

### Organization and Content

The twelfth grade logic course is a two-semester course intended to help seniors improve their thinking skills and to prepare them for discussions in the college classroom. The course is also intended to help students keep the facts of the case before them as they engage in academic and social communications.

The course is divided into five parts.

- Part One covers basic linguistic tools required for thinking clearly and consists of:
  - Classification
    - Concepts and referents
    - Rules of classification
    - Levels of organization
  - Definitions
    - The functions of a definition
    - Rules for definition
    - Constructing definitions
  - Propositions
    - Propositions and sentences
    - Propositions and word meaning
    - Propositions and grammar
- Part Two provides the students the tools for analyzing and evaluating arguments in ordinary language.
  - Basic argument analysis
    - Diagramming arguments
    - Logical strength
    - Implicit premises
  - Fallacies
    - Subjectivist fallacies
    - Fallacies involving credibility
    - Fallacies of context
    - Fallacies of logical structure
  - Advanced argument analysis
    - Distilling an argument
    - Diagramming debates
- Part Three presents the students with the principles and structure of classical deductive logic.
  - Categorical propositions
    - Standard form
    - The Square of Opposition
    - Existential import
    - Distribution
    - Immediate inference

- Venn diagrams
  - Categorical syllogisms
    - The structure of a syllogism
    - Validity
    - Enthymemes
    - Rules of validity
    - Venn diagrams
    - The cancellation method
  - Disjunctive and hypothetical syllogisms
    - Disjunctive syllogisms
    - Hypothetical propositions
    - Hypothetical syllogisms
  - Syllogisms in ordinary reasoning
    - Distilling deductive arguments
    - Extended arguments
- Part Four presents the elements of modern symbolic logic.
  - Propositional logic—symbolic notation
    - Connectives
    - Statement forms
    - Computing truth values
  - Propositional logic—arguments
    - Truth table test of validity
    - Truth table test—short form
    - Proof
    - Equivalence
    - Conditional proof and reduction ad absurdum
  - Predicate logic
    - Quantifiers
    - General statements
    - Relations and multiple quantification
- Part Five presents a treatment of inductive logic.
  - Inductive generalizations
    - Generalizing
    - Causality
    - Argument and difference
    - Concomitant variations and residue
  - Argument by analogy
    - Analogy and similarity
    - Analysis and evaluation
  - Statistical reasoning
    - Logic and statistics

- Using statistics in argument
- Statistical generalization
- Statistical evidence of causality
- Explanation
  - Explanation and argument
  - Adequacy
  - The truth of Hypotheses

### Elements of Course Design

There are five elements to help students assimilate the course material:

- Key points in the text are highlighted.
- *Summary boxes* pull together important definitions, principles, and rules.
- *Strategy boxes* offer summary formulations of procedures to follow, including heuristics and tips.
- The essential material in each chapter is reviewed in a condensed form in an end-of-chapter *Summary*
- A web-based tutorial program, LogicTutor, accompanies the course text and provides more than 1,100 exercises and summaries on every major concept. Each chapter in the site is organized into three modules:
  - Tutorial—this portion of the site reviews the concepts, definitions, rules, procedures, and heuristics that are highlighted in the textbook’s summary and strategy boxes. Brief quizzes with instant feedback allow you to quickly check your reading comprehension.
  - Practice—hundreds of interactive problems facilitate the application of analytical techniques discussed in the text. Here you can attempt as many answers as you wish without being penalized.
  - Self-Quiz—this module simulates an examination environment in which you may attempt to answer a problem only once. Our "mark and mail" feature allows the student to score their performance and email the results directly to the teacher.

The web address for the LogicTutor program is

<http://www.wwnorton.com/college/phil/logic3/>. Students are required to have access to a computer and the Internet to complete the self-quiz portion of their assignments.

### Textbooks

Kelley, David. *The Art of Reasoning*. 3rd ed. New York: W.W. Norton, 1998.

Hicks, Stephen Ronald Craig, and David Kelley. *Readings for Logical Analysis*. New York: W.W. Norton, 1998.