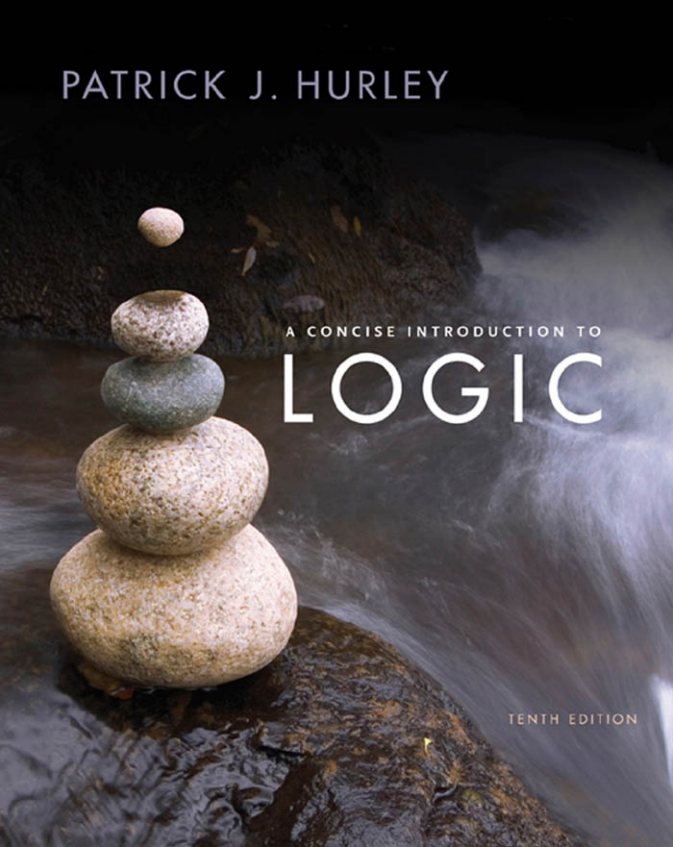


PATRICK J. HURLEY



A CONCISE INTRODUCTION TO  
**LOGIC**

TENTH EDITION



# **A Concise Introduction to Logic**

**TENTH EDITION**

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# A Concise Introduction to Logic

TENTH EDITION

Patrick J. Hurley

University of San Diego

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*To the memory of my  
brother Stephen*

*It is wrong always, everywhere, and for anyone,  
to believe anything upon insufficient evidence.*

W. K. CLIFFORD

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## Preface

The most immediate benefit derived from the study of logic is the skill needed to construct sound arguments of one's own and to evaluate the arguments of others. In accomplishing this goal, logic instills a sensitivity for the formal component in language, a thorough command of which is indispensable to clear, effective, and meaningful communication. On a broader scale, by focusing attention on the requirement for reasons or evidence to support our views, logic provides a fundamental defense against the prejudiced and uncivilized attitudes that threaten the foundations of our democratic society. Finally, through its attention to inconsistency as a fatal flaw in any theory or point of view, logic proves a useful device in disclosing ill-conceived policies in the political sphere and, ultimately, in distinguishing the rational from the irrational, the sane from the insane.

To realize the benefits offered by the study of logic, one must thoroughly understand the central concepts of the subject and be able to apply them in actual situations. To promote the achievement of these goals, this text presents the central concepts of logic clearly and simply. Examples are used extensively, key terms are introduced in boldface type and defined in the glossary/index, and major points are illustrated in graphic boxes. Furthermore, to ensure sufficient practice in applying the basic principles, the book includes over 2,000 exercises selected to illustrate the main points and guard against the most typical mistakes. In most cases, every third exercise is answered in the back of the book.

