

# PHIL UN1401 — INTRODUCTION TO LOGIC

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| <b>Time:</b>      | FALL B MTWR 10:10-11:25 |
| <b>Professor:</b> | Karen Lewis             |
| <b>Email:</b>     | klewis@barnard.edu      |

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## Course Description

This course is an introduction to symbolic logic. Logic is the study of patterns of reasoning, i.e., when is it rational to infer one claim from others? Symbolic (or Formal) Logic approaches these questions using artificial or formal languages, much like the ones used in math. In particular, we will study a powerful artificial language called **First-Order Logic** (FOL) that will allow us to precisely formulate the concepts of proof, truth and valid inference. FOL has been of immense foundational importance to mathematics, philosophy, computer science, linguistics and artificial intelligence, and so through FOL we will be encountering ideas of interest to all of these disciplines. But our study of FOL will focus on using it to represent and evaluate the inferences we normally express in ordinary English and other natural languages, and so more than anything else, it will help us better understand good and bad arguments made in any discipline, and in any language. Throughout the course we will rely heavily on the interactive computer software included with the textbook to solidify our study of FOL.

## Textbook

The text/software package *Language, Proof and Logic* **second edition** by David Barker-Plummer, Jon Barwise & John Etchemendy. This textbook is available in electronic or printed formats. Textbooks must be purchased new in order to get access to the computer programs required for the course.

## Software

The textbook comes with four programs:

1. *Tarski's World*: a program for investigating when sentences in logical languages are true or false.
2. *Fitch*: a program for constructing and checking formal proofs
3. *Boole*: a program for constructing and checking truth tables
4. *Submit*: a program for submitting homework assignments to an online program called 'Grade Grinder'

## Format

This course will be taught remotely. We will largely use a *flipped classroom* format in which short lectures on the material are watched before class and class sessions are used for applying concepts, asking and answering questions, and working through problem sets.