AN INTRODUCTION TO FINANCIAL MATHEMATICS

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Abstract.

1. Lecture 11: An introduction to stochastic analysis for financial mathematics

We will give a brief introduction to the stochastic analysis aimed to discussing after that pricing of derivatives in continuous time markets. We will discus such notions as Brownian motion, Doob-Meyer supermartingale decomposition, stochastic integrals, Itô's formula, Levi's characterisation of the Brownian motion, Girsanov's theorem, stochastic differential equations, martingale representation as stochastic integrals. This material can be found in [1], [4] and [3] while for a more thorough study of stochastic analysis we refer to [2].

References

[1] D. Lamberton and B. Lapeyre, *Introduction to Stochastic Calculus Applied to Finance*, Chapman& Hall/CRC, London, 2008.

[2] B. Oksendal, *Stochastic Differential Equations*, Springer, Berlin, 6th ed., 2003.

[3] S. Shreve, *Stochasic Calculus and Finance*, vol. 2, Springer, 2004.

[4] R.J. Williams, *Introduction to the Mathematics of Finance*, AMS, Providence R.I., 2006.

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