

THE CHINESE UNIVERSITY OF HONG KONG

Department of Mathematics

MATH5012 (Spring 2017)

Real Analysis II

FRIDAY 1:30-4:30

Course Web Page : <http://www.math.cuhk.edu.hk/~math5012>

Introduction

The tentative contents of this course: Differentiation theory, covering theorems, Radon-Nikodym theorem, Lebesgue differentiation theorem, one-dimensional case; Product measure, Fubini theorem, layer cake representation, convolution; Weak convergence of measures, Young's measure; Radamarcher's theorem, the area formula and coarea formula; Distribution theory, Fourier transform, Paley-Wiener theorem, Sobolev's lemma.

This is a continuation of MATH5011 Real Analysis I.

Instructor

- Prof Kai-Seng Chou
- Contact information:
 - Office: Rm 237 LSB
 - Phone: 3943 7971
 - Email: kschou@math.cuhk.edu.hk

References

The materials of this course are mainly taken from the following texts.

- [EG] *Measure Theory and Fine Properties of Functions*, L.C. Evans and R.F. Gariepy, CRC Press 1992.
- [HS] *Real and Abstract Analysis*, E. Hewitt and K. Stromberg, Graduate Texts in Mathematics, Springer-Verlag, New York 1975.
- [R1] *Real and Complex Analysis*, 3rd ed. W. Rudin, McGraw-Hill, New York 1966.
- [R2] *Functional Analysis*, 2nd ed. W. Rudin, McGraw-Hill, New York 1991.
- [SS] *Real Analysis: Measure Theory, Integration and Hilbert Spaces*, E.M. Stein and R. Shakarchi, Princeton Lectures in Analysis, Princeton 2005.

Marking Scheme

Presentation 50%

Final Examination 50%