Applied Symbolic Logic

Philosophy 315, Fall 2024
Scott Hall 101, M/Th 10:20–11:40
office hours Th 12–1 & by appt

To be able to understand contemporary philosophy, it helps to be "logically literate": to be fluent in various logical languages, and to understand what logic is all about. In this course we will study the basic techniques of logic, including syntax, semantics, proof theory, and metalogic; we will discuss some philosophy of logic; and we will study a number of logical languages, including some that go beyond intro logic and which are important in philosophy, such as three-valued logic, modal logic, and counterfactuals.

Prerequisite

Philosophy 201 (Intro Logic). I'll be liberal about exceptions, especially given a strong background in mathematics.

Readings

The course text is my *Logic for Philosophy*.

Requirements

Two exams (70%), plus periodic homework assignments (30%). Homework assignments will be posted on the Canvas site, and turned in there:

`https://rutgers.instructure.com/courses/289912`

You must do your homework completely on your own; no working in groups. If you get stuck on a problem, you can ask me for a hint. **Late homework will be penalized 10%; after 3 days it will not be accepted.**

Schedule

Philosophy of logic: what is logic about?

9/5 Chapter 1 (skim section 1.8)

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Propositional logic

9/9 Grammar and semantics. Pp. 15–16; sections 2.1–2

9/12 Establishing validity and invalidity. Section 2.4

9/16 Proof theory: sequents. Section 2.5

9/19 …continued

Three-valued logic

9/23 The idea. Sections 3.3–3.4.2

9/26 Priest; determinacy. Sections 3.4.3–3.4.5

Propositional modal logic

9/30 Idea of modal logic; grammar. Chapter 6 through the end of section 6.2

10/3 Semantics. Pp 12–15; section 6.3 through the end of 6.3.1

10/7 Establishing validity. Section 6.3.2

10/10 Establishing invalidity. Section 6.3.3

10/14 …continued

10/17 …continued

Counterfactuals

10/21 Intro. Chapter 8 through the end of section 8.1.6

10/24 Stalnaker's semantics. Section 8.3

10/28 **Midterm**

10/31 Establishing validity. Section 8.4

11/4 Establishing invalidity. Section 8.5

11/7 …continued

11/11 Logical features of Stalnaker's system. Section 8.6

11/14 Lewis's criticisms and semantics. Sections 8.7–8.8

Predicate logic

11/18 Grammar and semantics. Sections 4.1–4.2

11/21 …semantics continued

11/25 Establishing validity and invalidity. Section 4.3

11/26 (Tuesday) …continued

Quantified modal logic

12/2 Grammar, semantics. Chapter 9 through the end of section 9.3

12/5 Establishing validity and invalidity. Section 9.4

12/9 Philosophical questions about QML. Section 9.5

12/23 8am **Second exam (noncumulative)**