

SYMBOLIC LOGIC

FALL SEMESTER 2019

ROCHESTER INSTITUTE OF TECHNOLOGY

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Office Hours: MWF 12:00-1:00
or by appointment

Course Description

This course covers the basic rules of good reasoning. By studying logic we sharpen our ability to reason things through, to see the logical implications of our beliefs, and to distinguish good reasoning from bad. Logic is both useful as well as intellectually rewarding: it illuminates our rational nature as well as the often surprising connections among our beliefs. In this course we will learn a symbolic notation that allows us to express these connections with great efficiency and elegance. (That's what makes this a course in *symbolic* logic.) In many ways this is like learning a new language: one might even think of it as the language of thought. In other ways this is like learning a game with specific goals and objectives.

Logic is about reasoning from particular **premises** (or evidence) to a particular **conclusion**. This chain of reasoning is an **argument**, and logic helps us determine whether a given argument is good or bad. We will focus primarily on **deductive** logic which tells us whether a conclusion **necessarily** follows from certain premises. In a deductive argument, true premises guarantee the truth of the conclusion (i.e., they don't merely make it probable). It is often easier to assess a deductive argument if we translate it into symbolic notation. By doing so we can more easily recognize the logical connections between premises and conclusions.

Because it studies the abstract relations among statements, logic helps us think theoretically. This is a useful skill in a number of areas: law, medicine, and computer programming, to name a few. In addition, it is helpful in taking standardized tests, such as the LSAT and GRE. But logic is also philosophically interesting since it suggests that good arguments follow certain rules, regardless of topic. Because these rules hold true for everyone, everywhere, they help us better understand the nature of rational thought—or at least one type of rational thought.

This logic course is unlike most other philosophy courses and many other logic courses. For one thing, much of the time there will be clear right and wrong answers: things will be much more black-and-white than in most philosophy courses. (This can be a good or a bad thing. Here, it is mostly good.) This is why most logic courses around the world have the flavor of a mathematics course. However, this course will be different by also including more philosophy of logic in addition to the standard logical topics. This means that, in addition to learning a system of deductive logic, we'll also discuss the philosophical and historical implications of logic and logical reasoning.

Texts

There are two texts for this class. Both are .pdfs you can download from myCourses.

The first is *forallx*:Cambridge. This is an open access logic textbook. We'll be using the version adapted by Tim Button. Note that there is also a solutions manual you may want to consult.

The second .pdf is a collection of articles and book chapters dealing with various philosophical aspects of logic.

It's an excellent idea to print out both of these .pdfs. You can print for free at many ITS supported labs.

Expectations

Belaboring the Obvious

1. Logic requires a healthy work ethic. It is especially important that we not fall behind: it is so much easier to stay on schedule than try to catch up.

2. Logical thinking is a skill. Like all skills, we develop proficiency through practice and exercise; the more we practice, the easier and more natural logic becomes.

3. Get help quickly if you ever feel confused. Because the material in this course is cumulative, it is hard to recover if you fall behind. On the other hand, new material is easier to absorb if you are already comfortable with previous material. Feel free to come to my office hours or send me an e-mail if you ever have any questions or problems.

Quizzes

4. Every two weeks or so there will be a short (10-15 minute) quiz on recent material. These quizzes will allow us to keep track of our progress. There will also be an opportunity to retake 2 quizzes on the last day of class. There is no final exam.

Homework

5. There will be periodic homework assignments drawn from the “practice exercises” in *forallx*. Even though I won’t collect these practice exercises please do them! Not only are these (sometimes) fun puzzles but they really do prepare you for the quizzes and later work. Answers to the practice exercises can be found in the solutions manual so you can check your own work.

In addition I will also be handing out short homework assignments so I can gauge how everyone is doing. These I *will* collect and grade.

We will generally set Fridays aside to workshop any questions about the homework. If you have questions please bring them!

Attendance and Participation

6. Attendance is, of course, entirely expected and participation is strongly encouraged.

Grading Scale

7. There will be 7 quizzes. These quizzes will cover both the material in *forallx* and the philosophical articles we’ll be reading. Each quiz is worth 25 points (175 points total).

