An Introduction to Formal Logic: Peter Smith 2020

Forall X: P. D. Magnus 2018-07-25 *Forall 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 forall 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 Matters: P. T. Geach 1980-04-30 "This is a significant and often rather demanding collection of essays. It is an anthology pulling together the uncollected works of an important twentieth-century philosopher. Many of the articles treat one or another of the more important issues considered by analytic philosophers during the last quarter-century. Of significant importance to philosophers interested in researching the many topics contained in Logic Matters is the inclusion in this anthology of a rather extensive eight-page name-topic index. ..."—Thomist "The papers are arranged by topic: Historical Essays, Traditional Logic, Theory of Reference and Syntax, Intentionality, Quotation and Semantics, Set Theory, Identity Theory, Assertion, Imperatives and Practical Reasoning, Logic in Metaphysics and Theology. The broad range of issues that have engaged Geach’s complex and systematic reasoning is impressive. In addition to classical logic, topics in ethics, ontology, and even the logic of religious dogmas are tackled ... the work in this collection is more brilliant and ingenious than it is difficult and demanding."—Philosophy of Science "Geach displays his mastery of applying logical techniques and concepts to philosophical questions. Compared with most works in philosophical logic this book is remarkable for its range of topics. Plato, Aristotle, Aquinas, Russell, Wittgenstein, and Quine all figure prominently. Geach’s style is remarkably lively considering the rightly argued matter. Although some of the articles treat rather technical questions in mathematical logic, most are accessible to philosophers with modest backgrounds in logic." —Choice

An Introduction to Symbolic Logic: Langer 1967-01-01 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.

Formal Logic: Paul A. Gregory 2017-04-30 Formal Logic is an undergraduate text suitable for introductory, intermediate, and advanced courses in symbolic logic. The book’s nine chapters offer thorough coverage of truth-functional and quantificational logic, as well as the basics of more advanced topics such as set theory and modal logic. Complex ideas are explained in plain language that doesn’t presuppose any background in logic or mathematics, and derivation strategies are illustrated with numerous examples. Translations, tables, trees, natural deduction, and simple meta-proofs are taught through over 400 exercises. A companion website offers supplemental practice software and tutorial videos.

Traditional Logic 1: Martin Cothran 2000-01-01

Logic Works: Lorne Falkenstein 2021-09 "Logic Works is a critical and extensive introduction to logic. It asks questions about why systems of logic are as they are, how they relate to ordinary language and ordinary reasoning, and what alternatives there might be to classical logical doctrines. The book covers classical first order logic and alternatives, including intuitionistic, free, and many-valued logic. It also considers how logical analysis can be applied to carefully represent the reasoning employed in academic and scientific work, better understand that reasoning, and identify its hidden premises. Aiming to be as much a reference work and handbook for further, independent study as a course text, it covers more material than is typically covered in an introductory course. It also covers this material at greater length and in more depth with the purpose of making it accessible to those with no prior training in logic or formal systems. A companion website contains a detailed student solutions manual with a running commentary on all starred exercises and a set of editable slides for instructors to customize their courses"—

Introduction to Formal Logic: Russell Marcus 2018 Rigorous yet intuitive and accessible, Introduction to Formal Logic provides a focused, “nuts-and-bolts” introduction to formal deductive logic that covers syntax, semantics, translation, and natural deduction for propositional and predicate logics. For instructors who want to go beyond a basic introduction to explore the connection between formal logic techniques and philosophy, Oxford also publishes Introduction to Formal Logic with Philosophical Applications, an extended version of this text that incorporates two chapters of stand-alone essays on logic and its application in philosophy and beyond.

The Languages of Logic: Samuel D. Guttenplan 1986 “With the same intellectual goals as the first edition, this innovative introductory logic textbook explores the relationship between natural language and logic, motivating the student to acquire skills and techniques of formal logic. This new and revised edition includes substantial additions which make the text even more useful to students and instructors alike. Central to these changes is an Appendix, ‘How to Learn Logic’, which takes the student through fourteen compact and sharply directed lessons with exercises and answers"—Google books viewed Feb. 19, 2021.

