

PHILO275/MATH275/CSCI 395.5 | FALL 2017

SYMBOLIC LOGIC

PROFESSOR: Daniel W. Harris (danielwharris@gmail.com)

OFFICE HOURS: After class, or by appointment (HW1446)

COURSE WEBSITE: danielwharris.com/teaching/275

ABOUT THE COURSE

We all reason, sometimes well, sometimes badly, but almost always without thinking about the principles that are guiding us. The aim of formal logic is to articulate the principles of good reasoning as clearly and precisely as possible, and to learn to follow them in a self-conscious way.

Logic has also been interesting to philosophers, linguists, mathematicians, cognitive scientists, and computer scientists because it involves the systematic study of simple formal languages, and this has turned out to be useful for the study of natural languages, computation, mathematical proof, and human thought.

The course will concentrate on elementary reasoning involving the so-called Boolean operators such as “and”, “or”, “not”, and “if-then”, and the so-called quantifiers such as “all” and “some”. We will not treat probabilistic (“inductive”) reasoning, but only “deductive” reasoning, in which there is a claim that the conclusion follows with dead certainty. We will study some methods for testing or establishing such claims.

COURSE REQUIREMENTS

Four Sets of Exercises — 15% (3.75% each)
Five In-Class Quizzes — 25% (5% each)
Three in-class Exams — 45% (15% each)
Final Exam — 15%

GRADE CUTOFFS

I will calculate your final letter grade according to Hunter's standard cutoffs:

97.5: A+	92.5: A	90: A-
87.5: B+	82.5: B	80: B-
77.5: C+	70: C	
	60: D	
	0-59.9: F	

TEXTBOOK, SCHEDULE, AND WEBSITE

The text for this course is Understanding Symbolic Logic (5th Edition), by Virginia Klenk. You can buy a physical copy on Amazon or in the Hunter book store. Electronic copies are also available.

There is a tentative schedule of readings and assignments on the final page of this syllabus. However, this may change. The schedule on the course website will always be canonical:

danielwharris.com/teaching/275

Further materials (such as slides and lecture notes) may also be posted on the website. You should check it regularly.

EXERCISES

One of the best things about Klenk's book is that each chapter includes plenty of exercises that will allow you to practice what you're learning. Learning logic is like learning a new language or a new skill, not like memorizing a collection of facts. So you can't succeed without constantly practicing new techniques as you go. Therefore, you should spend time doing *all* of the exercises for the chapters we read. If there are exercises that you have trouble with, you should ask about them in class and we'll try them out together.

On some days, you will have to hand in your answers to the exercises, showing your work. I will give you a grade of 0 (fail), 1 (nice try), or 2 (good job) on these exercises. What I am looking for is evidence that you have figured out the relevant techniques. So even if you get the wrong answers, I will give you a 1 if you seem to have understood how things work.

QUIZZES

There will sometimes be a fifteen-minute quiz at the end of lecture (five in total). These quizzes count for 5% of your final grade, each. They will include questions that resemble exercise questions.

IN-CLASS EXAMS

The final exams will consist of questions similar to those from the exercises and quizzes, but they will be longer and you will have up to a whole class session to complete them.

FINAL EXAM

The final exam will be cumulative, and will cover the whole term. It will include questions that are similar to those on the three in-class exams.

If you are averaging at least an A- based on your work prior to the final exam, you may choose to opt out of the final and have your final grade be calculated from your average grade up until that point. This option is not available to students with averages of B+ or lower as of the final week of the term.

COURSE OBJECTIVES

If all goes well, here's what will happen this semester:

- You'll learn how to work with propositional (sentential) and first-order (predicate) logic, including translation and checking for validity using proofs and other methods.
- You'll get better at noticing the patterns in which everyday arguments are framed.
- You'll get better at recognizing which arguments are valid, and which ones aren't.
- You'll become more literate in two of the formal languages that are you are most likely to encounter in advanced philosophy, mathematics, and linguistics courses.
- You'll get better at thinking through the logical implications of things—a skill that is useful whether you're doing philosophy, mathematics, or computer engineering.

HOW TO GET A GOOD GRADE

Getting an A in this course will require you to do all of the following:

- Do each reading at least once, and preferably more than once.
- Demonstrate your understanding of each day's reading on a quiz.
- Participate in class discussion. Use this space as an opportunity to understand the material better, and to help classmates do the same.
- Work hard at understanding the theories we discuss and practice applying them to new cases.
- Learn to write in the clear, concise, and convincingly argumentative style that philosophers like.
- Ruthlessly revise and proofread your essays until they are written in clear and grammatical English.

ACADEMIC DISHONESTY

Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The College is committed to enforcing the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.

	MONDAYS	THURSDAYS
1	August 28 (Introduction)	August 31 Unit 1
2	September 4 Labor Day — No Class	September 7 Unit 2 Quiz 1 on U1-2
3	September 11 Unit 3	September 14 Unit 4 Hand in Exercises on U3-4
4	September 18 Unit 5	September 21 Hunter College Closed — No Class
5	September 25 Unit 6 Quiz 2 (U5-6)	September 28 EXAM #1 (covers U1-6)
6	October 2 Unit 7	October 5 Unit 7 Hand in Exercises from U7
7	October 9 Hunter College Closed — No Class	October 12 Unit 8
8	October 16 Unit 8 Quiz #3 (covers U7-8)	October 19 Unit 9
9	October 23 Unit 9 and review Hand in Exercises on U9	October 26 EXAM #2 (U7-9)
10	October 30 Unit 10	November 2 Unit 11 Quiz #4 (U11)
11	November 6 Unit 12	November 9 Unit 13 Hand in Exercises on U12-13
12	November 13 Unit 14	November 16 Unit 15
13	November 20 Unit 15 Quiz #5 (U14-15)	November 23 Thanksgiving — No Class
14	November 27 Unit 17	November 30 Unit 17
15	December 4 Review of U10-15, 17	December 7 Exam #3 (Units 10-15, 17)
	December 11 Review for Final Exam	