ACMA 425-3
Actuarial Mathematics II

Fall 2013
Day Course

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. Yi Lu

Prerequisite:

ACMA 320

Required Text:

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

References:
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

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 Description:

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

Outline:

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

- **Expenses and gross premium**
- **Reserves (**(Policy values)
  Continuous, Discrete, Recursive formulas, Fractional durations, Profit, Asset shares, Accounting
- M**ultiple state models**
  Continuous time stochastic process, Transition probabilities, Premiums, Reserves, Multiple decrement models, Joint-life and last-survivor models
- **Pension mathematics**
  Salary scale function, Pension plan service table, Defined benefit and defined contribution pension plans
- **Universal life insurance**
- **Interest rate risk**

Grading Scheme:

Assignments – 10%
Midterm – 40%
Final Exam – 50%
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