

Philosophy of Logic 2009 Fall General Course Plan

The course provides an overview of formal logic, its underlying conceptual setup and its role with regard to other disciplines (philosophy of language, epistemology, metaphysics and possibly mathematics and physics). Starting with a broad historical outline it attempts to exemplify various points by historical examples. The following is a tentative inclusive list. Probably not all items will be covered. The material may depend on progress in class, which might depend on the level of the students (items do not represent equal class time).

1. Introduction: Logic as the schematic representation of the most elementary patterns of thinking that can be explicitly expressed in language. The linguistic element and the wide scope of logic that distinguishes logic from mathematics. Basic factors that can influence logic: linguistic starting point and metaphysical theory. Some basic concepts: Valid inference, truth and falsity, propositions, statements and judgments, logical consequence and logical particles.
2. Some logical aspects in Plato. Aristotle's theory of syllogisms and the two-term framework.
3. The historical use of classes and diagrams in logical reasoning.
4. Boole's work and its significance. The extensional turn.
5. Logical techniques and insights in Lewis Carroll. The essential limitations of monadic logic.
6. Frege's system and its expressive power. The significance of dyadic logic.
7. The semantic paradoxes.
8. Russell's mixed linguistic/algebraic approach to logic and his theory of propositions. Wittgenstein's conception of logic.
9. Semantic and syntactic conceptions of logic and Hilbert's formalist program.
10. The notions of logical truth and logical consequences and attempts to characterize logical particles.
11. Formal logic and natural language.
12. Attempts to define the boundaries of "pure logic". Rich systems versus minimal systems.
13. Some non-classical logics and their underlying motivation.

Source material (subject to some changes as we go along):

- Short excerpts from some of Plato's dialogues (*Sophist*, *Cratylus*, *Theaetetus*, *Parmenides*)
- Excerpt from Aristotle's *Prior analytics*
- Excerpts from Boole's *The Law's of Thought*
- Excerpts from Carroll's *Symbolic Logic*
- Frege *Begriffsschrift* (excerpts), "On Concept and Object" "Function and Concept"
- Russell *Principles of Mathematics* (excerpt: pp. 10-23) "Mathematical Logic as Based on the Theory of Types"
- Hilbert "On the Foundations of Logic and Arithmetic"
- Tarski "On the concept of logical consequence"

- A.N. Prior “The runabout inference ticket”
- Belnap “Tonk Plonk and Plink”
- Excerpts from Strawson’s “Introduction to Logical Theory” and from Quine’s review of the book.
- Quine “Truth by convention”, “On what there is”, and excerpts from his *Philosophy of Logic*
- Boolos “To be is to be a Value of a Variable (or to Be Some Values of Some Variables)”

The course in Symbolic Logic or any equivalent background is a prerequisite for this course. Instructor’s permission is required in all borderline cases.