

# PHIL 122B: REASONING AND ARGUMENT

University of Southern California  
Spring 2024

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<b>Instructor:</b>	Anthony Nguyen (he/him)	<b>Time:</b>	TTh 5:00-6:50PM
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## Course Description

What is the difference between a persuasive and unpersuasive argument? When does an argument give us good reason to believe its conclusion? What follows from what? In this course, we will make further progress on these questions. We will focus on deductive arguments, which purport to show that their conclusion must be true if their premises are true. We will learn the formal language of FOL (i.e., first-order logic), and how to use it to determine whether an argument is valid. Since any persuasive deductive argument must be valid, this foray into FOL will help illuminate what makes a deductive argument persuasive. FOL will prove to be a more powerful tool than the truth-functional, or propositional, logic covered in this course's prerequisite (i.e., PHIL 122A). Through this course, students will acquire the required technical skills to later study more advanced logics, such as modal logic.

## Learning Objectives

By the end of this course, students will be able to perform the following tasks:

- Identify wffs (i.e., well-formed formulas) of FOL;
- Produce wffs of FOL;
- Translate wffs of FOL as English sentences, and vice-versa;
- Apply the Russellian analysis of definite descriptions to provide FOL translations of English definite descriptions;
- Develop formal FOL interpretations (i.e., models);
- Develop FOL natural deductions;
- Apply FOL interpretations and natural deductions to determine whether an argument is formally valid;
- Apply FOL interpretations and natural deductions to determine whether a sentence is a tautology, a contradiction, or a contingent sentence;
- Apply FOL interpretations and natural deductions to determine whether two sentences are logically equivalent; and
- Apply FOL interpretations and natural deductions to determine whether a collection of sentences is jointly satisfiable;

## Office Hours

I will hold office hours 2-4pm on Tuesdays in MHP B7AD. Please come by to ask *any* questions about the course. Office hours are a time in which my job

is to help you, in a one-on-one setting, succeed in this course. It makes me happy when students attend! If you cannot meet during my office hours but wish to meet to discuss the course, please email me to schedule a meeting.

### Communication Timeline

The best way to contact me about the course is through office hours or email. I will respond to emails within 3 days, including days of the weekend.

### Grading Timeline

I will return grades—and when applicable, feedback—on submitted coursework within a week of whichever of the following dates is later: its deadline or its date of submission.

### Textbook

We will use the Fall 2023 edition of *forallx: Calgary*, written by P.D. Magnus, Tim Button, Robert Trueman, and Richard Zach. This is a free textbook. I have uploaded a pdf copy on our course Blackboard. Except for this syllabus, all assigned readings will come from the *forallx: Calgary* textbook.

### Components of Course Grade

Your final grade will be determined by 3 components:

1. **HOMEWORK:** There will be 5 homework assignments. The first will be due on Sunday, 3/24. Subsequent homework assignments will be due on each following Sunday, up to (and including) Sunday, 4/21. Homework assignments will be made available at least 72 hours in advance of their respective deadlines. You must submit homework assignments through our course's [Carnap](#) page. You must register in the PHIL 122B Carnap course using your USC email and the following link:  
<https://carnap.io/enroll/USC:%20PHIL122B,%20Spring%202024>
2. **QUIZZES:** There will be 5 cumulative, closed-note quizzes. However, the quiz component of your final grade will be calculated using only the 4 that you do best on. For example, if you get a 90% A– on 4 quizzes but a 50% F on the fifth, then you will receive a 90% A– for this component of your final grade. The first quiz will be given on Tuesday, 3/26. Subsequent quizzes will be given on each following Tuesday, up to (and including) Tuesday, 4/23. Quizzes will be given at the beginning of class. You will have 25 minutes for each quiz. Each quiz will contain 5-10 questions. For any quiz, the vast majority of these questions will concern new material covered in the previous week week of the course, though one or two questions may concern older material. There is no option to do a makeup quiz unless you have an excused absence for the class meeting in which that quiz is given; in that case, contact me to determine when you will take a makeup quiz. Makeup quizzes will always differ from the quizzes originally given in class.
3. **FINAL EXAM:** The cumulative, closed-note final exam will proceed from 4:30-6:30pm on 5/2 in our usual classroom, GFS 108. By 4/25, a week in advance of the exam, I will provide a study guide and details on the exam's format. Makeup final exams will be offered only in the case of medical emergencies or when otherwise required by [university policy](#).

