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GRADUATE CERTIFICATE PROGRAM IN FINANCIAL MATHEMATICS

Pick three out of the following four

- 1. Financial Mathematics I – Math 337**
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 – Math 401/437**
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 – Stat 314/414**
Stationary processes, autocovariance functions, moving average, ARIMA, GARCH models, autoregressivity, spectral analysis, confidence intervals, forecasting, forecast error.
- 4. Stochastic Processes – Stat 441**
Development and application of Poisson processes, renewal processes, Markov chains, normal processes, Brownian motion, with applications to financial mathematics.

Pick one out of the 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