PDE in Finance
Spring 2009
Instructor: Marco Avellaneda

Syllabus

1. The Heat Diffusion Equation
2. Ito Calculus and Expectation of Functionals of Diffusion Processes
3. The Black-Scholes PDE
4. Trinomial Trees and Finite-Difference Schemes
5. Barrier Options
6. Uncertain Volatility Model
7. Option Spreads and Exotic Options: Valuation and Hedging
8. Stochastic Volatility Models
9. Volatility Skew
10. Steepest-Descent Approximations for Heat Kernels
11. Basket Options and Dispersion Trading, Spread Options
12. Stochastic Optimal Control and Applications to Financial Modeling
13. Stock Pinning on Option Expiration Dates

References

1. Robert V. Kohn, *Lecture Notes on PDEs in Finance*
   http://www.math.nyu.edu/faculty/kohn/pde_finance.html


