THE OHIO STATE UNIVERSITY

Mathematics 3589
Introduction to Financial Mathematics
Autumn, Spring
3 credits

Catalog Description:
Introduction to mathematics used in financial asset pricing, based on the binomial asset pricing model. This course prepares students for further study of stochastic calculus in continuous time.

Purpose:
This course is designed as an introduction to the concepts encountered in financial mathematics for students who don't have a background in continuous-time stochastic calculus.

Prerequisite:
{C- or better in 3345 or credit for 345}; and {C- or better in 4530, 5530H, or Stat 4201, or credit for 530, 531H, 345 or Stat 420}; or permission of department.

Text:
Stochastic Calculus for Finance I, The Binomial Asset Pricing Model, by Shreve, published by Springer, ISBN: 9780387249681

Topics List:

1. First principles; assumptions about stock behavior and description of basic financial instruments; put and call options.
2. Arbitrage, and no-arbitrage pricing.
3. One-period and multi-period models; replication and hedging.
4. Conditional expectations.
5. Martingales and Markov processes.
6. Change of measure.
7. Utility functions and the capital asset pricing model.
8. Stopping times and American derivatives.
9. Random walks and passage times.