Course: Math 38100; Discrete Models in Financial Mathematics

Text: Buchanan: An Undergraduate Introduction to Financial Mathematics, 3rd edition

COURSE LEARNING OUTCOMES:

After completing this course, student should have the skills below with the associated Departmental Learning Outcomes (outlined at the bottom of the page, and labeled a-g). They should be able to:

1. Find values of risk-free investments over time *(a, b, c, d)*
2. Apply basic notions of probability *(a, e,f)*
3. Mathematically describe arbitrage *(c, e)*
4. Use linear programming to find optimal arbitrage strategies *(a, c, d, e)*
5. Use the no-arbitrage principle to price financial instruments *(e, g)*
6. Price options using binomial trees *(a, b, c, d, e)*
7. Derive Black-Scholes as a limit of the binomial model *(e, f, g)*

DEPARTMENTAL LEARNING OUTCOMES:

The mathematics department, in its various courses, aims to teach students to

a) perform numeric and symbolic computations
b) construct and apply symbolic and graphical representations of functions
c) model real-life problems mathematically
d) use technology appropriately to analyze and solve mathematical problems
e) state and apply mathematical definitions and theorems
f) prove fundamental theorems
g) construct and present a rigorous mathematical argument