Introduction to Philosophical Logic

Instructor: Joseph M. Vukov
Meeting Time: TBD
Location: TBD
Office: TBD
Office Hours: TBD
Email: joseph.vukov@gmail.com
Course Information: available at josephvukov.weebly.com

Course Objectives: This course introduces students to philosophical logic. Philosophical logic is, broadly speaking, the study of argumentation. The subject is therefore important in its own right – philosophical logic helps us identity good arguments and bad arguments in both academic and non-academic contexts. But philosophical logic is also important in the influence it has exerted in other fields. The tools and discoveries of philosophical logic have proved foundational to modern philosophy, computer science, artificial intelligence, psychology, probability theory, and mathematics...just to name a few. Studying philosophical logic, in short, is important both for its own sake and for the sake of the influence it has had.

The objectives of the course are threefold:

First, students who successfully complete the course will demonstrate mastery of various logical tools. These tools may include, but are not limited to: truth tables, truth trees, formalization, proofs, and quantification.

Second, students who successfully complete the course will demonstrate the ability to apply logical devices beyond the classroom, to use the skills they learn in class to identity sound and unsound arguments they encounter outside class.

Third, students who successfully complete this course will demonstrate increased competency in their critical reasoning skills. Critical reasoning is not reducible to philosophical logic, but competence in philosophical logic is an important aspect of critical reasoning.

Notice from the Office of Disability Services. Under the Americans with Disabilities Act and Section 504 of the Vocational Rehabilitation Act of 1973, all students, with or without disabilities, are entitled to equal access to the programs and activities of this University. If you believe that you have a disabling condition that may interfere with your ability to participate in the activities, coursework, or assessment of the object of this course, you may be entitled to accommodations. Please schedule an appointment to speak with someone at the Office of Disability Services.

Texts Required
David Papineau - Philosophical Devices - ISBN 0199651736
Additional Readings Available on Blackboard
Academic Integrity

Plagiarism and other forms of cheating will not be tolerated. All offenses will be reported to the dean of the student’s college. You are responsible for knowing what plagiarism is – ignorance is no excuse. Penalties for cheating are – at minimum – as follows: 

First Offense: The student will receive an F on the assignment. Second Offense: The student will receive an F in the course. For the university’s full official policy on academic integrity, see: WEBSITE.

Basic Expectations

I expect from you:

- **Interaction**: I expect you to interact regularly, intelligently, and respectfully with the course content, with your classmates, and with me.
- **Preparation**: I expect you to complete your readings and assignments by the day for which they are assigned.
- **Thoughtfulness**: I expect all of your work to demonstrate time spent thinking. Philosophical logic is complex, and merits your careful study. In short, I expect your work to reflect effort.
- **Punctuality**: I expect you to arrive to every class session and turn in every assignment on time. Late assignments will not be accepted unless prior arrangements have been made at least three days before the assignment is due.
- **To turn off any screens**: Computers and cell phones are not to be used in the classroom.

You Can Expect from Me:

- **Timeliness**: I will return your assignments in a timely fashion. I will also reply to emails within 48 hours of receiving them.
- **Preparation**: I will come to class well-prepared for the day’s session.
- **Availability**: I will be available at office hours or whenever we can find time to answer your questions about assignments, grading, or other aspects of the course.

Means of Evaluation

Your final grade will be a weighted one. This means that various assignments will count towards a certain percentage of your final grade. The assignments and their respective weights are listed below; the descriptions are all subject to (slight) modification:

**Exercises**: 40%

The only way to master philosophical logic is to practice – a lot. You will therefore complete a set of exercises for a number of our class sessions. Exercise sets will be due to me at the beginning of the class session for which they are assigned. Late assignments will receive a 0 – no exceptions.

While certain exercise sets will be longer than others [the difficult sets will tend to include fewer exercises than the easy ones], I will weight each set of exercises equally. I will throw out the exercise set on which you score the lowest.
**Midterm:** 10%

The midterm will consist of questions very similar to those you will be completing in your exercises. The best way to study for the midterm therefore consists in mastering the problems found in these exercises.

**Logical Analyses:** 15% [3 analyses at 5% each]

For this assignment, you will apply your newfound logical skills to arguments you find beyond the classroom. You should complete three analyses – each analysis should include the following:

1. The complete text of the argument you are analyzing. This text could be a distinctively philosophical one, a text from a popular press, a famous speech, an online conversation with one of your friends – *any* kind of text you think could benefit from a logical analysis. When you are picking texts, however, keep in mind: (i) shorter texts are easier to analyze than longer ones, and (ii) clear texts are easier to analyze than convoluted ones.

2. A formalization of the text’s argument. **NOTE:** Analyses 1 and 2 need not include quantifiers – Analysis 3 must include quantifiers.