An Concise Introduction to Logic: Craig DeLancey 2017-02-06

An Invitation to Formal Reasoning: Fred Sommers 2017-03-02 An Invitation to Formal Reasoning introduces the discipline of formal logic by means of a powerful new system formulated by Fred Sommers. This system, term logic, is different in a number of ways from the standard system employed in modern logic; most striking is its greater simplicity and naturalness. Based on a radically different theory of logical syntax than the one Frege used when initiating modern mathematical logic in the 19th Century, term logic borrows insights from Aristotle's syllogistic, Scholastic logicians, Leibniz, and the 19th century British algebraists. Term logic takes its syntax directly from natural language, construing statements as combinations of pairs of terms, where complex terms are taken to have the same syntax as statements. Whereas standard logic requires extensive...
Formal Logic—Paul Hoyningen-Huene 2004-08-15 Many texts on logic are written with a mathematical emphasis, and focus primarily on the development of a formal apparatus and associated techniques. In other, more philosophical texts, the topic is often presented as an indulgent collection of musings on issues for which technical solutions have long since been devised. What has been missing until now is an attempt to unite the motives underlying both approaches. Paul Hoyningen-Huene’s Formal Logic seeks to find a balance between the necessity of formal considerations and the importance of full reflection and explanation about the seemingly arbitrary steps that occasionally confound even the most serious student of logic. Alex Levine’s artful translation conveys both the content and style of the German edition. Filled with example exercises, and a straightforward look at some of the most common problems in teaching the subject, this work is eminently suitable for the classroom.

Simple Formal Logic—Arnold van der Nat 2010-03-05 Perfect for students with no background in logic or philosophy, Simple Formal Logic provides a full system of logic adequate to handle everyday and philosophical reasoning. By keeping out artificial techniques that aren’t natural to our everyday thinking process, Simple Formal Logic trains students to think through formal logical arguments for themselves, ingraining in them the habits of sound reasoning. Simple Formal Logic features: a companion website with abundant exercise worksheets, study supplements (including flashcards for symbolizations and for deduction rules), and instructor’s manual two levels of exercises for beginning and more advanced students a glossary of terms, abbreviations and symbols. This book arose out of a popular course that the author has taught to all types of undergraduate and graduate studentsof mathematics. The treatmentalso contains much of interest to those 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, 1995Edition.

An Introduction to Formal Logic—Richard L. Epstein 2020-07-03 A book that makes sense of formal logic. Each step in the development of the formal system is clearly motivated, with the relationship of formal logic to ordinary reasoning central. Hundreds of examples of formalizing based on criteria for what counts as a good formalization. More than 500 exercises with answers.

An Introduction to Formal Logic and Metaphysics—Boyle Gibson Professor of Philosophy Graham Priest 2000-10-12 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.

The History of Philosophical and Formal Logic—Alex Malpass 2017-06-29 The History of Philosophical and Formal Logic introduces ideas and thinkers central to the development of philosophical and formal logic. From its Aristotelian origins to the present-day arguments, logic is broken down into four main time periods: Antiquity and the Middle Ages (Aristotle and the Stoics) The early modern period (Bolzano, Boole) High modern period (Frege, Peano & Russell and Hilbert) Early 20th century (Godel and Tarski) Each new time frame begins with an introductory overview highlighting themes and points of importance. Chapters discuss the significance and reception of influential works and look at historical arguments in the context of contemporary debates. To support independent study, comprehensive lists of primary and secondary reading are included at the end of chapters, along with exercises and discussion questions. By clearly presenting and explaining the changes to logic across the history of philosophy, The History of Philosophical and Formal Logic constructs an easy-to-follow narrative. This is an ideal starting point for students looking to understand the historical development of logic.

Symbolic Logic—David W. Agler 2012-12-13 Brimming with visual examples of concepts, derivation rules, and proof strategies, this introductory text is ideal for students with no previous experience in logic. Students will learn translation both from formal language into English and from English into formal language; how to use truth trees and truth tables to test propositions for logical properties; and how to construct and strategically use derivation rules in proofs.


Logic: A Very Short Introduction—Boyce Gibson Professor of Philosophy Graham Priest 2000-10-12 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.

The Elements of Formal Logic—G. E. Hughes 1965. This is a textbook of modern deductive logic, designed for beginners but leading further into the heart of the subject than most other books of the kind. The fields covered are the Propositional Calculus, the more elementary parts of the Predicate Calculus, and Syllogistic Logic treated from a modern point of view. In each of the systems discussed the main emphases are on Decision Procedures and Axiomatization, and the material is presented with as much formal rigour as is compatible with clarity of exposition. The techniques used are not only described but given a theoretical justification. Proofs of Consistency, Completeness and Independence are set out in detail. The fundamental characteristics of the various systems studies, and their relations to each other are established by meta-logical proofs, which are used freely in all sections of the book. Exercises are appended to most of the chapters, and answers are provided.

The Traditional Formal Logic—Taylor & Francis Group 2021-03-31 Originally published in 1937. A short account of the traditional logic,
intended to provide the student with the fundamentals necessary for the specialized study. Suitable for working through individually, it will provide sufficient knowledge of the elements of the subject to understand materials on more advanced and specialized topics. This is an interesting historic perspective on this area of philosophy and mathematics.

