

Philosophy 3204

Symbolic Logic

Professor Matthew Moore



In this course we will undertake a rigorous study of such basic logical concepts as validity, entailment and logical truth. We will define these concepts for a formal language with symbols for sentential connectives like “or” and “if . . . then”; for quantity terms like “all” and “some”; and for relations like “is taller than”. It will turn out that our basic concepts can be defined both semantically (in terms of meaning) and syntactically (in terms of truth trees). Do our two kinds of definitions—semantic and syntactic—match up? The positive answer to this question is called the Completeness Theorem, and in the final weeks of the course we will see why this is the right answer. Another important question is about what is called decidability: can a computer be programmed to determine whether, e.g., an argument is valid? Here the answer is negative; we will also see why our logic is undecidable and will discuss the philosophical ramifications of that fact. Our treatment will be self-contained; no previous knowledge of logic will be presumed.