

FALL 2018 - ACMA 425 D100

**ACTUARIAL MATHEMATICS II (3)**

Class Number: 3000 Delivery Method: In Person

**COURSE TIMES + LOCATION:**We 11:30 AM – 12:20 PM  
AQ 5009, BurnabyFr 10:30 AM – 12:20 PM  
AQ 5009, Burnaby**EXAM TIMES + LOCATION:**Dec 13, 2018  
3:30 PM – 6:30 PM  
BLU 10021, Burnaby**INSTRUCTOR:**Chi-Liang Tsai  
cltsai@sfu.ca  
1 778 782-7044  
Office: SC-K10563**PREREQUISITES:**

ACMA 320.

## Description

**CALENDAR DESCRIPTION:**

Actuarial reserves: allocation of the loss to the policy years. Multiple life functions: joint-life, last-survivor. Multiple decrement models: stochastic and deterministic approaches, associated single decrement, fractional durations. Valuation theory for pension plans. Insurance models including expenses: gross premiums and reserves, type of expenses, modified reserves. Nonforfeiture benefits and dividends: equity concept, cash values insurance options, asset shares, dividends. Covers part of the syllabus for Exam M of the Society of Actuaries and Exam 3 of the Casualty Actuarial Society. Quantitative.

**COURSE DETAILS:**

This course, a continuation of ACMA 320, covers the fundamentals of Actuarial Mathematics.

**Course Outline:**

The topics covered correspond to part of Exam MLC of the Society of Actuaries and they include:

**Reserves** (Policy values) Continuous, Discrete, Recursive formulas, Fractional duration, Profit, Asset shares

**Multiple state models** Continuous time stochastic process, Transition probabilities, Premiums, Reserves, Multiple decrement models, Joint-life and last-survivor benefits

**Pension mathematics** Salary scale function, Pension plan service table, Defined benefit and defined contribution pension plans

**Diversifiable and non-diversifiable risk**

**Participating and Universal life insurance** Participating insurance, Universal life insurance, Profit testing

**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

Assignments, Quizzes	10%
Midterm	40%
Final Exam	50%

**NOTES:**

***Above grading is subject to change.***

## Materials

## REQUIRED READING:

**Required Text:**

*Actuarial Mathematics for Life Contingent Risks, 2nd ed*, by Dickson, Hardy & Waters. Publisher: Cambridge University Press

## RECOMMENDED READING:

*Actuarial Mathematics* (2nd ed 1997) by Bowers, Gerber, et al.; Society of Actuaries

*Life Insurance Mathematics* by Gerber, Springer-Verlag

*The Mathematics of Life Insurance* by Menge and Fisher; Ulrich's

*Life Contingencies* by C.W. Jordan; Society of Actuaries

---

## 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