

SPRING 2017 - ACMA 815 G100

**RATE OF RETURN MODELS (2)**

Class Number: 9417 Delivery Method: In Person

**COURSE TIMES + LOCATION:**

Mo, We 2:30 PM – 4:20 PM

AQ 2120, Burnaby

**INSTRUCTOR:**

Gary Parker

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1 778 782-4818

Office: SC-K10562

**PREREQUISITES:**

Permission of the Department.

## Description

**CALENDAR DESCRIPTION:**

An introduction to stochastic models for the rate of return. Time series. Stochastic differential equations. Covariance equivalence principle. Applications. Students with credit for ACMA 820 may not take this course for further credit

**COURSE DETAILS:****Course runs from Jan 10th to March 7th.****Outline:**

Overview of basic stochastic processes used to model the interest rate/rate of return in finance and actuarial science.

Time series: ARMA models

SDEs: White Noise process, Brownian motion, Ornstein-Uhlenbeck process, second order stochastic differential equation, CIR, etc.

Other models: Regime-Switching LogNormal, Wilkie model, ...

The main features of these processes will be investigated.

Methods for solving systems of stochastic differential equations (SDE) arising in studying portfolios of insurance policies will be presented.

Applications: pricing bonds, guarantees, etc.

Estimation and calibration of the models will be discussed

## Grading

Assignments &amp; Term Project

40%

Final

60%

**NOTES:*****All grading is subject to change.***

## Materials

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**RECOMMENDED READING:**

*Rate of Return Models*, 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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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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