MATH 4332
Introduction to Real Analysis, Part II
Spring 2016

Class:	Tu&Th 2:30-3:50pm, F 154
Instructor:	Bernhard Bodmann, *bgb*@math.uh.edu
Office:	PGH 604; Tu 12-1pm, Wed 1-2pm,
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Objectives:	This course continues the rigorous introduction to deeper properties of the real numbers, continuous functions, and differentiability needed for advanced study in mathematics, science and engineering. As a continuation of Math 4331, it focuses more on applications of the fundamental concepts. Topics covered are metric spaces, completeness, polynomial approximations, the contraction mapping principle, differential equations, Fourier analysis and convex optimization.

Contents:

Topic	*Approx. Time*
Metric spaces and completeness	3 weeks
Approximation in polynomial spaces	2 weeks
Dynamical systems and contractions	2 weeks
Differential equations	1 week
Fourier series and approximation	3 weeks
Convexity and optimization	1 week

Prerequisites:	Math 4331.
Text:	Kenneth Davidson and Allan Donsig, "Real Analysis with Applications: Theory in Practice", Springer, 2010; or (out of print) Kenneth Davidson and Allan Donsig, "Real Analysis with Real Applications", Prentice Hall, 2001.
Exams:	Midterms: February 25 and March 31, 2016; in-class exams. Final exam (cumulative), date to be announced by the registrar.
Assignments:	You will be asked to hand in approximately ten assignments, which will be due on Thursdays in the lecture. Solutions will be posted online.
Final Grade:	Final exam contributes 30%, midterms 20% each, assignments 30%. All grades are summed and divided by the total number of points you can collect in the course. A percentage of 46% or more is D- , 54% or more is D, 62% or more is C, 70% is B-, 77% is B, 85% or more is A- , of 90% or more is A.