Course: Computational Methods for Option Pricing

Text: Numerical Methods in Finance and Economics by Paolo Brandimarte, John Wiley and Sons, 2nd Edition   ISBN 13 978 0 471 74503 7

Prerequisite: Numerical Methods (22:839:510) or permission by instructor

Homework assignments: to be submitted using MATLAB

Week 1. Classification of partial differential equations

2. Numerical solution by finite difference methods

3. Solving the heat equation by explicit method

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5. Convergence, consistency and stability of numerical schemes

6. Pricing by Binomial trees

7. Pricing American options by binomial trees

8. Simulating geometric Brownian motion

9. Option pricing by Monte Carlo methods

10. American, European and Asian options

11. Option pricing by finite difference

12. Applying finite difference method to Black-Schole equation

13. Option pricing by explicit and implicit method

14. Pricing American option by Crank-Nicolson method

15. Final Exam