SYMBOLIC LOGIC

FALL SEMESTER 2021
ROCHESTER INSTITUTE OF TECHNOLOGY

Since we're still dealing with COVID I may make adjustments as the semester unfolds. There may be times when we'll need to move to Zoom or adjust the format and timing of some of the assignments. I'll announce these as necessary.

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Office Hours: MWF 12:05-1:05 @ LBR 1309 LBR 1309
(COVID-dependent; most likely contact me via e-mail
and I'll arrange a Zoom meeting.)

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 trains us to think analytically. 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.

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 sets of readings for this class. These 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 set is a collection of articles and book chapters dealing with various philosophical aspects of logic.

It's an excellent idea to print out all of these .pdfs. I figure we're spending a lot of time on screens these days so it's probably smart to take a break, unplug, and read something on paper. It's also a good idea to have a copy of the text accessible during class. Sometimes we'll be looking at specific problems and this won't make sense unless you have the text in front of you.

Expectations

Belaboring the Obvious

1. Logic requires a healthy work ethic. It is especially important that we not fall behind: it is 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 unclear. I mean this! 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 earlier material. Send me an e-mail if you ever have any questions or problems; we can always set up a Zoom meeting. I would much rather help you early on than wait until the situation becomes critical.

Quizzes

4. Every week or so there will be a short quiz on recent material. These quizzes will be "take-home" for you to do over a weekend. I don't plan to offer make-ups if you miss or forget to take the quiz. These quizzes will allow us to keep track of our progress. There will also be an opportunity to retake 2 quizzes (same material, new questions) around the last day of class. If you miss a quiz, then I'll probably just have you take the make-up. There is no final exam.

Homework

5. There will be weekly 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 assigning short homework sets 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 material. 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 10 quizzes. These quizzes will cover both the material in *forallx* and the philosophical articles we'll be reading. Each quiz is worth 100 points (1000 points total).

There will be 8 homework assignments that I will collect and grade. Each of these is worth 25 points (200 points total).

Attendance and participation is worth 100 points for a grand total of 1300 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 speak to me after class, e-mail me, or ask to set up a Zoom meeting.

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. This semester I'll be using myCourses more extensively than I'd like; I still have my reservations but it's the best we can do.

10. Finally, here is how the class will be organized and paced:

Mondays: I will present on upcoming material. Often, there will be some philosophy you've read over the weekend that we'll discuss as a group.

Wednesdays: You'll read the material in *forallx* presented on Monday and do some HW problems. I might do some additional presenting, depending on how much time we have. But mostly we'll fill in any gaps, answer questions, go over tricky problems, and maybe do some additional problems.

Fridays: Workshop days. These are the days to come if you have any questions, would like some additional practice, or don't feel as confident as you'd like. Workshop days are crucial if you're worried about falling behind. The point of workshop days is to make sure that no one—really, absolutely no one—gets left behind.

Over the weekend: Many but not all weeks there will be a quiz for you to take, due the following Monday.

Monday: See above. But there might also be a quiz due in addition to the philosophy reading.

Etc., etc.

Readings and Assignments

	Reading	Homework
08.23.21	Introductory Remarks	
08.25.21	Shenefelt & White: "Symbolic Logic and The Digital Future" (205-219)	
08.27.21	Shenefelt & White: "Symbolic Logic and The Digital Future" (219-234)	
08.30.21	*forallx* Sections 1-3	1: 1-4 2: A-B 3: A-C
09.01.21	*forallx* Sections 4-7	5: A, B, C (odds), F, G 6: A-C
09.03.21	Workshop Day	
09.06.21	Labor Day—No Class	
09.08.21	*forallx* Sections 8-13 Quiz #1 Due	10: A (odds) 11: A (odds), B 1, C 1, 3, 5 12: A (odds) 13: C
09.10.21	Workshop Day	
09.13.21	Horwich: "What is Truth?" Quiz #2 Due	
09.15.21	*forallx* Sections 14-15	15: A-B
09.17.21	Workshop Day	
09.20.21	Taylor: "Fatalism" Quiz #3 Due	
09.22.21	*forallx* Sections 16	16: A (odds), C (evens)
09.24.21	Workshop Day	
09.27.21	Ryle: "It Was to Be"	
09.29.21	*forallx* Section 17-19	17: A 18: A (evens), B 1-4, C 1-2 19: A
10.01.21	Workshop Day	
10.04.21	Wittgenstein: *Tractatus Logico-Philosophicus* (Selections) Preface, 1-3.5 Quiz #4 Due	
10.06.21	*forallx* Sections 20-22	21: A (evens), B
10.08.21	Workshop Day	

10.11.21	Fall Break — No Class	
10.13.21	*forallx* Sections 23-24 Quiz #5 Due	23: A 1-3, B 1, 9, C 1, D (odds)
10.15.21	Workshop Day	
10.18.21	Wittgenstein: Tractatus Logico-Philosophicus (Selections) 4-7 Quiz #6 Due	
10.20.21	*forallx* Sections 25-26	26: A, B, C
10.22.21	Workshop Day	
10.25.21	Austin: "Performative Utterances"	
10.27.21	*forallx* Sections 27	27: A, B
10.29.21	Workshop Day	
11.01.21	Aldisert et al.: "Logic for Law Students: How to Think Like a Lawyer" Quiz #7 Due	
11.03.21	*forallx* Section 28-30	28: A, D 30: A
11.05.21	Workshop Day	
11.08.21	Fisher: "Two Logical Truths" Quiz #8 Due	
11.10.21	*forallx* Sections 31-32	31: A, B, E (odds), H 1-2 32: B, C 3
11.12.21	Workshop Day	
11.15.21	Fisher: "The Metaphysics of Logic" Quiz #9 Due	
11.17.21	*forallx* Sections 33-35	33: B
11.19.21	Workshop Day	
11.22.21	Maddy: "A Second Philosophy of Logic"	
11.24.21	Thanksgiving — No Class	
11.26.21	Thanksgiving — No Class	
11.29.21	Button: "Soundness"	
12.01.21	Sider: "Completeness of PL" Quiz #10 Due	
12.03.21	Workshop Day	
12.06.21	**Make-up Quizzes**	