SUBJECT NO-IM60059, SUBJECT NAME- FINANCIAL ENGINEERING

LTP- 3-0-0,CRD- 3

SYLLABUS :-

Prerequisite: IM21003 Operations Research-I The Black-Scholes Equation ÃÂ¢ÃÂÃÂ Background, Definitions, Hedging strategies, Brownian Motion, Geometric Brownian motion with drift, Ito s Lemma, The Black-Scholes Analysis, Hedging in Continuous Time, The option price.Monte Carlo Methods - Monte Carlo Error Estimators, The Box-Muller Algorithm, Low Discrepancy Sequences, Correlated Random Numbers, The Brownian Bridge The Binomial Model, No-arbitrage Lattice Derivative Contracts on non-traded Assets and Real Options - Derivative Contracts, A Forward Contract, Convenience Yield. Discrete Hedging - Delta Hedging, Gamma Hedging, Vega Hedging Jump Diffusion - The Poisson Process, The Jump Diffusion Pricing Equation Mean Variance Portfolio Optimization - The Portfolio Allocation Problem, Adding a Risk-free asset, Individual Securities. TextÃÂ¢ÃÂÃÂ¢Options, Futures, and Other Derivatives, J C Hull, Prentice Hall of India, Sixth Edition, 2007ÃÂ¢ÃÂÃÂ¢Principles of Financial Engineering, S N Neftci, Academic Press, Elsevier, 2004.ÃÂ¢ÃÂÃÂ¢An Introduction to Computational Finance without Agonizing Pain, Peter Forsyth 2005, www.scicom.uwaterloo.ca/paforsyt