MATH 409 Mathematics of Finance
Course Outline, 2016

Dr. Edward Butz
Sci 107

edward.butz@ubc.ca

MATH 409 (3) MATHEMATICS OF FINANCIAL DERIVATIVES

Mathematical theory of pricing a financial derivative. Topics include: Futures and forwards, Fundamental Theorem of Arbitrage Pricing, Options, Replicating portfolios, Risk-neutral pricing, One –period, multi-period models, Martingales. Price movements modeled by Brownian motion, Stochastic differential equations, Ito's formula, Black-Scholes partial differential equation, Risk-neutral option pricing, Put-Call Parity, Jump Discontinuities, Asian Options.
OUC equivalent: MATH 414
Pre-requisite: STAT 303
[3-0-0]

Course Outline

Definition of Financial Derivatives:
Futures: Equities, Commodities
Fundamental Theorem of Arbitrage Pricing: Binary Trees
Options, Put-Call Parity
Stochastic Differential Equations
Ito's Lemma
Black-Scholes PDE
Feynman-Kac Theorem
Commodity Derivatives
Incomplete Markets
Asian Options

Evaluation

4 Assignments @15%	60%
Final Exam	40%