

MATH 7366-1: Stochastic Analysis**Time:** Monday, Wednesday, Friday 10:30–11:20**Room:** Lockett 119**Prerequisite**

Undergraduate probability theory such as Math 3355 or Math 4058

Textbook

The following book together with class lecture notes:

H.-H. Kuo: Introduction to Stochastic Integration, Universitext, Springer, 2006

Reference

Kuo, H.-H.: White Noise Distribution Theory, CRC Press, 1996.

Coverage

The main aim of this course is to study a new theory of stochastic integration which I introduced in 2008. This new theory is an extension of the Itô theory of stochastic integration. We will cover the following subjects:

1. A brief review of the Itô theory for those parts needed for the new theory, especially the martingale property and the Markov property.
2. We will briefly describe the white noise theory for the part on stochastic integration in order to compare the white noise approach and the new theory of stochastic integration.
3. A new theory of stochastic integration with integrands containing adapted stochastic processes and instantly independent stochastic processes. We will give many examples to motivate new concepts of near-martingale property and near-Markov property. In addition we will propose research problems for further investigation of this new theory.

Grading

The grade will be determined by homework (40%), presentation (20%), and the final exam (40%) with the following tentative scale by using the new university grading system:

$96 \leq A^+ \leq 100$	$92 \leq A \leq 95$	$88 \leq A^- \leq 91$
$84 \leq B^+ \leq 87$	$80 \leq B \leq 83$	$76 \leq B^- \leq 79$
$73 \leq C^+ \leq 75$	$70 \leq C \leq 72$	$67 \leq C^- \leq 69$
$64 \leq D^+ \leq 66$	$61 \leq D \leq 63$	$58 \leq D^- \leq 60$
$F \leq 57$		

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