

Logic An Introduction To Elementary Wilfrid Hodges

An introductory 2001 textbook on probability and induction written by a foremost philosopher of science.

This volume offers a serious study of the fundamentals of symbolic logic that will neither frustrate nor bore the reader. The emphasis is on developing the students grasp of standard techniques and concepts rather than on achieving a high degree of sophistication. Coverage embraces all of the standard topics in sentential and quantificational logic, including multiple quantification, relations, and identity. Semantic and deductive topics are carefully distinguished, and appendices include an optional discussion of metatheory for sentential logic and truth trees.

Now much revised since its first appearance in 1941, this book, despite its brevity, is notable for its scope and rigor. It provides a single strand of simple techniques for the central business of modern logic. Basic formal concepts are explained, the paraphrasing of words into symbols is treated at some length, and a testing procedure is given for truth-function logic along with a complete proof procedure for the logic of quantifiers. Fully one third of this revised edition is new, and presents a nearly complete turnover in crucial techniques of testing and proving, some change of notation, and some updating of terminology. The study is intended primarily as a convenient encapsulation of minimum essentials, but concludes by giving brief glimpses of further matters.

If a man supports Arsenal one day and Spurs the next then he is fickle but not necessarily illogical. From this starting point, and assuming no previous knowledge of logic, Wilfrid Hodges takes the reader through the whole gamut of logical expressions in a simple and lively way. Readers who are more mathematically adventurous will find optional sections introducing rather more challenging material. 'A lively and stimulating book' Philosophy

This lucid, non-intimidating presentation by a Russian scholar explores propositional logic, propositional calculus, and predicate logic. Topics include computer science and systems analysis, linguistics, and problems in the foundations of mathematics. Accessible to high school students, it also constitutes a valuable review of fundamentals for professionals. 1970 edition.

A concise introduction to logic that teaches you not only how reasoning works, but why it works How Logic Works is an introductory logic textbook that is different by design. Rather than teaching elementary symbolic logic as an abstract or rote mathematical exercise divorced from ordinary thinking, Hans Halvorson presents it as the skill of clear and rigorous reasoning, which is essential in all fields and walks of life, from the sciences to the humanities—anywhere that making good arguments, and spotting bad ones, is critical to success. Instead of teaching how to apply algorithms using “truth trees,” as in the vast majority of logic textbooks, How Logic Works builds on and reinforces the innate human skills of making and evaluating arguments. It does this by introducing the methods of natural deduction, an approach that teaches students not only how to carry out a proof and solve a problem but also what the principles of valid reasoning are and how they can be applied to any subject. The book also allows students to transition smoothly to more advanced topics in logic by teaching them general techniques that apply to more complicated scenarios, such as how to formulate theories about specific subject matter. How Logic Works shows that formal logic—far from being only for mathematicians or a diversion from the really deep questions of philosophy and human life—is the best account we have of what it means to be rational. By teaching logic in a way that makes students aware of how they already use it, the book will help them to become even better thinkers. Offers a concise, readable, and user-friendly introduction to elementary symbolic logic that primarily uses natural deduction rather than algorithmic “truth trees” Draws on more than two decades’ experience teaching introductory logic to undergraduates Provides a stepping stone to more advanced topics

Table of contents

Part I of this coherent, well-organized text deals with formal principles of inference and definition. Part II explores elementary intuitive set theory, with separate chapters on sets, relations, and functions. Ideal for undergraduates.

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Modern Logic fills the strong need for a highly accessible, carefully structured introductory text in symbolic logic. The natural deduction system Forbes uses will be easy for students to understand, and the material is carefully structured, with graded exercises at the end of each section, selected answers to which are provided at the back of the book. The book's emphasis is on giving the student a thorough understanding of the concepts rather than just a facility with formal procedures.

Clear, comprehensive, and rigorous treatment develops the subject from elementary concepts to the construction and analysis of relatively complex logical languages. Hundreds of problems, examples, and exercises. 1958 edition.

