Course Overview and Introduction

Lecture: Week 1

Course instructor

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Office Hours:
Mondays, 10:00 am – 1:00 pm
or by appointment (email/in advance)

Course objectives

- New learning objectives for SOA Exam LTAM to take effect Fall 2018 exam
- New exam format took effect in the Spring 2014 exam
  - 4-hour exam; written-answer plus multiple choice
- To cover the first half of the SOA Exam LTAM
- General topics covered (in Math 3630) are:
  - Survival models (single lives)
  - Life tables and selection
  - Life insurance
  - Life annuities
  - Premium calculation
  - Policy values (reserves)

Textbooks for the course

- **Highly-Recommended Text:**
  - D. Dickson, M. Hardy and H. Waters, *Actuarial Mathematics for Life Contingent Risks*, second edition, Cambridge University Press, 2013.
  - Any possible Errata are available on the publisher's website. Links are provided at the course website.
  - *LTAM-21-18 Long Term Actuarial Mathematics Study Note*, by M. Hardy, available at the Society of Actuaries LTAM.
- Additional useful references:
  - Camilli, S., Duncan, I. and R. London, 6th edition, *Models for Quantifying Risk*, ACTEX Publications, 2014.
  - Bowers, N.L., Gerber, H.U., Hickman, J.C., Jones, D.A. and C.J. Nesbitt, 2nd edition, *Actuarial Mathematics*, Society of Actuaries, 1997.

Course assessments

You will be assessed according to the following scale:

Class Test 1	25%	September 18
Class Test 2	35%	November 18
Final examination	40%	to be announced
Total	**100%**	

Course grade

Your final grade will be determined according to (may be adjusted if necessary):

Grade	A	A-	B+	B	B-	C+
Points	[90, 100)	[87, 90)	[84, 87)	[81, 84)	[78, 81)	[75, 78)
Grade	C	C-	D+	D	D-	F
Points	[70, 75)	[65, 70)	[60, 65)	[55, 60)	[50, 55)	[0, 50)

Course websites

We have course websites:

`http://www.huskyct.uconn.edu/`

`http://www.math.uconn.edu/~valdez/math3630f19/`

Some suggestions

Here are some suggestions to maximize learning from this class:

Effective notetaking. Think in class, don't just take notes. It helps to go over your notes after class to identify what is important. Leave room to add details later.

Reading ahead. Lectures are important, but certainly do not cover everything and can include only a sample of examples. You need to read the text. Try to work out suggested problems and fill in missing steps as you read. Formulate questions before coming to class.

Consistent effort. Do not put off review and study until test time! Distributing your effort is more effective than cramming just before a test.

Doing problems. Do more problems than are suggested. Write your solutions neatly so that they are useful for review later.

Code of Conduct for candidates

- This course prepares students for a professional examination administered by the Society of Actuaries (SOA) for which credit may also awarded by the Casualty Actuarial Society (CAS).
- Actuarial Candidates, as defined by these organizations, must adhere to the Code of Conduct for Candidates (SOA) and Code of Professional Ethics for Candidates (CAS).
- A copy of each is attached at the end of this syllabus and is a part of this syllabus.

Background reading

For background material about life insurance, please read:

- Chapter 1 of the textbook on "Introduction to Life Insurance".

Evolution of the market

Since the 1980s, insurance/annuity contracts were very similar.

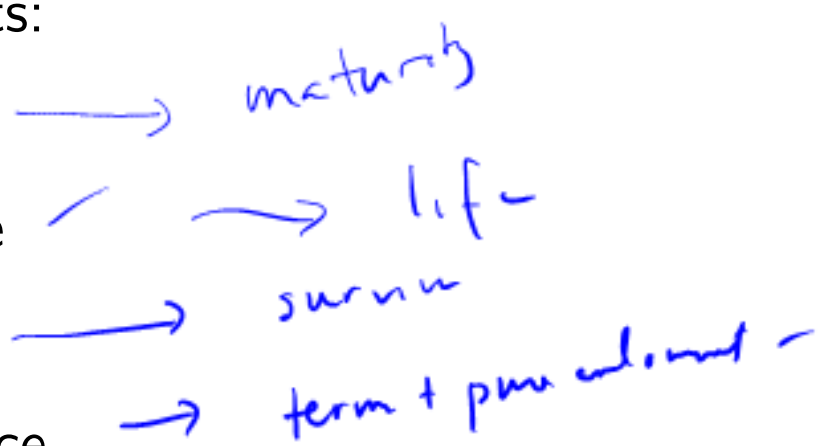
The design of insurance/annuity products has radically changed due to the following:

- Increased interest in combination of insurance protection and savings/investment
- Availability of computing facilities to allow for more complex features
- Sophisticated and educated customers/policyholders/investors
- Increased competition to attract this sophisticated market
- Emergence of modern risk management techniques allowing insurers to provide increased guarantees

Traditional insurance products

Some traditional products:

- Term insurance
- Whole life insurance
- Pure endowment
- Endowment insurance



Participating insurance

With participating insurance, profits earned on invested premiums are shared with policyholders.

- 'par' policies: 'with-profit' vs 'non-par' policies: 'without profit'
- In the US, it typically comes in the form of cash dividends or reduced premiums.
- In the UK and Australia, profits shared in the form of increased 'sum insured' (benefit amount).
  - 'reversionary bonuses' or 'terminal bonuses'

Modern insurance products

More modern products offer premium flexibility, investment options, savings components:

- Universal life insurance: North America
- Unitized with-profit: United Kingdom
- Equity-linked insurance
  - benefit is linked to investment funds performance
  - unit-linked (UK), segregated funds (Canada), variable annuity (US)
  - Equity-indexed annuity