劉 豐 哲 ： 實 分 析

Nature of the course 必修		Area： Real Analysis 。			
Course number		Section number	免填	Number of credits	
Course title	課程名稱：Real Analysis I				
Instructor	教授：Fon-Che Liu				
開設學期： 全學年		上課時間： 星期　　節次		開課對象： 皆可	

I. ＊**Contents**：The course aims to cover the Lebesgue theory of measure and integration as well as differentiation theorem of Lebesgue. Their role in the analysis of functions of real variables is emphasized. The fact that the real number system is linearly ordered is duly brought to light, in that monotony arguments are stressed. Elements of basic abstract analysis are also included for the sake of students. Topics covered include the following: Metric spaces and related concepts of limit and continuity; Semicontinuity of real-valued functions; General theory of measure and integration; Construction of measures from outer measures according to Caratheodory; L^p spaces with related inequalities; Covering lemmas and Lebesgue differentiation of Radon measures; Differentiation of functions of a real variable, functions of bounded variation and absolutely continuous functions; Lebesgue-Stielzes measures and integration by parts.

II. **Course prerequisite**：Advanced Calculus; Elementary Linear Algebra.

III. ＊**Reference material (textbook(s))**：1) G. B. Folland, Real Analysis; 2) S. L. Royden, Real Analysis; 3) S. Saks, Theory of Integral; 4) E. M. Stein & R. Shakarchi, Real Analysis.

IV. ＊**Grading scheme**：請填寫各項計分之百分比，例如：期中30% 期末40% 作業10% 報告20%，總計100%
Mid-term Examination: 30 %; Final Examination: 30 %; Home works: 20 %; Quizzes: 20 %.

V. ＊**Course Goal**：To prepare students for their further studies in modern analysis and probability theory.