

# Discrete Structures Logic And Computability

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**Mathematical Structures for Computer Science -**

Judith L. Gersting 2007

This edition offers a pedagogically rich and

intuitive introduction to discrete mathematics

structures. It meets the needs of computer

science majors by being both comprehensive and

accessible.

## **Discrete Mathematics Using a Computer -**

Cordelia Hall 2013-04-17

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 applications 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.

*Guide to Discrete Mathematics* - Gerard O'Regan  
2016-09-16

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 skill. 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.

#### **Introduction to Computing and Algorithms -**

Russell L. Shackelford 1999

Introduction to Computing and Algorithms prepares students for the world of computing by giving them a solid foundation in the study of computer science - algorithms. By taking an algorithm-based approach to the subject, this

book helps readers grasp overall concepts rather than getting them bogged down with specific syntax details of a programming language that can become obsolete. Students work with algorithms from the start and apply these ideas to real problems that computers can help solve. The benefit of this approach is that students will understand the power of computers as problem-solving tools, learn to think like programmers, and gain an appreciation of the computer science discipline.

Discrete Mathematics - Oscar Levin 2018-12-31

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](http://discrete.openmathbooks.org)

**Discrete Structures, Logic, and Computability -**

James L. Hein 2015-12-13

Following the recent updates to the 2013 ACM/IEEE Computer Science curricula, Discrete Structures, Logic, and Computability, Fourth Edition, has been designed for the discrete math

course that covers one to two semesters. Dr. Hein presents material in a spiral method of learning, introducing basic information about a topic, allowing the students to work on the problem and revisit the topic, as new information and skills are established. Written for prospective computer scientist, computer engineers, or applied mathematicians, who want to learn about the ideas that inspire computer science, this edition contains an extensive coverage of logic, setting it apart from similar books available in the field of Computer Science.

*A First Course in Logic* - Shawn Hedman

2004-07-08

The ability to reason and think in a logical manner forms the basis of learning for most mathematics, computer science, philosophy and logic students. Based on the author's teaching notes at the University of Maryland and aimed at a broad audience, this text covers the fundamental topics in classical logic in an extremely clear, thorough and accurate style that is accessible to all the above. Covering propositional logic, first-order logic, and second-order logic, as well as proof theory, computability theory, and model theory, the text also contains

numerous carefully graded exercises and is ideal for a first or refresher course.

**Discrete Mathematics for Computer Science -**

Gary Haggard 2005

Master the fundamentals of discrete mathematics with DISCRETE MATHEMATICS FOR COMPUTER SCIENCE with Student Solutions Manual CD-ROM! An increasing number of computer scientists from diverse areas are using discrete mathematical structures to explain concepts and problems and this mathematics text shows you how to express precise ideas in clear mathematical language. Through a wealth of

exercises and examples, you will learn how mastering discrete mathematics will help you develop important reasoning skills that will continue to be useful throughout your career.

**Modal Logic** - Patrick Blackburn 2002-08-22

This is an advanced 2001 textbook on modal logic, a field which caught the attention of computer scientists in the late 1970s.

Researchers in areas ranging from economics to computational linguistics have since realised its worth. The book is for novices and for more experienced readers, with two distinct tracks clearly signposted at the start of each chapter.

The development is mathematical; prior acquaintance with first-order logic and its semantics is assumed, and familiarity with the basic mathematical notions of set theory is required. The authors focus on the use of modal languages as tools to analyze the properties of relational structures, including their algorithmic and algebraic aspects, and applications to issues in logic and computer science such as completeness, computability and complexity are considered. Three appendices supply basic background information and numerous exercises are provided. Ideal for anyone wanting to learn



modern modal logic.

**Mathematics for Computer Science** - Eric Lehman

2017-03-08

This book covers elementary discrete mathematics for computer science and engineering. It emphasizes mathematical definitions and proofs as well as applicable methods. Topics include formal logic notation, proof methods; induction, well-ordering; sets, relations; elementary graph theory; integer congruences; asymptotic notation and growth of functions; permutations and combinations, counting principles; discrete probability. Further

selected topics may also be covered, such as recursive definition and structural induction; state machines and invariants; recurrences; generating functions.

**Logic And Discrete Mathematics: A Computer Science Perspective** - Grassmann 2007-09

*Discrete Structures, Logic, and Computability* -

James Hein 2010-10-25

Thoroughly updated, the new Third Edition of *Discrete Structures, Logic, and Computability* introduces beginning computer science and computer engineering students to the

fundamental techniques and ideas used by computer scientists today, focusing on topics from the fields of mathematics, logic, and computer science itself. Dr. Hein provides elementary introductions to those ideas and techniques that are necessary to understand and practice the art and science of computing. The text contains all the topics for discrete structures in the reports of the IEEE/ACM Joint Task Force on Computing Curricula for computer science programs and for computer engineering programs.

