Pure Math 450/650 Winter 2017
Fourier Series and Lebesgue Measure

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Class meets: MWF 9:30–10:20 in MC 4045

Website: www.math.uwaterloo.ca/~krdavids/PM450.html

Textbooks: These will be available in the bookstore.
   - Real analysis and applications: theory in practice
     by K.R. Davidson and A.P. Donsig
   - An Introduction to Lebesgue Integration and Fourier Series
     by H.J. Wilcox and D.L. Myers

Other reference books: The book by Seeley is very inexpensive. The last three books are more advanced, but are standard texts. Folland and Royden are commonly used as texts for PMath 451/651.
   - An Introduction to Fourier Series and Integrals by R. Seeley
   - An introduction to harmonic analysis by Y. Katznelson
   - Real Analysis by G.B. Folland
   - Real analysis by H.L. Royden

Course Outline
   - Existence and uniqueness of solutions of ODEs
   - The steady state heat problem and Fourier series
   - Fourier series of continuous functions
   - Introduction to Lebesgue measure
   - Fourier series of $L^p(\mathbb{T})$ functions

Grading
   - There will be approximately 6 assignments.
   - There is no midterm exam.
   - Undergraduates: Assignments 40%, Final Exam 60%.
   - Math grad students have to give a talk and write a short paper
     Assignments 40%, Talk and paper 10%, Final Exam 50%.
   - Graduate students in other faculties: the talk and paper is optional.