

SPRING 2017 - ACMA 820 G100

**STOCHASTIC ANALYSIS OF INSURANCE PORTFOLIOS (4)***Class Number: 9020 Delivery Method: In Person***COURSE TIMES + LOCATION:**

Mo, We 2:30 PM – 4:20 PM

AQ 2120, Burnaby

**INSTRUCTOR:**

Gary Parker

1 778 782-4818

**PREREQUISITES:**

ACMA 320.

## Description

**CALENDAR DESCRIPTION:**

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

**COURSE DETAILS:****Outline:**

- Basic model for studying life insurance contracts
- Models for the Rate of return:
  - >Time Series; ARMA models
  - >Stochastic Differential Equations; Ito's formula, log-normal model, Ornstein-Uhlenbeck process, Cox-Ingersoll-Ross model, Second Order Stochastic Differential Equations, 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, Reserving
- Diversified portfolios

## Grading

Assignments & Term Project	30%
Midterm	30%
Final	40%

## Materials

**RECOMMENDED READING:**

*Stochastic Analysis of Insurance Portfolios*, G. Parker, 2013

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**GRADUATE STUDIES NOTES:**

Important dates and deadlines for graduate students are found here: [http://www.sfu.ca/dean-gradstudies/current/important\\_dates/guidelines.html](http://www.sfu.ca/dean-gradstudies/current/important_dates/guidelines.html). The deadline to drop a course with a 100% refund is the end of week 2. The deadline to drop with no notation on your transcript is the end of week 3.

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**REGISTRAR NOTES:**

SFU's Academic Integrity web site <http://students.sfu.ca/academicintegrity.html> is filled with information on what is meant by academic dishonesty, where you can find resources to help with your studies and the consequences of cheating. Check out the site for more information and videos that help explain the issues in plain English.

Each student is responsible for his or her conduct as it affects the University community. Academic dishonesty, in whatever form, is ultimately destructive of the values of the University. Furthermore, it is unfair and discouraging to the majority of students who pursue their studies honestly. Scholarly integrity is required of all members of the University. <http://www.sfu.ca/policies/gazette/student/s10-01.html>

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