Mathematical Structures for Computer Science -  
Judith L. Gersting 2014-01-01

Judith Gersting's *Mathematical Structures for Computer Science* has long been acclaimed for its clear presentation of essential concepts and its exceptional range of applications relevant to computer science majors. Now with this new edition, it is the first discrete mathematics textbook revised to meet the proposed new ACM/IEEE standards for the course.

*Discrete Mathematics For Computer Scientists* -  
Stein Clifford 2010-09

*Mathematical Logic* - H.-D. Ebbinghaus  
2013-03-14

This introduction to first-order logic clearly works out the role of first-order logic in the foundations of mathematics, particularly the two basic questions of the range of the axiomatic method and of theorem-proving by machines. It covers several advanced topics not commonly treated in introductory texts, such as Fraïssé's characterization of elementary equivalence, Lindström's theorem on the maximality of first-order logic, and the fundamentals of logic programming.

**Discrete Structures, Logic, and Computability,**

**3/e - Hein 2010-07-01**

Written for the prospective computer scientist, computer engineer, or applied mathematician, *Discrete Structures, Logic, and Computability*, Third Edition provides elementary introductions to those ideas and techniques that are necessary to understand and practice the art and science of computing. The text contains all the topics for discrete structures highlighted in the reports put forth by the IEEE/ACM Joint Task Force on Computing Curricula for both computer science and computer engineering programs. The author supports a spiral method of learning by introducing the basics of a given topic and then

revisiting the topic whenever new skills or knowledge about the topic are needed to solve problems. This approach allows students to master key material and maximizes their problem-solving ability.

**Computability and Logic** - George S. Boolos  
2007-09-17

This fifth edition of 'Computability and Logic' covers not just the staple topics of an intermediate logic course such as Godel's incompleteness theorems, but also optional topics that include Turing's theory of computability and Ramsey's theorem.

Computable Structure Theory - Antonio Montalbán  
2021-06-24

Presents main results and techniques in computable structure theory together in a coherent framework for the first time in 20 years.

**Mathematics and Computation** - Avi Wigderson  
2019-10-29

An introduction to computational complexity theory, its connections and interactions with mathematics, and its central role in the natural and social sciences, technology, and philosophy  
Mathematics and Computation provides a broad, conceptual overview of computational complexity

theory—the mathematical study of efficient computation. With important practical applications to computer science and industry, computational complexity theory has evolved into a highly interdisciplinary field, with strong links to most mathematical areas and to a growing number of scientific endeavors. Avi Wigderson takes a sweeping survey of complexity theory, emphasizing the field's insights and challenges. He explains the ideas and motivations leading to key models, notions, and results. In particular, he looks at algorithms and complexity, computations and proofs, randomness and interaction, quantum

and arithmetic computation, and cryptography and learning, all as parts of a cohesive whole with numerous cross-influences. Wigderson illustrates the immense breadth of the field, its beauty and richness, and its diverse and growing interactions with other areas of mathematics. He ends with a comprehensive look at the theory of computation, its methodology and aspirations, and the unique and fundamental ways in which it has shaped and will further shape science, technology, and society. For further reading, an extensive bibliography is provided for all topics covered. Mathematics and Computation is useful for

undergraduate and graduate students in mathematics, computer science, and related fields, as well as researchers and teachers in these fields. Many parts require little background, and serve as an invitation to newcomers seeking an introduction to the theory of computation. Comprehensive coverage of computational complexity theory, and beyond High-level, intuitive exposition, which brings conceptual clarity to this central and dynamic scientific discipline Historical accounts of the evolution and motivations of central concepts and models A broad view of the theory of computation's influence on science,

technology, and society Extensive bibliography  
A Friendly Introduction to Mathematical Logic -  
Christopher C. Leary 2015

At the intersection of mathematics, computer science, and philosophy, mathematical logic examines the power and limitations of formal mathematical thinking. In this expansion of Leary's user-friendly 1st edition, readers with no previous study in the field are introduced to the basics of model theory, proof theory, and computability theory. The text is designed to be used either in an upper division undergraduate classroom, or for self study. Updating the 1st

Edition's treatment of languages, structures, and deductions, leading to rigorous proofs of Gödel's First and Second Incompleteness Theorems, the expanded 2nd Edition includes a new introduction to incompleteness through computability as well as solutions to selected exercises.

