

ANALYSIS I  
MA 676 SECTION 001 – SPRING 2017

**Syllabus**

**Instructor:** Francis Chung  
**Office:** 727 Patterson Office Tower  
**Office Hours:** Tues 10-11, Wed 3-4, Thurs 3-4.  
**Email:** fj.chung@uky.edu  
**Class Meetings:** MWF 1-2, CB 343.

**Textbook:** There is no required textbook for this class. I will be mostly following a mixture of the following books: *Analysis: an introduction* by Richard Beals, *Real Analysis: measure theory, integration, and Hilbert spaces*, by Elias Stein and Rami Shakarchi, and *Real and Complex Analysis* by Walter Rudin. Roughly speaking, the course material corresponds to Chapters 10-12 of Beals, or Chapters 1-3 of Stein and Shakarchi. Rudin's book presents a much more advanced point of view but can be useful as a reference. Sadly our course material is scattered somewhat haphazardly throughout Rudin's book.

**Material:** This course has two overarching themes: first, Lebesgue's concepts of measure and integration, and second, the treatment of sets of functions as metric spaces. The two themes are intertwined, since a proper definition of the integral allows us to properly understand various notions of convergence of functions.

We will begin the course by studying the notions of Lebesgue measure and integration, first on the real line, and then on  $\mathbb{R}^n$ . Along the way we will discuss basic properties of the Lebesgue integral, convergence theorems, Fubini's theorem. Then we will do a brief review of metric spaces, and discuss  $L^p$  spaces and some of their basic properties. Finally, we will discuss differentiation properties of the integral, including the Lebesgue differentiation theorem.

<b>Grades:</b>	Problem Sets	30 %
	Class Participation	10 %
	Quizzes	10 %
	Midterm	20 %
	Exam	30 %

Letter grades will be assigned to percentages in the following manner: 80-100% corresponds to an A, 70-79% corresponds to a B; less than 70% corresponds to a C.

Problem sets will be assigned roughly once per week, to be turned in at the beginning of class on the due date. Late problem sets will not be accepted. You are allowed and in fact encouraged to discuss problems with others, but your solutions

must be written up independently. Solutions should be written clearly, in complete sentences.

There will be a midterm exam on or around March 3, with precise arrangements to be made later. The final exam is scheduled by the university to occur on May 1, 2017, from 8-10am.

**Accommodations:** If you have a documented disability that requires academic accommodations, please see me as soon as possible. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center for coordination of campus disability services available to students with disabilities.

Updates to this document, along with announcements and problem sets, will be posted on my website, under teaching.