There will be 7 homework assignments that I will collect and grade. Each of these is worth 5 points (35 points total).

Attendance and participation is worth 40 points for a grand total of 250 points (quiz points + homework points + attendance and participation). It’s possible that I’ll include extra credit on some of the quizzes or devise extra credit assignments later in the semester.

I will follow a standard grading scale where A=93% or greater, A-=90-92%, B+=88%-89% and so on.

Additional Information

8. Because I think logic and philosophy are really wonderful and important I’m always happy to talk about the course. Feel free to drop by my office hours or speak to me after class. I’ve found it’s usually a lot more efficient to talk in person than over e-mail.

9. Feel free to ask if you have any questions about your grade. While I expect you’re able to keep track of this, too, I’m happy to tell you where you stand if you have any concerns. I use myCourses only minimally in the conviction that we don’t need another barrier to more direct forms of communication.

Readings and Assignments

Please note: a particular day's reading and assignment should be done *before* class.

	Reading	Homework
08.26.19	Introductory Remarks	
08.28.19	Shenefelt & White: "Symbolic Logic and The Digital Future" (205-219)	
08.30.19	<i>forallx</i> Sections 1-3 Shenefelt & White: "Symbolic Logic and The Digital Future" (219-234)	
09.02.19	No Class: Labor Day	
09.04.19	<i>forallx</i> Sections 4-7	1: 1-4 2: A-B 3: A-C
09.06.19	Workshop Day	5: A, B, C (odds), F, G 6: A-C
09.09.19	<i>forallx</i> Sections 8-10	
09.11.19	Quiz #1	
09.13.19	Workshop Day	10: A (odds)
09.16.19	<i>forallx</i> Sections 11-13	
09.18.19	Horwich: "What is Truth?"	
09.20.19	Workshop Day	11: A (odds), B 1, C 1, 3, 5 12: A (odds) 13: C
09.23.19	<i>forallx</i> Sections 14-15	
09.25.19	Quiz #2	
09.27.19	Workshop Day	15: A-B
09.30.19	<i>forallx</i> Section 16	
10.02.19	Taylor: "Fatalism"	
10.04.19	Workshop Day	16: A (odds), C (evens)
10.07.19	<i>forallx</i> Sections 17-19	
10.09.19	<i>forallx</i> Sections 20-22 Quiz #3	
10.11.19	Workshop Day	17: A 18: A (evens), B 1-4, C 1-2 19: A

10.14.19	No Class: Columbus Day	
10.16.19	Ryle: "It Was to Be"	
10.18.19	Workshop Day	21: A (evens), B
10.21.19	<i>forallx</i> Sections 23-24	
10.23.19	Quiz #4	
10.25.19	Workshop Day	23: A 1-3, B 1, 9, C 1, D (odds)
10.28.19	<i>forallx</i> Sections 25-26	
11.30.19	Wittgenstein: Selections from <i>Remarks on the Foundations of Mathematics</i> and <i>The Big Typescript</i>	
11.01.19	Workshop Day	26: A, B, C
11.04.19	<i>forallx</i> Section 27	
11.06.19	Quiz #5	
11.08.19	Workshop Day	27: A, B
11.11.19	<i>forallx</i> Sections 28-30	
11.13.19	Maddy: "A Second Philosophy of Logic"	
11.15.19	Workshop Day	28: A, D 30: A
11.18.19	<i>forallx</i> Sections 31-32	
11.20.19	Quiz #6	
11.22.19	Workshop Day	31: A, B, E (odds), H 1-2 32: B, C 3
11.25.19	<i>forallx</i> Sections 33-35	
11.27.19	No Class: Thanksgiving	
11.29.19	No Class: Thanksgiving	
12.02.19	Buttton: "Soundness"	
12.04.19	Quiz #7	
12.06.19	Sider: "Completeness of PL"	33: B
12.09.19	Make-up Quizzes	