

PHIL 20100: Introduction to Logic

Time and Place: Monday/Wednesday, 3:00-4:20, Cobb 301

Instructor: Ryan Simonelli

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Office Hours: Fridays 12:40-2:40 or by appointment in Rosenwald 216. Link for sign up sheet [here](#) (if you're looking at this digitally) and on the Canvas site.

1 Course Overview

This course is an introduction to the concepts and techniques of symbolic logic. We will learn how to represent sentences and arguments in symbolic notation, how to think systematically about the meanings of these symbolic sentences, and how to establish the validity or invalidity of the arguments consisting in such sentences, using both semantic methods and the method of natural deduction. We'll start with the simple logical system of sentential logic, acquire mastery of the basic concepts and techniques there, and then move on to the more powerful logical system of first-order predicate logic. In developing these logical systems, we will occasionally venture into philosophical issues that arise, but our main focus will be to develop competence with the concepts and techniques of symbolic logic as such.

2 Course Requirements and Expectations

Disclaimer: This course is listed as a philosophy course, but it's best to think of this course as a philosophically-oriented math course rather than a philosophy course in the normal sense. Though the logical systems we'll be learning were originally developed by philosophers such as Frege, Wittgenstein, and Russell, we won't be reading any primary texts from these philosophers. Though we'll engage in some philosophical discussion in class, most of the time spent in class will be spent learning the formal concepts and techniques. And though the homework assignments will contain some philosophical questions, for the most part, they'll be more like math assignments than philosophy assignments: problem sets rather than philosophical essays. Still, though this is not a philosophy class in the normal sense, I hope the content in the class will be intrinsically philosophically interesting, as well as useful in your philosophical endeavors (and in your intellectual endeavors more generally).

Grade Breakdown: The grade for this course is broken into three parts:

Weekly Homework Assignments: There will be weekly homework assignments, due each Monday in class (with the exception of the first week's, which will be due Wednesday). These are worth 60% of the total grade. There are seven of them, and each is worth 10% of the total grade, but the lowest grade is dropped. You are welcome to work in groups of *no more than four* on these assignments. If you do work in a group, you still must turn in your own assignment, you must say who you worked with at the top of the assignment, and you must be able to take responsibility for anything appears on that assignment. That is, even if you arrived at some solution collaboratively, you must understand and be able to produce that solution on your own.

Take Home Final: There will be a take home final exam, worth 30% of the total grade. You are also welcome to work on this collaboratively, with the same rules applying as for the homeworks.

Participation: Participation is worth 10% of the total grade. In most classes, there will be at least one portion in which you will break into small groups to work on a problem. You should be engaged in these activities.

Grade Scale: The grading scale is as follows:

93+ = A
90-92.99 = A-
87-89.99 = B+
83-86.99 = B
80-82.99 = B-
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These are hard cut-offs, since cut-offs must be drawn somewhere. So, if you have an 89.98 at the end of the quarter, that's unfortunately still a B+.

Extensions and Late Work Policy: The assignments will build on one another, and so it is important to do the assignments on time in order to not get behind. If there is a legitimate reason you cannot turn in an assignment on time, I may be willing to grant an extension, but you must contact me before the due date in order to have an extension granted. Late work submitted without an extension having been granted will be penalized by 5 points for each day that it is late.

AI Policy: Using generative AI tools like ChatGPT for your assignments in class is considered cheating and is strictly prohibited.

Book: The book for this course will be the coursebook posted on Canvas. This will also contain the exercises. The first few chapters are up on the canvas now. I will be updating it throughout the quarter, as I complete the chapters for the latter parts of the course.

3 Diversity and Accessibility

Diversity: As an instructor, I am actively committed to creating an inclusive classroom environment where diverse backgrounds and viewpoints are recognized, respected, and valued. If there is anything you believe I should be doing differently, I welcome any feedback both during and outside of class. I pledge to take any comments regarding my teaching or content seriously and without defensiveness.

Accessibility: The University of Chicago is committed to ensuring equitable access to our academic programs and services. Students with disabilities who have been approved for the use of academic accommodations by Student Disability Services (SDS) and need a reasonable accommodation(s) to participate fully in this course should follow the procedures established by SDS for using accommodations. Timely notifications are required in order to ensure that your accommodations can be implemented. Please meet with me to discuss your access needs in this class after you have completed the SDS procedures for requesting accommodations.

Phone: (773) 702-6000

Email: disabilities@uchicago.edu

4 Class Schedule

Note: this schedule is subject to change, depending on how much material we're able to get through on each day of class. Check the Canvas for the most updated schedule.

Class 1, Wednesday 1/3: Introduction

Reading: *Chapter 1*

Class 2, Monday 1/8: The Language of SL

Reading: *Chapter 2*

Class 3, Wednesday 1/10: Semantics of SL

Due: *1st Homework (Chapters 1 and 2 Exercises)*

Reading: *Chapter 3, through Section 3.4*

Monday 1/15: *No Class, MLK Day*

Class 4, Wednesday 1/17: Semantics of SL, Continued

Reading: *Chapter 3, Section 3.5 on*

Monday 1/22: *No Class—I'll be out of town. Will hold extra office hours on Friday, the 19th.*

Due: *2nd Homework (Chapters 3 Exercises)* Put in my mailbox, in Stuart Hall, right outside of Room 207.

Class 5: Wednesday 1/24: Putting Truth-Tables to Work

Reading: *Chapter 4*

Class 6, Monday 1/29: Natural Deduction for SL

Due: *3rd Homework (Chapters 4 Exercises)*

Reading: *Chapter 5*

Class 7, Wednesday 1/31: Proof Strategies for SL

Reading: *Chapter 6*

Class 8, Monday 2/5: The Language of Predicate Logic

Due: *4th Homework (Chapters 5 and 6 Exercises).*

Reading: *Chapter 7*

Class 9, Wednesday 2/7: Semantics for PL

Reading: *Chapter 8*

Class 10, Monday 2/12: Natural Deduction PL

Due: *5th Homework (Chapter 7 and Chapter 8 Exercises)*

Reading: *Chapter 9*

Class 11, Wednesday 2/14: Natural Deduction for PL, Continued

Reading: *Chapter 9*

Class 12, Monday 2/19: PL with Identity

Due: *6th Homework (Chapters 9 exercises)*

Reading: *Chapter 10*

Class 13, Wednesday 2/21: Review of all topics

Due: Before 9am, discussion post, saying what you'd like to go over in class

Reading: *Review Chapters 1-10*

Class 14, Monday 2/26: The Logic of Paradox

Due: 7th Homework: Chapter 10 exercises

Reading: Chapter 11

Class 15, Wednesday 2/28: LP Continued, Different Proof Systems Considered

Reading: Chapter 11, optional chapter on Bilateralism