Introductory logic is generally taught as a straightforward technical discipline. In this book, John MacFarlane helps the reader think about the limitations of, presuppositions of, and alternatives to classical first-order predicate logic, making this an ideal introduction to philosophical logic for any student who already has completed an introductory logic course. The book explores the following questions. Are there quantificational idioms that cannot be expressed with the familiar universal and existential quantifiers? How can logic be extended to capture modal notions like necessity and obligation? Does the material conditional adequately capture the meaning of 'if'—and if not, what are the alternatives? Should logical consequence be understood in terms of models or in terms of proofs? Can one intelligibly question the validity of basic logical principles like Modus Ponens or Double Negation Elimination? Is the fact that classical logic validates the inference from a contradiction to anything a flaw, and if so, how can logic be modified to repair it? How, exactly, is logic related to reasoning? Must classical logic be revised in order to be applied to vague language, and if so how? Each chapter is organized around suggested readings and includes exercises designed to deepen the reader's understanding. Key Features: An integrated treatment of the technical and philosophical issues comprising philosophical logic Designed to serve students taking only one course in logic beyond the introductory level Provides tools and concepts necessary to understand work in many areas of analytic philosophy Includes exercises, suggested readings,

and suggestions for further exploration in each chapter

This comprehensive overview of mathematical logic is designed primarily for advanced undergraduates and graduate students of mathematics. The treatment also contains much of interest to advanced students in computer science and philosophy. Topics include propositional logic; first-order languages and logic; incompleteness, undecidability, and indefinability; recursive functions; computability; and Hilbert's Tenth Problem. Reprint of the PWS Publishing Company, Boston, 1995 edition.

A Mathematical Introduction to Logic, Second Edition, offers increased flexibility with topic coverage, allowing for choice in how to utilize the textbook in a course. The author has made this edition more accessible to better meet the needs of today's undergraduate mathematics and philosophy students. It is intended for the reader who has not studied logic previously, but who has some experience in mathematical reasoning. Material is presented on computer science issues such as computational complexity and database queries, with additional coverage of introductory material such as sets. * Increased flexibility of the text, allowing instructors more choice in how they use the textbook in courses. * Reduced mathematical rigour to fit the needs of undergraduate students

Designed for students with no prior training in logic, INTRODUCTION TO LOGIC AND CRITICAL THINKING offers an accessible treatment of logic that enhances understanding of reasoning in everyday life. The text begins with an introduction to arguments. After some linguistic preliminaries, the text presents a detailed analysis of inductive reasoning and associated fallacies. This order of presentation helps to motivate the use of formal methods in the subsequent sections on deductive logic and fallacies. Lively and straightforward prose assists students in gaining facility with the sometimes challenging concepts of logic. By combining a sensitive treatment of ordinary language arguments with a simple but rigorous exposition of basic principles of logic, the text develops students' understanding of the relationships between logic and language, and strengthens their skills in critical thinking. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

"This accessible, applications-related introductory treatment explores some of the structure of modern symbolic logic useful in the exposition of elementary mathematics. Topics include axiomatic structure and the relation of theory to interpretation. No prior training in logic is necessary, and numerous examples and exercises aid in the mastery of the language of logic. 1959 edition"--

Logic, Sets, and Numbers is a brief introduction to abstract mathematics that is meant to familiarize the reader with the formal and conceptual rigor that higher-level undergraduate and graduate textbooks commonly employ. Beginning with formal logic and a fairly extensive discussion of concise formulations of mathematical statements, the text moves on to cover general patterns of proofs, elementary set theory, mathematical induction, cardinality, as well as, in the final chapter, the creation of the various number systems from the integers up to the complex numbers. On the whole, the book's intent is not only to reveal the nature of mathematical abstraction, but also its inherent beauty and purity.

Logic is often perceived as having little to do with the rest of philosophy, and even less to do with real life. Graham Priest explores the philosophical roots of the subject, explaining how modern formal logic addresses many issues.

