

MT-529	Monte Carlo Techniques for Simulations
	<p><u>Models:</u>  Various types of models, Properties of linear models, Model building techniques, Black box approach, Generation of random numbers, Transformation test of randomness,</p> <p>Parameter estimation, Least mean square.</p> <p><u>Random Number Generation:</u>  Generating uniformly distributed variates, Generating from other distributions, Testing random number generators.</p> <p><u>Generating Stock Prices:</u>  Generating prices for a single stock, Generating correlated stock prices, Generating stock price paths.</p> <p><u>Monte Carlo Integration:</u>  Crude Monte Carlo integration, Option pricing as an integration problem, Estimating the Greeks, Error analysis, Open rules, Closed rules.</p> <p><u>Variance Reduction and Finite Difference Methods:</u>  Control variates, Antithetic variates, Importance sampling, Application to derivatives pricing, Optimal stopping boundary, Adapting binomial trees, Finite difference and Monte Carlo methods.</p> <p><u>Reference Books:</u></p> <ol style="list-style-type: none"> <li>1. Mun J, <i>Modelling Risk: Applying Monte Carlo Simulation, Real Options Analysis, Forecasting, and Optimization Techniques</i>, John Wiley &amp; Sons, 2006.</li> <li>2. Mcleish Don.L, <i>Monte Carlo Simulation and Finance</i>, John Wiley &amp; Sons, 2005.</li> <li>3. Giordano F.R, <i>Mathematical Modelling</i>, 3rd Edition, Thomson, 2003.</li> </ol>