

Introduction to Logic and Computation I

Fall 2008

MATH 570 / LGIC 310 / PHIL 006 / PHIL 506

MW 10:30 - 12

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About This Course:

From the Encyclopaedia Britannica: Goedel's proof, which states that within any rigidly logical mathematical system there are propositions (or questions) that cannot be proved or disproved on the basis of the axioms within that system; that is, such a system cannot be proved simultaneously to be complete and consistent. This proof has become a hallmark of 20th-century mathematics, and its repercussions continue to be felt and debated.

Textbook:

H.B. Enderton. "A Mathematical Introduction to Logic", Second Edition. Academic Press, 2001. ISBN-10: 0-12-238452-0.

Syllabus:

Chapters 0 - 3 from Enderton:

Propositional Logic: Propositions and Connectives, Semantics, Natural Deduction, Completeness.

Predicate Logic: Quantifiers, Structures, Semantics, Natural Deduction, The Completeness Theorem, Compactness and Skolem-Loewenheim Theorems, Skolem Functions.

Undecidability and Incompleteness: Turing Machines, Undecidability of Predicate Logic, Goedel's First and Second Incompleteness Theorems.