculus courses. With an extensive Student Study Guide and a full Solutions Manual for instructors, Precalculus with Calculus Previews offers a complete teaching and learning package!

An introduction to applying predicate logic to testing and verification of software and digital circuits that focuses on applications rather than theory. Computer scientists use logic for testing and verification of software and digital circuits, but many computer science students study logic only in the context of traditional mathematics, encountering the subject in a few lectures and a handful of problem sets in a discrete math course. This book offers a more substantive and rigorous approach to logic that focuses on applications in computer science. Topics covered include predicate logic, equation-based software, automated testing and theorem proving, and large-scale computation. Formalism is emphasized, and the book employs three formal notations: traditional algebraic formulas of propositional and predicate logic; digital circuit diagrams; and the widely used partially automated theorem prover, ACL2, which provides an accessible introduction to mechanized formalism. For readers who want to see formalization in action, the text presents examples using Proof Pad, a lightweight ACL2 environment. Readers will not become ALC2 experts, but will learn how mechanized logic can benefit software and hardware engineers. In addition, 180 exercises, some of them extremely challenging, offer opportunities for problem solving. There are no prerequisites beyond high school algebra. Programming experience is not required to understand the book's equation-based approach. The book can be used in undergraduate courses in logic for computer science and introduction to computer science and in math courses for computer science students.

Several areas of mathematics find application throughout computer science, and all students of computer science need a practical working understanding of them. These core subjects are centred on logic, sets, recursion, induction, relations and functions. The material is often called discrete mathematics, to distinguish it from the traditional topics of continuous mathematics such as integration and differential equations. The central theme of this book is the connection between computing and discrete mathematics. This connection is useful in both directions: * Mathematics is used in many branches of computer science, in applica tions including program specification, datastructures,design and analysis of algorithms, database systems, hardware design, reasoning about the correctness of implementations, and much more; * Computers can help to make the mathematics easier to learn and use, by making mathematical terms executable, making abstract concepts more concrete, and through the use of software tools such as proof checkers. These connections are emphasised throughout the book. Software tools (see Appendix A) enable the computer to serve as a calculator, but instead of just doing arithmetic and trigonometric functions, it will be used to calculate with sets, relations, functions, predicates and inferences. There are also special software tools, for example a proof checker for logical proofs using natural deduction.

Essentials of Stochastic Processes

Computing the Continuous Discretely

Discrete Mathematics: Introduction to Mathematical Reasoning

Discrete Mathematics

Essentials of Mathematical Statistics

Introduces and clarifies the basic theories of 12 structural concepts, offering a fundamental theory of groups, rings and other algebraic structures. Identifies essentials and describes interrelationships between particular theories. Selected classical theorems and results relevant to current research are proved rigorously within the theory of each structure. Throughout the text the reader is frequently prompted to perform integrated exercises of verification and to explore examples. The title includes the print version of Essentials of Discrete Mathematics, Fourth Edition, and access to WebAssign.

Discrete Mathematics with Ducks, Second Edition is a gentle introduction for students who find the proofs and abstractions of mathematics challenging. At the same time, it provides stimulating material that instructors can use for more advanced students. The first edition was widely well received, with its whimsical 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 practicing and doing, which helps students better retain what they've learned. As such, each chapter contains a mixture of discovery-based activities, projects, expository text, in-class exercises, and homework problems. The author's lively and friendly writing style is appealing to both instructors and students alike and encourages readers to learn. The book's light-hearted approach to the subject is a guiding principle and helps students learn mathematical abstraction. Features: The book's Try This! sections encourage students to construct components of discussed concepts, theorems, and proofs Provided sets of discovery problems and illustrative examples reinforce learning Bonus sections can be used by instructors as part of their regular curriculum, for projects, or for further study

Readership: Undergraduates and researchers in probability and statistics; applied, pure and financial mathematics; economics; chaos.

Exploring Interesting, Fun and Weird Corners of Mathematics

This text combines the topics generally found in main-stream elementary statistics books with the essentials of the underlying theory. The book begins with an axiomatic treatment of probability followed by chapters on discrete and continuous random variables and their associated distributions. It then introduces basic statistical concepts including summarizing data and interval parameter estimation, stressing the connection between probability and statistics. Final chapters introduce hypothesis testing, regression, and non-parametric techniques. All chapters provide a balance between conceptual understanding and theoretical understanding of the topics at hand.