San Francisco State University
Department of Mathematics
Course Syllabus

MATH 710
Analysis I

Prerequisites

Math 470/471 with a grade of C or better.

Bulletin Description

Rigorous development of the theory of metric spaces and Lebesgue integration. Concepts covered in the theory of metric spaces include open and closed sets, boundary, closure, interior, connectedness, compactness, continuous functions on metric spaces and the Baire Category Theorem. Topics in Lebesgue integration, such as sigma-algebras, outer measures, measures, measurable functions, integration and convergence will be discussed.

Course Objectives

The aim of Analysis I is to introduce the theory of metric spaces and Lebesgue integration. Students are expected to lean how to write complete proofs using theorems from metric spaces and Lebesgue integration.

Students learn to solve problems using the concepts of real analysis. They present their solutions as proofs written in correct mathematical English. Students will be able to devise, organize and present brief solutions based on the theorems of real analysis.

Students who successfully complete this course should be capable of understanding the concepts of open and closed sets, boundary, closure, interior, connectedness, compactness, continuous functions on metric spaces and the Baire Category Theorem. In the theory of Lebesgue integration, they should have a good comprehension of topics such as sigma-algebras, outer measures, measures, measurable functions, integration and convergence.

Evaluation of Students

Students will be graded on their ability to devise, organize and present in correct mathematical English rigorous solutions to assignments and problems on exams. While instructors may design their own methods of evaluating student performance, these methods must include in-class examinations, assignments and a final examination.

Course Outline

Topics	Number of Weeks
Metric Spaces	6
Measure Theory	4
Theory of Integration	4
Baire Category Theorem	1
Arzela-Ascoli Theorem, Stone-Weierstrass Theorem (optional)	1

Textbooks and Software

Real Analysis (3rd edition), by Royden.
An Introduction to Analysis (3rd edition), by Wade.

Submitted by: ___Alex Schuster_____ Date: September 26, 2006_____