FINANCIAL ECONOMICS FOR ACTUARIES (3)

Class Number: 2920   Delivery Method: In Person

COURSE TIMES + LOCATION:

Jan 8 – Apr 12, 2024: Tue, 10:30 a.m.–12:20 p.m.
Burnaby

Jan 8 – Apr 12, 2024: Fri, 10:30–11:20 a.m.
Burnaby

EXAM TIMES + LOCATION:

Feb 28, 2024
Wed, 7:00–9:20 p.m.
Burnaby

Apr 20, 2024
Sat, 8:30–11:30 a.m.
Burnaby

INSTRUCTOR:

Barbara Sanders
bsanders@sfu.ca

PREREQUISITES:

ACMA 201 (or 210), with a minimum grade of C. Corequisite: STAT 285.

Description

CALENDAR DESCRIPTION:

Option pricing models and their application to insurance and financial risks. Introduction to finance and derivatives. Option strategies and risk management. Binomial models. Black-Scholes-Merton model. Market-making, hedging, and option Greeks. Introduction to exotic options. Mean-variance portfolio theory and asset pricing models. Covers part of the syllabus for Exam 3F of the Casualty Actuarial Society. Quantitative.

COURSE DETAILS:

Outline:

This course is an introduction to financial economics for actuaries. The topics covered include:

Introduction to Derivatives: An Overview of Financial Markets, Role of Financial Markets, Use of Derivatives, Buying and Short-Selling, Forward Contracts, Call Options, Put Options, Options as Insurance.

Option Trading Strategies: Basic Insurance Strategies, Put-Call Parity, Spreads and Collars, Speculating on Volatility.

Forwards and Futures: Alternative Ways to Buy a Stock, Prepaid Forward Contracts on Stocks, Forward Contracts on Stocks, Futures Contracts.

Put-Call Parity: Put-Call Parity, Generalized Parity and Exchange Options, Comparing Options.

Binomial Option Pricing: One-Period Binomial Tree, Constructing a Binomial Tree, Two-Period Binomial Tree, The General Binomial Tree Model, Pricing Using Real Probabilities, American Options, Options on Dividend-Paying Stocks, Options on Other Assets.

The Black-Scholes-Merton Model: Introduction to the Black-Scholes-Merton Formula, Relationship Between Binomial and BSM Models, Applying the Formula to Other Assets, Option Greeks, Option Elasticity.

Market-Making and Delta-Hedging: What Do Market-Makers Do, Market-Maker Risk, Delta-Hedging, The Mathematics of Delta-Hedging, The BSM Analysis.

Introduction to Exotic Options: Asian Options, Barrier Options, Compound Options, Gap Options, Exchange Options.

Mean-Variance Portfolio and Asset Pricing: Mathematics of Portfolios, Diversification, Mean-Variance Theory, Capital Asset

Pricing Model, Arbitrage Pricing Theory.

Market Efﬁciency, Behavioural Finance and Project Analysis: Efﬁcient-Market Hypothesis, Behavioural Biases, Cognitive Behavioural Biases, Investment risk Measures, Advantages and Disadvantages of Risk Measures, Risk Analysis.

This course is part of the University Accreditation Program and meets speciﬁc requirements set by the Canadian Institute of Actuaries (CIA). Please consult the CIA website for full details on CIA accreditation.

Grading

In-class Activities and Participation

Term Project

Midterm

Final Exam

NOTES:

Above grading is subject to change.

Materials

REQUIRED READING:

McDonald, R. L. (2012). Derivatives Markets (3rd edition). Pearson.

Berk, J. and DeMarzo, P. (2019). Corporate Finance (5th edition). Pearson.

RECOMMENDED READING:

Hull, J. C. (2015). Options, Futures, and Other Derivatives (9th edition). Pearson.

Tutor Requests:
Students looking for a tutor should visit https://www.sfu.ca/stat-actsci/all-students/other-resources/tutoring.html. We accept no responsibility for the consequences of any actions taken related to tutors.