3. A formal proof that shows the argument to be valid or invalid.

4. A two-three page discussion [12 pt; double-spaced] of the argument and your formalization. In this discussion, you should use your formalization and proof to discuss the argument – is the argument valid, invalid, fallacious? Does it use any common logical forms [i.e. modus ponens]? Is the argument deductive or inductive? You should, however, go beyond a merely formal evaluation of the argument. You should, in other words, evaluate the content and not merely the form of the argument: are the premises true? Is the argument sound? Is the argument convincing?

Due dates for your analyses are as follows:

*Analysis 1 Due:* Class 14  
*Analysis 2 Due:* Class 21  
*Analysis 3 Due:* Class 29

**Attendance:** 10%

Attendance will be recorded at every class session, and is mandatory. For every unexcused absence, I will deduct 2 percentage points from your attendance grade (i.e. if you miss one session, you will receive 8% for attendance; two sessions, 6%; and so on). For the university’s policy on **excused** absences, see: [WEBSITE ON excused absences](#).

**Final:** 25%

The final will be cumulative and, like the midterm, will be composed of problems of the kind you find in your exercises. A study guide will be distributed near the end of the semester. But again, the best way to study for the final is mastering the problems you will be asked to complete in your exercises.
Topics and Readings

Unless otherwise indicated, all readings can be found in Hausman, Kahane, and Tidman, Logic and Philosophy. Page numbers are included in [brackets]. Due dates for Exercise Sets are included below. Specifics about which problems are included in each exercise set will be distributed at a later time. All topics and readings are subject to alteration.

Course Introduction

Class 1 - Course Welcome and Introduction
Class 2 - Chapter 1 [pp 1-8] - Arguments: Deductive and Inductive
Class 3 - Chapter 1 [pp 8-16] - Truth, Validity, Soundness, Consistency - Exercise Set 1 Due
Class 4 - Chapter 2 [pp 17-20] - Atomic and Compound Sentences
Class 5 - Chapter 2 [pp 21-35] - Truth-Functions, Variables, and Constants
Class 6 - Chapter 2 [pp 35-40] - Material Conditionals - Exercise Set 2 Due
Class 7 - Chapter 2 [pp 40-50] - More Complex Symbolizations
Class 8 - Chapter 3 [pp 53-58] - Truth Tables: Introduction
Class 9 - Chapter 3 [pp 59-70] - Truth Tables: Tautologies, Contradictions, Equivalences - Exercise Set 3 Due
Class 10 - Chapter 3 [pp 70-76] - Truth Tables: Validity and Consistency
Class 11 - Chapter 3 [pp 76-85] - Truth Tables: Short Truth Tables - Exercise Set 4 Due
Class 12 - Chapter 4 [pp 86-91] - Introduction to Proofs
Class 12 - Chapter 4 [pp 91-103] - Proofs Part 1
Class 13 - Chapter 4 [pp 103-111] - Proofs Part 2 - Exercise Set 5 Due
Class 14 - Chapter 4 [pp 111-122] - Proofs Part 3 - Analysis 1 Due
Class 15 - Midterm Review
Class 16 - Midterm
Class 17 - Chapter 5 [pp 123-132] - Conditional Proofs
Class 18 - Chapter 5 [pp 132-139] - Indirect Proofs - Exercise Set 6 Due
Class 19 - Chapter 5 [pp 139-149] - Advanced Proofs
Class 20 - Chapter 6 [pp 151-163] - Sentential Logic Truth Trees - Exercise Set 7 Due
Class 21 - Chapter 7 [pp 165-171] - Introduction to Predicate Logic - Analysis 2 Due
Class 22 - Chapter 7 [pp 171-180] - Quantifiers and Basic Symbolizations - Exercise Set 8 Due
Class 23 - Chapter 7 [pp 180-190] - Complex Symbolizations - Exercise Set 9 Due

Class 24 - Chapter 9 [pp 200-209] - Intro to Predicate Logic Proofs

Class 25 - Chapter 9 [pp 209-216] - Predicate Logic Proofs Part 1

Class 26 - Chapter 9 [pp 216-225] - Predicate Logic Proofs Part 2 - Exercise Set 10 Due

Class 27 - Chapter 10 [pp 226-229] - Relational Predicates Part 1

Class 28 - Chapter 10 [pp 229-240] - Relational Predicates Part 2 - Exercise Set 11 Due

Class 29 - Papineau Ch. 1-3 - Sets, Russell’s Paradox, and Infinity

Class 30 - Papineau Ch. 4-6 - Analyticity, A Prioricity, and Necessity

Class 31 - Pапинеau Ch. 10-12 - Soundness and Completeness

Class 32 - Course Summary - Analysis 3 Due

Class 33 - Final Exam Review