Math 574: Topics in Logic and Foundations

Spring 2004, MWF 9:05–9:55 AM, 113 McAllister, Schedule 292990

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The web page for this course is

> `http://www.math.psu.edu/simpson/courses/math574/`.

This course is intended for graduate students in mathematical logic. I will carefully introduce a variety of topics which are important in contemporary mathematical logic, but not normally covered in our basic logic sequence, MATH 557–558. Among the topics:

- computability in core mathematics

- unsolvable problems in core mathematics

- Turing degrees (i.e., degrees of unsovability)

- basis theorems and absoluteness

- combinatorial set theory

- ultrapowers

- large cardinals

- forcing

- infinite games and determinacy

- models of arithmetic

I don't plan to go very deeply into any of these topics. Material will be selected from standard textbooks such as (1) *Theory of Recursive Functions and Effective Computability*, by Hartley Rogers, (2) *Set Theory*, by Thomas Jech, (3) *Models of Peano Arithmetic*, by Richard Kaye.