

FALL 2018 - ACMA 210 D100

**MATHEMATICS OF COMPOUND INTEREST (3)**

Class Number: 6488 Delivery Method: In Person

**COURSE TIMES + LOCATION:**Tu 10:30 AM – 11:20 AM  
SECB 1014, BurnabyTh 9:30 AM – 11:20 AM  
SECB 1012, Burnaby**EXAM TIMES + LOCATION:**Oct 3, 2018  
5:30 PM – 7:20 PM  
AQ 3149, BurnabyOct 31, 2018  
5:30 PM – 7:20 PM  
AQ 3149, BurnabyDec 7, 2018  
12:00 PM – 3:00 PM  
BLU 10021, Burnaby**INSTRUCTOR:**Yi Lu  
yilu@sfu.ca  
1 778 782-7231  
Office: SC-K10558**PREREQUISITES:**

MATH 152; or MATH 155 or MATH 158 with a grade of at least B.

## Description

**CALENDAR DESCRIPTION:**

Measurement of interest, present value. Equations of value. Basic annuities: immediate, due, perpetuity. General annuities. Yield rates: cash flow analysis, reinvestment rate, portfolio and investment year methods. Amortization schedules and sinking funds. Bonds and other securities. Inflation, yield curves, immunization. Applications: real estate mortgages, depreciation methods. Interest rate disclosure and regulation in Canada. Covers the interest theory portion of Exam FM of the Society of Actuaries. Quantitative.

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

This course is an introduction to the mathematics of compound interest. The topics covered correspond to the course of reading of Exam FM of the Society of Actuaries and they include:

**Measurement of Interest:** Simple interest, compound interest, accumulation functions, present value, effective and nominal rates, forces of interest.

**Equations of value:** Basic problem, numerical results, unknown time, unknown rate of interest.

**Basic Annuities:** Immediate, due, perpetuities.

**General Annuities:** Payments at a different frequency than interest is convertible, continuous annuities, varying annuities.

**Yield Rates:** Cash flow analysis, reinvestment rate.

**Amortization Schedules and Sinking Funds:** Outstanding loan balance, varying series of payments, continuous payments.

**Bonds and Other Securities:** Types of securities, price of a bond, premium and discount, yield rates, callable bonds, serial bonds.

**Applications:** Real estate mortgages, interest rate disclosure and regulation.

**Other:** Inflation, yield curves, forward rates, spot rates, duration, convexity, immunization, interest rate swaps.

**This course is accredited under the Canadian Institute of Actuaries (CIA) University Accreditation Program (UAP) for the 2018-2019 academic year. Achievement of the established exemption grade in this course may qualify a student for exemptions from writing certain preliminary exams. Please note, a combination of courses may be required to achieve a single exemption. Please see <http://www.cia-ica.ca/membership/uap> for full details.**

## Grading

Quizzes	10%
Midterm 1	25%

Midterm 2

25%

Final Exam

40%

## NOTES:

**Above grading is subject to change.**

## Materials

## REQUIRED READING:

**Required Text:**

***Mathematics of Investment and Credit (6th ed.)*** by Samuel A. Broverman. Publisher: ACTEX

or

***Mathematics of Investment and Credit (5th ed.)*** by Samuel A. Broverman. Publisher: ACTEX

**\*Note: Problem sets will be assigned based on end-of-chapter exercises in the 6th edition, which may differ from the 5th edition.**

## RECOMMENDED READING:

*Mathematics of Compound Interest* by M.V. Butcher & C.J. Nesbitt, pub: Ulrich's

*Theory of Interest and Life Contingencies with Pension Applications* by M.M. Parmenter, pub: Actex

*The Theory of Interest (2nd ed.)* by S.G. Kellison, Publisher: Richard D. Irwin Inc.

*An Introduction to the Mathematics of Finance* by J.J. McCutcheon & W.F. Scott, pub: Institute and Faculty of Actuaries

*Financial Mathematics – A Practical Guide for Actuaries and other Business Professionals (2nd ed.)* by Ruckman and Francis, pub: BPP Professional Education

*Derivatives Markets (2nd ed)* by Robert L. McDonald, pub: Addison Wesley

## DEPARTMENT UNDERGRADUATE NOTES:

**Students with Disabilities:**

Students requiring accommodations as a result of disability must contact the Centre for Accessible Learning 778-782-3112 or [csdo@sfu.ca](mailto:csdo@sfu.ca)

**Tutor Requests:**

Students looking for a Tutor should visit <http://www.stat.sfu.ca/teaching/need-a-tutor-.html>. We accept no responsibility for the consequences of any actions taken related to tutors.

## 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>

ACADEMIC INTEGRITY: YOUR WORK, YOUR SUCCESS