

Dear Carol and Peter,

Below is the syllabus for Math 661. If I should provide more information about the course, please let me know. I would be happy to write a more detailed description. There will not be a required text (as there is no book on the subject), but I will photocopy a number of articles for the students. Also, if you would rather have a copy of the syllabus in LaTeX or as a pdf or ps file, just let me know.

Thanks,
Reed Solomon

Department of Mathematics
University of Wisconsin-Madison

Math 661 will be an introduction to applications of Π^0_1 classes in computability theory and reverse mathematics. A Π^0_1 class is the set of infinite paths through a computable binary branching tree. The course will split into three parts. First, we will introduce Π^0_1 classes as topological spaces and survey results on the computational properties of members of Π^0_1 classes. Second, we will apply these results in a variety of contexts, including effective algebra, effective analysis, reverse mathematics, and algorithmic randomness. Third, we will consider various notions of complexity for Π^0_1 classes, including Turing, Muchnik, and Medvedev degrees. Muchnik and Medvedev degrees are currently very active research areas and they lead to nice results or models of fragments of second order arithmetic. The only prerequisite for the course is a rudimentary knowledge of basic logic and computability theory. (In particular, techniques such as infinite injury are not required.) The pace of the course and the exact applications covered can be varied depending on the background and the interests of the students. For more information, please contact Reed Solomon at rsolomon@math.wisc.edu.