Computability in Analysis and Physics - Marian B. Pour-El 2017-03-02

The first graduate-level treatment of computable analysis within the tradition of classical mathematical reasoning.

Discrete Mathematical Structures with Applications to Computer Science - Jean-Paul

Tremblay 1987

**Introduction to Automata Theory, Formal Languages and Computation** - Shyamalendu Kandar

Formal languages and automata theory is the study of abstract machines and how these can be used for solving problems. The book has a simple and exhaustive approach to topics like automata theory, formal languages and theory of computation. These descriptions are followed by numerous relevant examples related to the topic.

A brief introductory chapter on compilers

explaining its relation to theory of computation is also given.

### **Logic and Discrete Mathematics - Willem**

Conradie 2015-04-16

A concise yet rigorous introduction to logic and discrete mathematics. This book features a unique combination of comprehensive coverage of logic with a solid exposition of the most important fields of discrete mathematics, presenting material that has been tested and refined by the authors in university courses taught over more than a decade. The chapters on logic - propositional and first-order - provide a robust

toolkit for logical reasoning, emphasizing the conceptual understanding of the language and the semantics of classical logic as well as practical applications through the easy to understand and use deductive systems of Semantic Tableaux and Resolution. The chapters on set theory, number theory, combinatorics and graph theory combine the necessary minimum of theory with numerous examples and selected applications. Written in a clear and reader-friendly style, each section ends with an extensive set of exercises, most of them provided with complete solutions which are available in the accompanying



solutions manual. Key Features: Suitable for a variety of courses for students in both Mathematics and Computer Science. Extensive, in-depth coverage of classical logic, combined with a solid exposition of a selection of the most important fields of discrete mathematics Concise, clear and uncluttered presentation with numerous examples. Covers some applications including cryptographic systems, discrete probability and network algorithms. Logic and Discrete Mathematics: A Concise Introduction is aimed mainly at undergraduate courses for students in mathematics and computer science, but the book

will also be a valuable resource for graduate modules and for self-study.

ADTs, Data Structures, and Problem Solving with C++ - Larry R. Nyhoff 2005

For the introductory Data Structures course (CS2) that follows a first course in programming. A presentation of essential principles and practices in data structures using C++. Reflecting trends in computer science, new and revised material in the Second Edition places increased emphasis on abstract data types (ADTs) and object-oriented design.

**A Short Course in Discrete Mathematics** - Edward

A. Bender 2005-01-01

What sort of mathematics do I need for computer science? In response to this frequently asked question, a pair of professors at the University of California at San Diego created this text. Its sources are two of the university's most basic courses: Discrete Mathematics, and Mathematics for Algorithm and System Analysis. Intended for use by sophomores in the first of a two-quarter sequence, the text assumes some familiarity with calculus. Topics include Boolean functions and computer arithmetic; logic; number theory and cryptography; sets and functions; equivalence and

order; and induction, sequences, and series.

Multiple choice questions for review appear throughout the text. Original 2005 edition.

Notation Index. Subject Index.

**Outlines and Highlights for Discrete Structures**

**Logic and Computability by Hein, Isbn - Cram101**

Textbook Reviews 2009-08

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: 9780763772062 .

**Discrete Mathematics with Applications -**  
Susanna S. Epp 2018-12-17

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 circuits and

computer 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.

**Computability Theory - S. Barry Cooper**  
2017-09-06

Computability theory originated with the seminal work of Gödel, Church, Turing, Kleene and Post in the 1930s. This theory includes a wide spectrum of topics, such as the theory of reducibilities and their degree structures, computably enumerable sets and their automorphisms, and subrecursive hierarchy classifications. Recent work in computability theory has focused on Turing definability and promises to have far-reaching mathematical, scientific, and philosophical consequences. Written by a leading researcher, *Computability Theory* provides a concise, comprehensive, and

authoritative introduction to contemporary computability theory, techniques, and results. The basic concepts and techniques of computability theory are placed in their historical, philosophical and logical context. This presentation is characterized by an unusual breadth of coverage and the inclusion of advanced topics not to be found elsewhere in the literature at this level. The book includes both the standard material for a first course in computability and more advanced looks at degree structures, forcing, priority methods, and determinacy. The final chapter explores a variety of computability applications to

mathematics and science. *Computability Theory* is an invaluable text, reference, and guide to the direction of current research in the field. Nowhere else will you find the techniques and results of this beautiful and basic subject brought alive in such an approachable and lively way.

**Computational Complexity** - Sanjeev Arora

2009-04-20

New and classical results in computational complexity, including interactive proofs, PCP, derandomization, and quantum computation. Ideal for graduate students.

