

Selected Topics: Stochastic Analysis of Insurance Portfolios Day Course

Students requiring accommodations as a result of disability must contact the Centre for Students with Disabilities 778-782-3112 or csdo@sfu.ca

Instructor: [Dr. Gary Parker](#)

Prerequisite:

ACMA 320 & permission of the instructor.

Required Text:

No textbook required.

References:

Stochastic Analysis of Insurance Portfolios, G. Parker, 2013

Calendar Description:

Life insurance models. Interest rate models for life insurance: time series, stochastic differential equations, estimation. Portfolios of identical policies. Diversified portfolios.

Outline:

Basic model for studying life insurance contracts

Models for the Rate of return:

Time Series; ARMA models

Stochastic Differential Equations; Ito formula, log-normal model, Ornstein-Uhlenbeck process, Cox-Ingersoll-Ross model, Principle of covariance equivalence

Other models: Regime-switching model, Wilkie model

Insurance risk: One contract, A portfolio of identical contracts

Life Insurance with Random Interest and Mortality: Present value, net single premium

Portfolio of Policies with Random Interest and Mortality: moments

Distribution of the Present Value of Benefits for a Portfolio

Approximating the Distribution; Limiting Portfolio

Diversified portfolios

Grading Scheme:

Assignments & Term Project-30%

Midterm-30%

Final-40%

Grading is subject to change.

Students should be aware that they have certain rights to confidentiality concerning the return of course papers and the posting of marks. Please pay careful attention to the options discussed in class at the beginning of the semester. Students are reminded that Academic Honesty is a cornerstone of the acquisition of knowledge. Scholarly integrity is required of all