Meaning and Argument-Ernest Lepore 2012-09-14 Meaning and Argument is a popular introduction to philosophy of logic and philosophy of language. Offers a distinctive philosophical, rather than mathematical, approach to logic. Concentrates on symbolization and works out all the technical logic with truth tables instead of derivations Incorporates the insights of half a century’s work in philosophy and linguistics on anaphora by Peter Geach, Gareth Evans, Hans Kamp, and Irene Heim among others. Contains numerous exercises and a corresponding answer key. An extensive appendix allows readers to explore subjects that go beyond what is usually covered in an introductory logic course. Updated edition includes over a dozen new problem sets and revisions throughout. Features an accompanying website at http://ruccs.rutgers.edu/~logic/MeaningArgument.html

Introduction to Logic and Critical Thinking-Merrilee H. Salmon 2012-01-01 Designed for students with no prior training in logic, INTRODUCTION TO LOGIC AND CRITICAL THINKING offers an accessible treatment of logic that is divorced from 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.


How Logic Works-Hans Halvorson 2020-09-01 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. 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.

The Discovery of Deduction-Joelle Hodge 2010-03 Provides an introduction to formal, deductive logic using Socratic dialogue and discussion.

A Friendly Introduction to Mathematical Logic-Christopher 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 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.

Introduction to Languages, Machines and Logic-Alan P. Parkes 2002-04-26 A well-written and accessible introduction to the most important features of formal languages and automata theory. It focuses on the key concepts, illustrating potentially intimidating material through diagrams and pictorial representations, and this edition includes new and expanded coverage of topics such as: reduction and simplification of material on Turing machines; complexity and G notation; propositional logic and first order predicate logic. Aimed primarily at computer scientists rather than mathematicians, algorithms and proofs are presented informally through examples, and there are numerous exercises (many with solutions) and an extensive glossary.

Systems of Formal Logic-J.H. Hackstaff 2012-12-06 The present work constitutes an effort to approach the subject of symbolic logic at the elementary to intermediate level in a novel way. The book is a study of a number of systems, their methods, their rela tions, their differences. In pursuit of this goal, a chapter explaining basic concepts of modern logic together with the truth-table techniques of definition and proof is first set out. In Chapter 2 a kind of ur-logic is built up and deductions are made on the basis of its axioms and rules. This axiom system, resembling a propositional system of Hilbert and Bernays, is called P+, since it is a positive logic, i.e., a logic devoid of nega tion. This system serves as a basis upon which a variety of further sys tems are constructed, including, among others, a full classical propositional calculus, an intuitionistic system, a minimum propositional calculus, a system equivalent to that of F. B. Fitch (Chapters 3 and 6). These are developed as axiomatic systems. By means of adding independent axioms to the basic system P+, the notions of independence both for primitive functors and for axiom sets are discussed, the axiom sets for a number of such systems, e.g., Frege’s propositional calculus, being shown to be non-independent. Equivalence and non-equivalence of systems are discussed in the same context. The deduction theorem is proved in Chapter 3 for all the axiomatic propositional calculi in the book.
Introduction to Logic - Michael Genesereth 2016-11-07
This book is a gentle but rigorous introduction to Formal Logic. It is intended primarily for use at the college level. However, it can also be used for advanced secondary school students, and it can be used at the start of graduate school for those who have not yet seen the material. The approach to teaching logic used here emerged from more than 20 years of teaching logic to students at Stanford University and from teaching logic to tens of thousands of others via online courses on the World Wide Web. The approach differs from that taken by other books in logic in two essential ways, one having to do with content, the other with form. Like many other books on logic, this one covers logical syntax and semantics and proof theory plus induction. However, unlike other books, this book begins with Herbrand semantics rather than the more traditional Tarskian semantics. This approach makes the material considerably easier for students to understand and leaves them with a deeper understanding of what logic is all about. In addition to this text, there are online exercises (with automated grading), online logic tools and applications, online videos of lectures, and an online forum for discussion. They are available at http://intrologic.stanford.edu/

Formal Logic - P. Lorenzen 2013-03-09
"Logic", one of the central words in Western intellectual history, compre hends in its meaning such diverse things as the Aristotelian syllogistic, the scholastic art of disputation, the transcendental logic of the Kantian critique, the dialectical logic of Hegel, and the mathematical logic of the Principia Mathematica of Whitehead and Russell. The term "Formal Logic", following Kant is generally used to distinguish formal logical reasonings, precisely as formal, from the remaining universal truths based on reason. (Cf. SCHOLZ, 1931). A textbook example of a formal-logical inference which from "Some men are philosophers" and "All philosophers are wise" concludes that "Some men are wise" is called formal, because the validity of this inference depends only on the form of the given sentences - in particular it does not depend on the truth or falsity of these sentences. (On the dependence of logic on natural language, English, for example, compare Section 1 and 8). The form of a sentence like "Some men are philosophers", is that which remains preserved when the given predicates, here "men" and "philosophers" are replaced by arbitrary ones. The form itself can thus be represented by replacing the given predicates by variables. Variables are signs devoid of meaning, which may serve merely to indicate the place where meaningful constants (here the predicates) are to be inserted. As variables we shall use - as did Aristotle - letters, say P, Q and R, as variables for predicates.