*Computational Discrete Mathematics* - Helmut Alt

2003-06-30

This book is based on a graduate education program on computational discrete mathematics run for several years in Berlin, Germany, as a joint effort of theoretical computer scientists and mathematicians in order to support doctoral students and advanced ongoing education in the field of discrete mathematics and algorithmics.

The 12 selected lectures by leading researchers presented in this book provide recent research results and advanced topics in a coherent and consolidated way. Among the areas covered are combinatorics, graph theory, coding theory,

discrete and computational geometry,  
optimization, and algorithmic aspects of algebra.

The Logical Basis for Computer Programming:

Deductive reasoning - Zohar Manna 1985

Slicing the Truth - Denis R Hirschfeldt 2014-07-18

This book is a brief and focused introduction to the reverse mathematics and computability theory of combinatorial principles, an area of research which has seen a particular surge of activity in the last few years. It provides an overview of some fundamental ideas and techniques, and enough context to make it possible for students

with at least a basic knowledge of computability theory and proof theory to appreciate the exciting advances currently happening in the area, and perhaps make contributions of their own. It adopts a case-study approach, using the study of versions of Ramsey's Theorem (for colorings of tuples of natural numbers) and related principles as illustrations of various aspects of computability theoretic and reverse mathematical analysis. This book contains many exercises and open questions. Contents: Setting Off: An Introduction Gathering Our Tools: Basic Concepts and Notation Finding Our Path: König's Lemma

and Computability  
Gauging Our Strength: Reverse  
Mathematics  
In Defense of Disarray  
Achieving  
Consensus: Ramsey's Theorem  
Preserving Our  
Power: Conservativity  
Drawing a Map: Five  
Diagrams  
Exploring Our Surroundings: The World  
Below  
RT22  
Charging Ahead: Further  
Topics  
Lagniappe: A Proof of Liu's Theorem  
Readership: Graduates and researchers in  
mathematical logic. Key Features: This book  
assumes minimal background in mathematical  
logic and takes the reader all the way to current  
research in a highly active area  
It is the first  
detailed introduction to this particular approach to

this area of research  
The combination of fully  
worked out arguments and exercises make this  
book well suited to self-study by graduate  
students and other researchers unfamiliar with the  
area  
Keywords: Reverse  
Mathematics; Computability Theory; Computable  
Mathematics; Computable Combinatorics  
Computability and Randomness - André Nies  
2012-03-29  
The interplay between computability and  
randomness has been an active area of research  
in recent years, reflected by ample funding in the  
USA, numerous workshops, and publications on

the subject. The complexity and the randomness aspect of a set of natural numbers are closely related. Traditionally, computability theory is concerned with the complexity aspect. However, computability theoretic tools can also be used to introduce mathematical counterparts for the intuitive notion of randomness of a set. Recent research shows that, conversely, concepts and methods originating from randomness enrich computability theory. The book covers topics such as lowness and highness properties, Kolmogorov complexity, betting strategies and higher computability. Both the basics and recent

research results are described, providing a very readable introduction to the exciting interface of computability and randomness for graduates and researchers in computability theory, theoretical computer science, and measure theory.

**Discrete Mathematics** - James L. Hein 2003

Winner at the 46th Annual New England Book Show (2003) in the "College Covers & Jackets"

category This introduction to discrete mathematics prepares future computer scientists, engineers, and mathematicians for success by providing extensive and concentrated coverage of logic, functions, algorithmic analysis, and



algebraic structures. Discrete Mathematics, Second Edition illustrates the relationships between key concepts through its thematic organization and provides a seamless transition between subjects. Distinct for the depth with which it covers logic, this text emphasizes problem solving and the application of theory as it carefully guides the reader from basic to more complex topics. Discrete Mathematics is an ideal resource for discovering the fundamentals of discrete math. Discrete Mathematics, Second Edition is designed for an introductory course in discrete mathematics for the prospective

computer scientist, applied mathematician, or engineer who wants to learn how the ideas apply to computer sciences. The choice of topics-and the breadth of coverage-reflects the desire to provide students with the foundations needed to successfully complete courses at the upper division level in undergraduate computer science courses. This book differs in several ways from current books about discrete mathematics. It presents an elementary and unified introduction to a collection of topics that has not been available in a single source. A major feature of the book is the unification of the material so that it does not

fragment into a collection of seemingly unrelated ideas.