### New to This Edition

- In this Tenth Edition, the coverage of **Inductive Logic** in Part III has been broken up into six separate chapters to allow for greater flexibility in using the text in class. This change also facilitates customization through our Custom program, which lets you select course materials to create an affordable text that matches your syllabus. For more information, visit [www.thomsoncustom.com/makeityours/hurley10e](http://www.thomsoncustom.com/makeityours/hurley10e).
- Also new in this edition, thirteen pages devoted to “**Eminent Logicians**” highlight the contributions of key logicians in history. The inclusion of these features should help to humanize logic and make it more interesting by connecting it with historical figures who devoted much of their lives to advancing the science of logic.

- 
- A new method for testing sorites has been introduced into **Section 5.7**. This method, which resembles the rules method for syllogisms, is often simpler to apply because it does not require that intermediate conclusions be drawn.
  - In **Section 8.6** the restriction on universal generalization for arguments involving relational predicates and overlapping quantifiers has been replaced by a slightly stricter version. To my considerable surprise, a very good logician came up with an invalid argument that got past the earlier formulation of this restriction.
  - Also, in **Chapter 14** (formerly Section 9.6) more treatment is accorded Ockham's razor in connection with explanations.
  - The “**Logic and Graduate-Level Admissions Tests**” appendix, which draws a connection between logic and earning a good score on tests such as the LSAT, GMAT, and MCAT, has been completely rewritten and expanded, paying greater attention to logical strategies.
  - Beginning with this edition, the *Learning Logic* program is available online at **ThomsonNOW™** ([www.thomsonedu.com/ThomsonNOW](http://www.thomsonedu.com/ThomsonNOW)). As a result, the CD-ROM containing that program has been removed from the book, but it is available as a bundled item at no additional cost, and separately at minimal cost. *Learning Logic* is a multimedia program that vastly simplifies the teaching of logic, allowing classroom time to be spent on troubleshooting and special interests.
  - Two new multimedia offerings are available with this edition. Audio files that help students comprehend and retain the central concepts of logic, and that can be used as a final preparation before taking an exam, are available as mp3 files. They can be purchased and downloaded at [www.iChapters.com](http://www.iChapters.com). Video clips will be available through **ThomsonNOW** (formerly **iLrn**), as well as on the multimedia manager. These clips cover topics that students often find difficult, such as the concept of validity, conversion, obversion, and contraposition, indirect truth tables, and natural deduction. Each video is devoted to a brief lecture on one of these topics, together with pointers on how to work the exercises at the end of the pertinent section.
  - In addition, numerous smaller changes have been introduced throughout the book. A list of the more significant ones can be found in the instructor's manual.

### Note to the Student

Imagine that you are interviewing for a job. The person across the desk asks about your strengths, and you reply that you are energetic, enthusiastic, and willing to work long hours. Also, you are creative and innovative, and you have good leadership skills. Then the interviewer asks about your weaknesses. You hadn't anticipated this question, but after a moment's thought you reply that your reasoning skills have never been very good.

The interviewer quickly responds that this weakness could create big problems.

“Why is that?” you ask.

“Because reasoning skills are essential to good judgment. And without good judgment your creativity will lead to projects that make no sense. Your leadership skills will direct our other employees in circles. Your enthusiasm will undermine everything we have accomplished up until now. And your working long hours will make things even worse.”

---

“But don’t you think there is some position in your company that is right for me?” you ask.

The interviewer thinks for a moment and then replies, “We have a competitor on the other side of town. I hear they are hiring right now. Why don’t you apply with them?”

The point of this little dialogue is that good reasoning skills are essential to doing anything right. The business person uses reasoning skills in writing a report or preparing a presentation; the scientist uses them in designing an experiment or clinical trial, the department manager uses them in maximizing worker efficiency, the lawyer uses them in composing an argument to a judge or jury. And that’s where logic comes in. The chief purpose of logic is to develop good reasoning skills. In fact, logic is so important that when the liberal arts program of studies was formulated fifteen hundred years ago, logic was selected as one of the original seven liberal arts. Logic remains to this day a central component of a college or university education.

