

MT-524	Financial Mathematics
	<p><u>Introduction to Financial Mathematics:</u> Elementary definitions from probability, Discrete processes and martingales, Independence, Binomial model of asset pricing and derivative evaluation.</p> <p><u>Stochastic Models of Financial Markets:</u> Forward and futures contracts, European options and equivalent martingale measures, Hedging strategies and management of risk, Term structure models and interest rate derivatives, Optimal stopping and American options.</p> <p><u>Introduction to Measure Theory</u> Measures, Sigma -fields and integration, Stopping times and American options in the binomial model, Conditional expectation and Radon-Nikodym theorem, Introduction to Brownian motion, Log-normal random process, Introduction to stochastic calculus.</p> <p><u>Derivation of the Black-Scholes Equation:</u> Derivation of black-scholes partial differential equations, Relationship to discrete hedging on a lattice, Newton iteration for implied volatility.</p> <p><u>Reference Books:</u></p> <ul style="list-style-type: none"> • Richardson C.H, <i>Financial Mathematics</i>, Spalding Press, 2008. • Bueno M.C, <i>Fundamentals and Practice of Financial Mathematics</i>, Librería-Editorial Dykinson, 2006. • Frensidy B, <i>Financial Mathematics</i>, Penerbit Salemba Empat, 2008. • Neftci S.N, <i>An Introduction to the Mathematics of Financial Derivatives</i>, 2nd Revised Edition, Academic Press, 2000.