Traditionally, developmental psychology has its focus on individuals. Developmentalists aim to describe regularities in individuals' change and development across time, to explain the processes and mechanisms that are involved in producing change and regularity, and eventually, to design strategies for optimization and modification of developmental pathways. Although the role of contexts has always been of central concern for these purposes, it is nevertheless quite surprising to note that compared to the effort devoted to individuals, relatively little attention has been paid to the study of the nature and organization of their contexts. This volume is an exploration of the idea that how we describe and explain human development will be closely tied to our understanding of what contexts are, how individuals and contexts become influential for one another, what contexts do to and with individuals, and how contexts and their influences change themselves across time. A major theme is whether the traditional dichotomy between individuals and their contexts may be artificial, perhaps culturally biased, and after psychologists have adhered to it for about a century, may have become an impediment to increasing our understanding of developmental processes. With this volume, the editors contribute a serious consideration of development and systematic change to emerging models of person-context relations, and provide suggestions about how it may be possible to incorporate these notions in developmental research and theorizing.

Originally published in 1966. This is a self-instructional course intended for first-year university students who have not had previous acquaintance with Logic. The book deals with "propositional" logic by the truth-table method, briefly introducing axiomatic procedures, and proceeds to the theory of the syllogism, the logic of one-place predicates, and elementary parts of the logic of many-place predicates. Revision material is provided covering the main parts of the course. The course represents from eight to twenty hours work, depending on the student's speed of work and on whether optional chapters are taken.

Elementary Logic explains what logic is, how it is done, and why it can be exciting. The book covers the central part of logic that all students have to learn: propositional logic. It aims to provide a crystal-clear introduction to what is often regarded as the most technically difficult area in philosophy. The book opens with an explanation of what logic is and how it is constructed. Subsequent chapters take the reader step-by-step through all aspects of elementary logic. Throughout, ideas are explained simply and directly, with the chapters packed with overviews, illustrative examples, and summaries. Each chapter builds on previous explanation and example, with the final chapters presenting more advanced methods. After a discussion of meta-logic and logical systems, the book closes with an exploration of how paradoxes can exist in the world of logic. Elementary Logic's clarity and engagement make it ideal for any reader studying logic for the first time.

Language in Action demonstrates the viability of mathematical research into the foundations of categorial grammar, a topic at the border between logic and linguistics. Since its initial

publication it has become the classic work in the foundations of categorial grammar. A new introduction to this paperback edition updates the open research problems and records relevant results through pointers to the literature. Van Benthem presents the categorial processing of syntax and semantics as a central component in a more general dynamic logic of information flow, in tune with computational developments in artificial intelligence and cognitive science. Using the paradigm of categorial grammar, he describes the substructural logics driving the dynamics of natural language syntax and semantics. This is a general type-theoretic approach that lends itself easily to proof-theoretic and semantic studies in tandem with standard logic. The emphasis is on a broad landscape of substructural categorial logics and their proof-theoretical and semantic peculiarities. This provides a systematic theory for natural language understanding, admitting of significant mathematical results. Moreover, the theory makes possible dynamic interpretations that view natural languages as programming formalisms for various cognitive activities.

The methods of logic are essential to an understanding of philosophy and are crucial in the study of mathematics, computing, linguistics and many other subjects. Introducing the major concepts and techniques involved in the study of logic, this authoritative book explores both formal and philosophical logic, and the ways in which we can achieve good reasoning. Individual chapters include: * Propositions and Arguments * Truth Tables * Trees * Conditionality * Natural Deduction * Predicates, Names and Quantifiers * Definite Descriptions. This exceptionally clear introduction to the subject is ideally suited to students taking introductory courses in logic.

This is a compact introduction to some of the principal topics of mathematical logic. In the belief that beginners should be exposed to the most natural and easiest proofs, I have used free-swinging set-theoretic methods. The significance of a demand for constructive proofs can be evaluated only after a certain amount of experience with mathematical logic has been obtained. If we are to be expelled from "Cantor's paradise" (as nonconstructive set theory was called by Hilbert), at least we should know what we are missing. The major changes in this new edition are the following. (1) In Chapter 5, Effective Computability, Turing-computability is now the central notion, and diagrams (flow-charts) are used to construct Turing machines. There are also treatments of Markov algorithms, Herbrand-Gödel-computability, register machines, and random access machines. Recursion theory is gone into a little more deeply, including the s-m-n theorem, the recursion theorem, and Rice's Theorem. (2) The proofs of the Incompleteness Theorems are now based upon the Diagonalization Lemma. Löb's Theorem and its connection with Gödel's Second Theorem are also studied. (3) In Chapter 2, Quantification Theory, Henkin's proof of the completeness theorem has been postponed until the reader has gained more experience in proof techniques. The exposition of the proof itself has been improved by breaking it down into smaller pieces and using the notion of a scapegoat theory. There is also an entirely new section on semantic trees.