**Grade Breakdown**

Homework .....	30%
Quizzes .....	40%
Final Exam .....	30%

**Grading Scale**

Letter grades will be determined using the following 100-point scale:

A .....	93-100
A- .....	90-92
B+ .....	87-89
B .....	83-86
B- .....	80-82
C+ .....	77-79
C .....	73-76
C- .....	70-72
D+ .....	67-69
D .....	63-66
D- .....	60-62
F+ .....	57-59
F .....	0-56

**Late Work, Extensions, and Excused Absences**

Solutions to homework problems that are submitted late can only receive, at most, half credit. Except when an extension is granted, late work will not be accepted at all a week after the deadline. Extensions on homework assignment are possible on a case-by-case basis. For example, illness and family emergencies that hinder your ability to complete an assignment on time are legitimate reasons for requesting an extension. Extensions must be approved by me ideally, but not necessarily, before the deadline. Please contact me if you need an extension. Note that requesting an extension is not the same thing as receiving one from me; I must approve it for it to count. An analogous policy holds for excused absences. For the makeup policy for quizzes and the final exam, refer back to the “Components of Course Grade” section above.

**Recommendations**

Topics in this course will build on previous ones. So, I encourage you keep up with the course by carefully doing the readings, regularly attending and actively participating in class meetings, promptly completing homework assignments, and asking questions when you struggle. You will learn course material best via trial-and-error. I expect all of you to make mistakes. I also expect all of you to work hard, and to use these mistakes as opportunities for further growth. Failing to solve a problem correctly is *not* a sign that you aren’t “smart enough!” When I first took a logic course over a decade ago, I made plenty of mistakes. What matters is that you identify your mistakes and learn to improve upon them in the future. When you find that you are struggling with some course material, please get in touch with me—whether during class, in office hours, or over email—so that I can help you succeed! It would be most unusual if you never needed individualized help on course material from me. I also encourage you to form study groups with your peers. Of course, you must avoid plagiarism, as that is a serious academic offense.

**Course Schedule: Weekly Breakdown**

Readings and important dates are listed below. When reading is assigned for a given week, please read it before class meets on Tuesday that week.

WEEK 1: 3/5 AND 3/7—INTRODUCTION TO FOL: MOTIVATION AND SYNTAX

- Assigned Reading: Syllabus

SPRING BREAK: 3/10–3/17

WEEK 2: 3/19 AND 3/21—FOL TRANSLATIONS AND THE RUSSELLIAN ANALYSIS OF DEFINITE DESCRIPTIONS

- Assigned Reading: chapters 23-29
- Homework Assignment #1 due on Sunday, 3/24

WEEK 3: 3/26 AND 3/28—FOL INTERPRETATIONS, TRUTH, VALIDITY, AND JOINT SATISFIABILITY

- Assigned Reading: Chapters 30-32
- Quiz #1 on Tuesday, 3/26
- Homework Assignment #2 due on Sunday, 3/31

WEEK 4: 4/2 AND 4/4—FOL INTERPRETATIONS, TAUTOLOGIES, CONTRADICTIONS, CONTINGENCY, AND EQUIVALENCY

- Assigned Reading: Chapters 33-35
- Quiz #2 on Tuesday, 4/2
- Homework Assignment #3 due on Sunday, 4/7

WEEK 5: 4/9 AND 4/11—NATURAL DEDUCTIONS AND FOL VALIDITY

- Assigned Reading: Chapters 36-38
- Quiz #3 on Tuesday, 4/9
- Homework Assignment #4 due on Sunday, 4/14

WEEK 6: 4/16 AND 4/18—NATURAL DEDUCTIONS, RULES FOR IDENTITY, AND OTHER LOGICAL PROPERTIES

- Assigned Reading: Chapters 39-41
- Quiz #4 on Tuesday, 4/16
- Homework Assignment #5 due on Sunday, 4/21

WEEK 7: 4/23 AND 4/25—NATURAL DEDUCTION AND FINAL EXAM REVIEW

- Assigned Reading: None!
- Quiz #5 on Tuesday, 4/23
- **Final Exam: 4:30-6:30PM on Thursday, May 2**

## Statement on Academic Conduct and Support Systems

### Academic Conduct

Plagiarism—presenting someone else’s ideas as your own, either verbatim or recast in your own words—is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “[Behavior Violating University Standards](#)” policy. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on [Research and Scholarship Misconduct](#).

### Students and Disability Accommodations

USC welcomes students with disabilities into all of the University’s educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at [osas.usc.edu](https://osas.usc.edu). You may contact OSAS at (213) 740-0776 or via email at [osasfrontdesk@usc.edu](mailto:osasfrontdesk@usc.edu).