

Spring 2003

## MATH 7390-2: Advanced Topics in Probability Theory

**Time:** MWF 9:40–10:30

**Room:** Lockett 111

### Prerequisite

Math 7311 (Real Analysis I) or equivalent

### Coverage

This course will cover the following topics:

1. Brownian motion
2. Wiener-Itô decomposition theorem
3. Measures on infinite dimensional spaces
4. Wiener space
5. Abstract Wiener spaces
6. Nuclear space
7. Stochastic integrals
8. The Itô formula
9. Diffusion processes
10. Mathematical finance applications
11. Theory of generalized functions on  $R^n$
12. White noise theory

### References

1. Kuo, H.-H.: Gaussian Measures in Banach Spaces, Lecture Notes in Math., Vol. 463, Springer-Verlag, 1975
2. Kuo, H.-H.: Stochastic Integration. (In preparation)
3. Kuo, H.-H.: White Noise Distribution Theory, CRC Press, 1996

### Grading

The grade will be determined by homework assignments (65%) and the final exam (35%) with the tentative scale: A 80%; B 70%; C 60%

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