MT-257	**Stochastic Calculus**
	Random walks and first step analysis, First martingale steps, Riemann Integration, The Riemann Integral of Brownian Motion, Wiener Integration, Calculating Wiener Integrals, Properties of the Wiener Integral, Analysis of continuous-time stochastic models involving stochastic integrals and stochastic differential equations, Ito Integration, Ito's Formula, Stochastic differential equations and their links to partial differential equations, Stochastic calculus methods in finance, models of evolution of stock prices, interest rates, pricing of options, and pricing of other contingent claims. The Black-Scholes Partial Differential Equation. The Diffusion equation, Martingale representation theorem, Girsanov theory, Arbitrage and Martingales, The Feynman-Kac formula. **Recommended Books:** ○ "Stochastic Calculus and Financial Applications" Springer, 2001 ○ "Introductory Stochastic Analysis for Finance and Insurance", X. Sheldon Lin, John Wily & Sons Inc., 2006.