### **Automata and Computability - Ganesh**

Gopalakrishnan 2019-03-04

Automata and Computability is a class-tested textbook which provides a comprehensive and accessible introduction to the theory of automata and computation. The author uses illustrations, engaging examples, and historical remarks to make the material interesting and relevant for students. It incorporates modern/handy ideas, such as derivative-based parsing and a Lambda reducer showing the universality of Lambda

calculus. The book also shows how to sculpt automata by making the regular language conversion pipeline available through a simple command interface. A Jupyter notebook will accompany the book to feature code, YouTube videos, and other supplements to assist instructors and students. Features Uses illustrations, engaging examples, and historical remarks to make the material accessible. Incorporates modern/handy ideas, such as derivative-based parsing and a Lambda reducer showing the universality of Lambda calculus. Shows how to "sculpt" automata by making the

regular language conversion pipeline available through simple command interface Uses a mini functional programming (FP) notation consisting of lambdas, maps, filters, and set comprehension (supported in Python) to convey math through PL constructs that are succinct and resemble math Provides all concepts are encoded in a compact Functional Programming code that will tessellate with Latex markup and Jupyter widgets in a document that will accompany the books. Students can run code effortlessly [href="https://github.com/ganeshutah/Jove.git"](https://github.com/ganeshutah/Jove.git)here .

**Foundations of Algorithms** - Richard E. Neapolitan 2011  
**Data Structures & Theory of Computation**  
**Core Java SE 9 for the Impatient** - Cay S. Horstmann 2017-09-15  
**An Accessible Guide to the Java Language and Libraries** Modern Java introduces major enhancements that impact the core Java technologies and APIs at the heart of the Java platform. Many old Java idioms are no longer needed and new features such as modularization make you far more effective. However, navigating these changes can be challenging. Core Java®

SE 9 for the Impatient, Second Edition, is a complete yet concise guide that includes all the latest changes up to Java SE 9. Written by Cay S. Horstmann—author of the classic two-volume Core Java—this indispensable tutorial offers a faster, easier pathway for learning modern Java. Given Java SE 9’s size and the scope of its enhancements, there’s plenty to cover, but it’s presented in small chunks organized for quick access and easy understanding. Horstmann’s practical insights and sample code help you quickly take advantage of all that’s new, from Java SE 9’s long-awaited “Project Jigsaw”

module system to the improvements first introduced in Java SE 8, including lambda expressions and streams. Use modules to simplify the development of well-performing complex systems Migrate applications to work with the modularized Java API and third-party modules Test code as you create it with the new JShell Read-Eval-Print Loop (REPL) Use lambda expressions to express actions more concisely Streamline and optimize data management with today’s Streams API Leverage modern concurrent programming based on cooperating tasks Take advantage of a multitude of API improvements for

working with collections, input/output, regular expressions, and processes Whether you're just getting started with modern Java or you're an experienced developer, this guide will help you write tomorrow's most robust, efficient, and secure Java code. Register your product at [informit.com/register](http://informit.com/register) for convenient access to downloads, updates, and/or corrections as they become available.

*A Course in Mathematical Logic* - Yu.I. Manin

2013-06-29

1. This book is above all addressed to mathematicians. It is intended to be a textbook of

mathematical logic on a sophisticated level, presenting the reader with several of the most significant discoveries of the last ten or fifteen years. These include: the independence of the continuum hypothesis, the Diophantine nature of enumerable sets, the impossibility of finding an algorithmic solution for one or two old problems. All the necessary preliminary material, including predicate logic and the fundamentals of recursive function theory, is presented systematically and with complete proofs. We only assume that the reader is familiar with "naive" set theoretic arguments. In this book mathematical logic is

presented both as a part of mathematics and as the result of its self-perception. Thus, the substance of the book consists of difficult proofs of subtle theorems, and the spirit of the book consists of attempts to explain what these theorems say about the mathematical way of thought. Foundational problems are for the most part passed over in silence. Most likely, logic is capable of justifying mathematics to no greater extent than biology is capable of justifying life. 2. The first two chapters are devoted to predicate logic. The presentation here is fairly standard, except that semantics occupies a very dominant

position, truth is introduced before deducibility, and models of speech in formal languages precede the systematic study of syntax.

*Discrete Structures, Logic, and Computability -*

James L. Hein 2001

Discrete Structure, Logic, and Computability introduces the beginning computer science student to some of the fundamental ideas and techniques used by computer scientists today, focusing on discrete structures, logic, and computability. The emphasis is on the computational aspects, so that the reader can see how the concepts are actually used. Because of

logic's fundamental importance to computer science, the topic is examined extensively in

three phases that cover informal logic, the technique of inductive proof; and formal logic and its applications to computer science.