From a more pragmatic angle, logic is important to earning a good score on any of the several tests required for admission to graduate professional schools—the LSAT, GMAT, MCAT, and so on. Obviously, the designers of these tests recognize that the ability to reason logically is a prerequisite to success in these fields. The appendix in the back of the book, which has been expanded for this edition, contains sample questions and cues on answering them. Also, logic is a useful tool in relieving what has come to be called math anxiety. For whatever reason, countless students today are terrified of any form of reasoning that involves abstract symbols. If you happen to be one of these students, you should find it relatively easy to master the use of logical symbols, and your newly found comfort with these symbols will carry over into the other, more difficult fields.

To improve your performance in logic, I strongly urge you to take full advantage of a multimedia program called *Learning Logic*. This is an interactive tutorial that teaches the essentials of this textbook in a very user-friendly way. However, your computer must be equipped with loudspeakers or headphones, because the audio component is essential. With earlier editions of this textbook, *Learning Logic* was written on a CD that came bundled with the book, and if your instructor has ordered it (at no additional cost), it may still be bundled with the book. However, *Learning Logic* is now available online through ThomsonNOW, and new books contain an access card that gives instructions on how to open the program. If you have a used book, you can still access *Learning Logic* through ThomsonNOW for a small fee or, alternately, purchase the CD separately.

Also available online through [www.thomsonedu.com/ThomsonNOW](http://www.thomsonedu.com/ThomsonNOW) are brief video lectures on key topics. The videos include pointers on how to work the pertinent exercises in the textbook. They cover topics such as the concept of validity, conversion, obversion, and contraposition, indirect truth tables, and natural deduction. If, as you work through the content of this book, you encounter a subject that you have trouble understanding, one of these videos may solve the problem.

Additionally, a set of audio summaries for each chapter in the book is available online at [www.thomsonedu.com/philosophy/hurley](http://www.thomsonedu.com/philosophy/hurley). These are designed so that you

can download them onto your iPod, mp3 player, or computer and listen to them before taking a test.

Because proficiency in logic involves developing a skill, it helps to work through the practice problems in *Learning Logic* and the exercises in the textbook more than once. This will help you see that good reasoning (and bad reasoning, too) follows certain patterns whose identification is crucial to success in logic. As you progress, I think you will find that learning logic can be lots of fun, and working with the online resources should enhance your overall learning experience.

## Note to the Instructor: Alternative Course Approaches to the Textbook

Depending on the instructor's preferences, this textbook can be approached in several ways. The following chart presents possible approaches for three different kinds of courses.

In general, the material in each chapter is arranged so that certain later sections can be skipped without affecting subsequent chapters. For example, those wishing a brief treatment of natural deduction in both propositional and predicate logic may want to skip the last three sections of Chapter 7 and the last four (or even five) sections of Chapter 8. Chapter 2 can be skipped altogether, although some may want to cover the first section of that chapter as an introduction to Chapter 3. Finally, Chapters 9 through 14 depend only slightly on earlier chapters, so these can be treated in any order one chooses. However, Chapter 14 does depend in part on Chapter 13.

### Type of Course

	<b>Traditional logic course</b>	<b>Informal logic course, critical reasoning course</b>	<b>Course emphasizing modern formal logic</b>
<b>Recommended material</b>	Chapter 1 Chapter 3 Chapter 4 Chapter 5 Chapter 6 Sections 7.1–7.4	Chapter 1 Chapter 2 Chapter 3 Chapter 4 Sections 5.1–5.3 Sections 5.5–5.6 Sections 6.1–6.4 Section 6.6 Chapter 9 Chapter 12 Chapter 13 Chapter 14 Writing Supplement	Chapter 1 Sections 4.1–4.3 Section 4.7 Sections 6.1–6.5 Chapter 7 Chapter 8 Truth Tree Supplement
<b>Optional material</b>	Chapter 2 Sections 7.5–7.7 Chapters 9–14	Section 5.4 Section 5.7 Section 6.5 Chapter 10 Chapter 11	Chapter 3 Sections 4.4–4.6 Sections 5.1–5.2 Section 5.7 Section 6.6

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