

OFFICIAL SYLLABUS 450-REAL ANALYSIS

Adopted – Fall 2003

(Committee: Drs. K. Jarosz, U. Łędzewicz, G. Pelekanos, S. Rigdon)

Catalog Description

Euclidean and metric spaces, sequences and functions in Euclidean spaces, differentiation of functions of several variables. Prerequisites: 250, 321, 350.

Textbook

Introduction to Real Analysis, 3rd Edition by Robert G. Bartle.

Course Outline and Topics

Chapter 6, Differentiation

The derivative. Mean Value Theorem. L' Hospital's Rules. Taylor's Theorem.

Chapter 7, The Riemann Integral

The Riemann Integral. Riemann Integrable Functions. The Fundamental Theorem. Approximate Integration.

Chapter 8, Sequences of Functions

Pointwise and Uniform Convergence (Review from Math 350). Interchange of Limit. The Exponential and Logarithmic Functions. The Trigonometric Functions.

Chapter 9, Infinite Series

Absolute Convergence. Tests for Absolute Convergence. Tests for Nonabsolute Convergence. Series of Functions.

Chapter 10, The Generalized Riemann Integral

Definition and Main Properties. Improper and Lebesgue Integrals.

Chapter 11, A Glimpse into Topology

Open and Closed Sets in \mathbb{R} . Compact Sets.

Any instructor should cover all of the material specified, additional sections are optional.