Introduction to Logic combines likely the broadest scope of any logic textbook available with clear, concise writing and interesting examples and arguments. Its key features, all retained in the Second Edition, include: • simpler ways to test arguments than those available in competing textbooks, including the star test for syllogisms • a wide scope of materials, making it suitable for introductory logic courses (as the primary text) or intermediate classes (as the primary or supplementary book) • engaging and easy-to-understand examples and arguments, drawn from everyday life as well as from the great philosophers • a suitability for self-study and for preparation for standardized tests, like the LSAT • a reasonable price (a third of the cost of many competitors) • exercises that correspond to the LogiCola program, which may be downloaded for free from the web. This Second Edition also: • arranges chapters in a more useful way for students, starting with the easiest material and then gradually increasing in difficulty • provides an even broader scope with new chapters on the history of logic, deviant logic, and the philosophy of logic • expands the section on informal fallacies • includes a more exhaustive index and a new appendix on suggested further readings • updates the LogiCola instructional program, which is now more visually attractive as well as easier to download, install, update, and use.

"For all x is an introduction to sentential logic and first-order predicate logic with identity, logical systems that significantly influenced twentieth-century analytic philosophy. After working through the material in this book, a student should be able to understand most quantified expressions that arise in their philosophical reading. This book treats symbolization, formal semantics, and proof theory for each language. The discussion of formal semantics is more direct than in many introductory texts. Although for all x does not contain proofs of soundness and completeness, it lays the groundwork for understanding why these are things that need to be proven. Throughout the book, I have tried to highlight the choices involved in developing sentential and predicate logic. Students should realize that these two are not the only possible formal languages. In translating to a formal language, we simplify and profit in clarity. The simplification comes at a cost, and different formal languages are suited to translating different parts of natural language. The book is designed to provide a semester's worth of material for an introductory college course. It would be possible to use the book only for sentential logic, by skipping chapters 4-5 and parts of chapter 6"--Open Textbook Library.

Logic Penguin UK

Logic is primarily about consistency - but not all types of consistency. For example if a man supports Arsenal one day and supports Spurs the next then he is fickle, but not necessarily illogical. The type of consistency which concerns logicians is not loyalty or justice or sincerity but compatibility of beliefs. Logic, therefore, involves studying the situations in which a sentence is true or valid and subsequently the rules which determine the validity or otherwise of a given argument.

Introduces students to non-classical logic, syllogistic, to quantificational and modal logic. The book includes exercises throughout and a glossary of terms and symbols.

A basic introduction to the subject which addresses questions of truth and meaning, providing a basis for much of what is discussed elsewhere in philosophy. Up-to-date and comprehensive.

Famous classic has introduced countless readers to symbolic logic with its thorough and precise exposition. Starts with simple symbols and conventions and concludes with the Boole-Schroeder and Russell-Whitehead systems. No special knowledge of mathematics necessary. "One of the clearest and simplest introductions to a subject which is very much alive." — Mathematics Gazette.

"One of the most careful and intensive among the introductory texts that can be used with a wide range of students. It builds remarkably sophisticated technical skills, a good sense of the nature of a formal system, and a solid and extensive background for more advanced work in logic. . . . The emphasis throughout is on natural deduction derivations, and the text's deductive systems are its greatest strength.

Lemmon's unusual procedure of presenting derivations before truth tables is very effective." --Sarah Stebbins, The Journal of Symbolic Logic

The present text book is intended as an introduction to elementary logic. Its content, structure, and manner have been determined in large measure - perhaps 'caused' is the better word- by certain desiderata about which the reader should be informed at the outset. The leading idea is that even an introductory treatment of logic may profitably be fashioned around a rigorous framework.

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 Godel'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.

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