

Omar Fakhri

Introduction to Logic

Course Description:

This is an introductory course in logic. The course will cover propositional and predicate logic. Although logic is mathematical in nature, there are no prerequisites. In this class, we will begin by learning the syntax and semantics of propositional logic, and then we will learn natural deductions for propositional logic. Along the way we will learn about the basic theory of propositional logic. After, we will build on what we've learned but introduce more syntax and semantics for predicate logic, and then learn about proofs for predicate logic. We will conclude the class by looking at a few applications of predicate logic.

Learning Goals:

- Be able to clearly and concisely exposit arguments in premise-conclusion form.
- Be able to critically assess arguments by either objecting directly or indirectly to a specific premise(s), or by showing that the argument is fallacious.
- Be able to understand, state, and describe the main historical problems and positions discussed in the reading and in lecture.
- Be able to write a well-developed philosophy paper that explains the key moves in a given argument and critically evaluate it.
- Be able to articulate and provide reasons for one's own position or lack thereof.

Required Text:

Deductive Logic, Warren D. Goldfarb.

Course Requirements:

- Section and Class Attendance 10% – Section and class attendance and participation is mandatory. Come to sections (and class) having done all the assigned reading.
- Homework 45% – You'll have five homework assignments. These will consist of questions that will help you to exercise the things you've learned in class and in the reading. You'll get the assignment before the weekend, and it'll be due the first day of class after the weekend.
- Final 45% - The final exam will be cumulative. It will test you on all the material that we've covered in class. The exam will be held on the final day of class.

*LATE ASSIGNMENTS: There is a 1/3 letter grade penalty for every *class*-day a paper is late (e.g. suppose an assignment is due on Friday and you turn it in the following Wednesday and the assignment receives a B+, then because it is late it will receive a 2/3 letter grade deduction, which means that the paper will receive a B-).

Tentative Schedule:

* = handout

DD = *Deductive Logic*

Week	Readings and Assignments due
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<p>1 Propositional</p>	<p>General Introduction <i>Logic in Action</i>, 1-11* Conjunction, negation, disjunction, and grouping DD, 6-15 Truth-functions, conditional, logical paraphrase DD, 19-36</p>
<p>2 Propositional</p>	<p>HW #1 due Validity, Satisfiability, implication DD, 37-52 Use and Mention, Equivalences DD, 53-60 Disjunctive normal form, expressive adequacy, formal systems DD, 61-81</p>
<p>3 Monadic Quantification</p>	<p>HW #2 due Existential and Universal Quantifier DD, 89-112 Paraphrasing, Universe of Discourse DD, 113-122 Validity, implication, and equivalence DD, 123-138 General Laws DD, 139-146</p>
<p>4 Polyadic Quantification</p>	<p>HW #3 is due Paraphrasing polyadic quantification DD, 147-166 Validity, implication, and equivalence DD, 167-180 Natural deduction DD, 181-187</p>
<p>5 Polyadic Quantification</p>	<p>HW #4 is due Natural deduction (continued) DD, 188-198 Other Laws DD, 199-215 Completeness DD, 216-224</p>
<p>6 Application</p>	<p>HW #5 is due Decidability DD, 225-230 Arithmetic <i>Logic in Action</i>, sections 4.10 and 9.3* Set Theory Sections 6.1 and 6.2 of “The Philosophy of Set Theory” by Mary Tiles REVIEW Review guide will be handed out FINAL EXAM</p>