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's 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 members of the University. Students are encouraged to review policies pertaining to academic integrity available on Student Services webpage at http://students.sfu.ca/academicintegrity.html

Revised June 26, 2013