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GRADUATE CERTIFICATE PROGRAM IN FINANCIAL MATHEMATICS

Pick three out of following four

- 1. Financial Mathematics I – Department of Mathematics and Statistics**
Mechanics of futures markets, hedging strategies using futures, interest rates, determination of forward and futures prices, interest rate futures, swaps, mechanics of options markets, properties of stock options, trading strategies involving options, binomial trees, Cox-Ross-Rubinstein analysis, Wiener processes and Itô's lemma, the Black-Scholes-Merton model, the Greek letters, volatility smiles.
- 2. Financial Mathematics II – Department of Mathematics and Statistics**
Probability background, conditional expectation, martingales, European derivative securities in discrete time, American derivative securities in discrete time, stopping times, Brownian motion, stochastic calculus, Itô integral, stochastic differential equations, risk-neutral pricing, derivative securities in continuous time, exotic options.
- 3. Applied Time Series Analysis – Dept of Mathematics and Statistics**
Stationary processes, autocovariance functions, moving average, ARIMA, GARCH models, autoregressivity, spectral analysis, confidence intervals, forecasting, forecast error.
- 4. Object-oriented Financial Software – Dept of Information Science & Techn.**
Object-oriented design and development of quantitative finance software for derivative pricing, patterns, templates, inheritance, asset modeling, derivative theory, interest rate models, Monte Carlo methods, binomial trees, finite difference methods

Pick one out of following

- ✚ Econ 415 – Advanced Mathematical Economics
- ✚ Econ 423 – Advanced International Finance
- ✚ IST 301 – Financial Information Systems
- ✚ Eng Mg 480 – Investment
- ✚ Eng Mg 481 – Financial Engineering
- ✚ Stat 346 – Regression Analysis
- ✚ Math 465 – Mathematical Programming