

## PHIL 315: APPLIED SYMBOLIC LOGIC

Instructor: Jennifer Wang

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Time: 8:10 – 9:30am, MTh

Location: Murray 113

Office hours: 9:30 – 11:00am Monday and 2:00 – 4:00pm Thursday  
in 1 Seminary Place Rm. 201 and by appointment

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### Course Description

The aim of this course is to introduce various systems of classical and non-classical logic and their metalogical properties. Along the way, we will be discussing the philosophical motivations behind different systems: Why do some reject classical logic in favor of intuitionistic logic? What are the metaphysical controversies behind systems of quantified modal logic? Etc.

### Prerequisites

PHIL 201 (Introduction to Logic) is the only prerequisite for this course. In PHIL 201, you should have learned how to construct first-order proofs for propositional and predicate logic, and at least some semantics (e.g. truth tables and models). We will review this in the first few weeks, but it will go by quickly. Furthermore, we will primarily be working with *axiomatic* proof systems, which you may or may not have seen before. (It's okay if you haven't seen them before; we'll cover them.) If you are worried that this course will be too fast-paced or technically demanding for you, please contact me.

### Textbook

Ted Sider, *Logic for Philosophy* (2010), Oxford University Press

### Requirements

Students are required to attend and participate in class, take two examinations, and submit 12 problem sets (though the 2 lowest-scoring problem sets will be dropped).

### Attendance and Participation Policy

There is a new university-wide system in place for student absences. If you expect to miss a class, please use the University absence reporting website (<https://sims.rutgers.edu/ssra>) to indicate the date and reason for your absence. An email is automatically sent to me. My own policy is that attendance does not officially count towards your grade. However, good attendance and participation in class will count in favor of you if your final grade is within half a point of the next grade up.

### Late Submission Policy

Late submissions of problem sets will not be accepted, since we will go over portions of problem sets in class. However, your lowest two problem set grades will be dropped. In extreme cases, we can work something out.

### Honor Policy

Academic integrity concerns will be taken very seriously. All submitted work must be your own. You are NOT allowed to copy answers or parts of answers from anyone else (including off the internet). Cases of cheating will be reported to a Dean, and may result in suspension or

expulsion from Rutgers. (See <http://ctaar.rutgers.edu/integrity/policy.html>.) That being said, you are allowed to work with other students in the class on your problem sets, and you are allowed to come ask me for help. Keep in mind that it is in your own interest to learn the material to the best of your ability, as the in-class exams will require you to apply skills learned in the class to problems you won't have seen before.

### Grading

Weighting	30%	Midterm
	30%	Final
	40%	Homeworks

Scale	90-100	A	70-74	C
	85-89	B+	60-69	D
	80-84	B	0-59	F
	75-79	C+		

### Schedule

<b>Date</b>	<b>Lecture topic</b>	<b>Reading</b>	<b>HW due</b>
1-Sep R	What is logic?	1	
5-Sep M	No class (Labor Day)		
8-Sep R	Propositional Logic: Semantics	2.1-2.4	
12-Sep M	Propositional Logic: Axiomatic proofs	2.6	
15-Sep R	Propositional Logic: Soundness	2.7-8	
19-Sep M	Propositional Logic: Completeness	2.9	1
22-Sep R	Propositional Logic: Review		
26-Sep M	Beyond PL: Alternate notations and 3-valued logic	3.1-3.4.2	2
29-Sep R	Beyond PL: Supervaluationism and intuitionistic logic	3.4.5-3.5	
3-Oct M	Predicate Logic: Semantics	4.1-4.3	3
6-Oct R	Predicate Logic: Axiomatic proofs	4.4-5	
10-Oct M	Midterm review		4
13-Oct R	In-class midterm		
17-Oct M	Beyond PC: = and free logic	5.1, 5.6	
20-Oct R	Modal Propositional Logic: Semantics	6.1-6.3	5
24-Oct M	Modal Propositional Logic: Semantics		
27-Oct R	Modal Propositional Logic: Axiomatic proofs	6.4	6
31-Oct M	Modal Propositional Logic: Axiomatic proofs		
3-Nov R	Modal Propositional Logic: Soundness	6.5	7
7-Nov M	Modal Propositional Logic: Completeness	6.6	
10-Nov R	Beyond MPL: Intuitionistic logic	7.4	8
14-Nov M	Quantified Modal Logic: SQML	9.1-9.4	
17-Nov R	Quantified Modal Logic: Philosophical questions	9.5	9
21-Nov M	No class (Wednesday classes meet)		
22-Nov T	Quantified Modal Logic: Variable domain semantics	9.6	10
24-Nov R	No class (Thanksgiving)		
28-Nov M	Quantified Modal Logic: Axiomatic proofs	9.7	11
1-Dec R	2d Modal Logic: Actuality and fixedly	10.1,10.3	
5-Dec M	2d Modal Logic: Necessity and apriority	10.4	12
8-Dec R	Final review		
12-Dec M	In-class final		