

SYLLABUS

Set Theory and Applications (math 683.1) FALL 2015

INSTRUCTOR:	Dr. Krzysztof Chris Ciesielski
OFFICE HOURS:	T, Th 3:00-3:50pm, 6:00-6:50pm, and by appointment
OFFICE:	308G Armstrong Hall
CLASS MEETING TIMES:	T, Th 7:00-8:15pm
CLASS MEETING PLACE:	313 Armstrong Hall
WEB PAGE:	www.math.wvu.edu/~kcies
TEXT:	Krzysztof Ciesielski, <i>Set Theory for the Working Mathematician</i> , London Math. Soc. Stud. Texts 39 , Cambridge Univ. Press 1997, see http://www.math.wvu.edu/~kcies/STbook.html
TENTATIVE GRADING SCHEME:	Homework & Quizzes 30% Mid Term Test 30% Final Test 40%
FINAL EXAM:	The final exam will be comprehensive.

The course and its sequel 783 will concentrate on the introduction of typical methods in set theory: transfinite induction, Zorn's Lemma, the Continuum Hypothesis, etc. It will be designed to stress techniques that are useful in other parts of mathematics including topology, analysis and algebra. The applications will be mainly a subject of the second semester course.

The prerequisites for this course include at least one of the 500 level course: topology 581, algebra 541, or analysis 551. In particular, a good understanding of abstract proof techniques will be necessary.

I will also assume basic set-theoretical knowledge. This includes a good understanding of the basic set operations (union, intersection, Cartesian product of arbitrary families of sets, and the difference of two sets), abstract functions (operations of taking images and preimages of sets with respect to functions) and elements of the theory of cardinal numbers (finite, countable and uncountable sets.)

Most of these prerequisites will be discussed in the course. However, it will be done very quickly, and I will not spend enough time on each of these subjects to build up your intuition about them if you have not have seen them before.

To help you get through the difficulty of studying the abstract theory I will be assigning you homework exercises at least once a week. You will be expected to write the solutions, which I will correct. I will try to write you my comments in your solutions. I like also to emphasize that some of the exercises might be more difficult that the others and I will not expect you to solve all exercises during the semester. However, to be at the "A" level for the homework I will expect you to solve 70-80% of all homework assignments.

The questions and discussions will be encouraged. In particular, this kind of interaction may have an important influence on the pace and some aspects of the content of the course.