

ANALYSIS II

Math 555

Spring 1998

Instructor:

Professor: Bob Sharpley
Office: 313D LeConte
Office Hours: MW 4 p.m. or appointment.

Prerequisite: Math 554 or equivalent. See for example the lecture notes in [Math 554 \(Spring 96\)](#)

Course Materials:

- General Reference
 1. *Real Analysis, A First Course*, by Russell A. Gordon, Addison-Wesley Higher Mathematics Series, Reading, MA, 1997.
- Supplementary materials
 1. *Principles of Real Analysis* (3rd ed.), by Walter Rudin, McGraw-Hill, 1976.
 2. <http://www.math.sc.edu/~sharp/le/math555>

Grading:

The course grade is computed from 3 Test grades (20% each), Homework (10%) and the Final Exam (30%).

Course Content

The course will cover the topics contained in the last three chapters of the text:

- Introduction to Metric Spaces
- Special Functions (exponential, logarithmic, trigonometric functions, ...and their inverses)
- Infinite series (convergence tests)
- Sequences and Series of functions (for example, $C[\mathbf{a},\mathbf{b}]$ is a complete metric space.)
- Interchange of Limit Operations

Additional topic which will be drawn from several sources (primarily Rudin and lecture notes) and will include:

- Riemann-Stieltjes Integration
- Weierstrass Approximation Theorem
- Picard Fixed Point Theorem
- Existence/Uniqueness of ODE
- Ascoli's Theorem

If time permits, we will also cover introductory material to

- Fourier Series and Existence/Uniqueness of solutions of elliptic and parabolic PDE.

Robert Sharpley
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