

Introduction to Logic

Course Description

One characteristic of a good argument is that its conclusion *follows from* its premises. But what exactly does this “following from” involve? Logic aims to answer that question. In this course we will study three systems of logic: sentential logic, monadic predicate logic, and full first-order logic. We will learn how to represent the logical forms of English arguments in each of these systems, and then develop a semantics as well as a system of natural deduction in each system to assess the validity of arguments given such formal representations. Upon completing the course, students will be familiar with the basic tools of formal logic and be able to apply them to effectively analyze and evaluate natural language arguments.

Instructor

Michael Rieppel

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Office Hours: 3:30 - 4:30 TW, 244 Moses Hall

Times and Locations

Lectures are on Tuesdays, Wednesdays, and Thursdays 1-3:30pm in 123 Wheeler. Discussion Section 101 is on Mondays and Fridays 1-3:30pm in 123 Wheeler, and Discussion Section 102 is on Mondays and Fridays 1-3:30pm in 100 Wheeler.

Textbook and Supplemental Materials

We will be using Graeme Forbes' *Modern Logic* (Oxford University Press, 1994). The book is available from the campus bookstore and of course on Amazon. The first three chapters are also available for free on [Forbes' website](#).

I will occasionally supplement the text with my own handouts. Supplementary materials and lecture notes will be made available on [bSpace](#).

Grades

- (i) Six homework assignments (5% each)
- (ii) Midterm Exam (30%)
- (iii) Final Exam (40%)

Homeworks will usually be handed out on Thursdays, and will be due the following Thursday in the “12A Drop Box” in front of 301 Moses Hall at 12:45pm. No late work accepted!

I encourage you to work in groups on the homework assignments. See the “Group Work” section below for details.

Tentative Schedule

This is a six week summer course. The following is a *tentative* schedule. The course will evolve dynamically, so this schedule is likely to change as we go along. Details about the evolution of the course will be announced in lecture as we proceed.

Week 1	5.24: Introduction. What is Logic? Validity and Soundness. (ML Ch1) 5.25: Syntax of LSL. Beginning symbolization. (ML Ch2) 5.26: More symbolization. Symbolizing arguments. (ML Ch2)
Week 2	5.31: Semantics of LSL. Truth functions and truth tables. (ML Ch3) 6.1: Logical properties/relations. Exhaustive truth table tests. (ML Ch3) 6.2: “Short” truth table tests; expressive completeness of LSL. (ML Ch3)
Week 3	6.7: LSL deductions. Rules of &I, &E, \rightarrow E, \rightarrow I. (ML Ch4) 6.8: Deductions. Rules of \sim I, \sim E, DN. (ML Ch4) 6.9: Deductions. Rules of \forall I, \forall E, SI and TI (ML Ch4)
Week 4	6.14: <i>Midterm Exam</i> 6.15: LMPL: names, predicates, and quantifiers. Symbolization. (ML Ch5) 6.16: Semantics of LMPL. Constructing counterexamples. (ML Ch6)
Week 5	6.21: Deductions in LMPL. Rules of \forall E, \exists I, \forall I. (ML Ch6) 6.22: Rule of \exists E. LMPL extensions of SI. (ML Ch6) 6.23: LFOL: n-place predicates. Symbolization in LFOL. (ML Ch7)
Week 6	6.28: Semantics of LFOL. Constructing counterexamples. (ML Ch8) 6.29: Deductions in LFOL. (ML Ch8) 6.30: In-class review 7.1: <i>Final Exam</i>

Group Work

I encourage you to work in groups on homework assignments. Two extra points will be added to your score on the relevant assignment if you work in a group. Group work is subject to the following rules:

1. Groups should have *at most four* members.
2. Each member of the group has to work individually on the homework for at least one hour prior to meeting with the other group members. If someone in your group shows up without having done any preliminary work, let them know that’s not acceptable.
3. Each group member has to complete, and turn in, their own individual assignment. If you simply copy someone else’s work, that counts as plagiarism and is a violation of the University’s policy on academic integrity.

To get the two extra points, list the members of your group beneath your own name on the assignment you turn in. We will take that as your pledge that you and your group have worked in compliance with the conditions above.

Working in groups is *not* a requirement. If you prefer to work alone, or if you have a schedule that makes it impossible for you to engage in group work, that’s perfectly alright.