

Stochastic Simulation

This doctorate level course discusses methodologies for stochastic simulation. The aim is to create familiarities with different theoretical concepts of simulation through various types of applications ranging from queueing systems to financial engineering. The following topics will be discussed

1. Generating numbers and stochastic processes
2. Numerical integration (numerical methods to compute integrals)
3. Regeneration in discrete-time simulation
4. Importance Sampling and rare event simulations
5. Control Variates
6. Output analysis
7. Gradient estimation and stochastic optimization
8. Pricing derivative securities