

Announcing a New Course

MONTE CARLO METHODS IN FINANCIAL MATHEMATICS



MAP 6437 Section 4
Course Ref # 08372
MWF 9:05-9:55 AM

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Monte Carlo simulation is a popular numerical tool in financial engineering, especially in the areas of derivative pricing and risk management. In this course we will learn about the general theory of Monte Carlo methods, covering topics like pseudorandom numbers, generation of random variables, variance reduction techniques, low-discrepancy sequences and quasi-Monte Carlo methods. As we learn the theory we will discuss applications in computational finance, covering problems like pricing European and American type derivatives, estimating sensitivities, and pricing collateralized mortgage obligations.

Prerequisite: A good understanding of probability and basic measure theory, ability to write computer programs, sufficient mathematical maturity to read research papers. Student must be in Financial Mathematics degree program, preferably in their second year. First year students must obtain permission from the director of the program, Dr. Case, and the instructor, Dr. Ökten.

Suggested reading: “Monte Carlo Methods in Financial Engineering” by Paul Glasserman, Springer, 2004. “Simulation and the Monte Carlo Method”, by Reuven Y. Rubinstein, John Wiley & Sons, 1981.