



Math 262.1
Actuarial Science I
Course Syllabus
1st Semester, AY 2015 – 2016



Course Objectives

At the end of the course, the students are expected to be able to know the Actuarial Control Cycle framework as a problem solving process, understand product development, product pricing and cash flows involving life insurance, learn the methodologies and actuarial principles for the valuation of life insurance liabilities, and familiarize with the Philippine statutory actuarial requirements for product development and valuation of liabilities.

Course Prerequisites

Actuarial Theory and Practice (Math 260)

Survival and Loss Models (Math 261)

The students are expected to know with mastery the mathematical foundations of Actuarial Science and integrate these concepts towards application in insurance practice.

Course Schedule and Outline

Week 1	Orientation and Expectation Setting
	Introduction to Actuarial Control Cycle (Bellis Chapter 1)
Week 2	Need for Financial Products (Bellis Chapter 4)
Week 3	Applying Risk Management (Bellis Chapter 6)
Week 4	Product Design (Bellis Chapter 8)
	Pricing (Bellis Chapter 13)
Week 5	Life Insurance Overview (Atkinson Chapter 1)
	Product Development (Atkinson Chapter 2)
Week 6	Exam 1
Week 7	Pricing Assumptions (Atkinson Chapter 3)
Week 8	Life Insurance Cash Flows (Atkinson Chapter 5)
	Reserves (Atkinson Chapter 6)
Week 9	Profit Measurement and Analysis (Atkinson Chapter 11)
	Stochastic Modeling (Atkinson Chapter 15)
Week 10	Philippine Statutory Regulations on Pricing Life Insurance Products (Insurance Code Chapter III Title 9 Sections 232-233 and Title 10)
	Exam 2
Week 12	Valuing Liabilities (Bellis Chapter 12)
Week 13	Overview of Valuation Requirements (Lombardi Chapter 1)
	Valuation Process (Lombardi Chapter 3)
	Valuation Assumptions (Lombardi Chapter 4)
Week 14	Valuation Methodologies and Approximations (Lombardi Chapter 5)
	Variable Life Insurance (Lombardi Chapter 9)
Week 15	Miscellaneous Reserves (Lombardi Chapter 12)
	Cash Flow Testing (Lombardi Chapter 13)
	Philippine Statutory Regulations on Valuation of Liabilities (Insurance Code Chapter III Title 5)
Week 16	Exam 3

Course Requirements

3 Exams with 30 points each (Cancel the lowest exam)	60 points
2 Projects with Documentation	30 points
<u>Quizzes and/or Assignments</u>	<u>10 to 15 points</u>
Total	100 to 105 points

Grading Scale

Let x be the rounded up points in the course requirements.

Total Points	Grade	Total Points	Grade
$x \geq 90$	1.00	$65 \leq x \leq 69$	2.25
$85 \leq x \leq 89$	1.25	$60 \leq x \leq 64$	2.50
$80 \leq x \leq 84$	1.50	$55 \leq x \leq 59$	2.75
$75 \leq x \leq 79$	1.75	$50 \leq x \leq 54$	3.00
$70 \leq x \leq 74$	2.00	$x \leq 49$	5.00

Classroom Policies

1. No makeup exams and quizzes. Any missed requirements will merit a zero mark regardless whether the absence (or non-submission) is a valid excuse or not.
2. Make up classes may be held if the number of class sessions is not enough to adhere with the schedule.
3. Proper decorum is expected in every class meeting.
4. University rules and procedures are applied on Attendance, Drop and Incomplete. No grade of 4.00 will be given in the course. Any form of cheating and plagiarism will result to a grade of 5.00 and a possibility to report the misconduct to the Student Disciplinary Tribunal.
5. Check emails/online drive regularly for the uploaded lecture slides, readings, assignments and class announcements.

Main References

- Bellis, Lyon, Klugman and Shepherd. *Understanding Actuarial Management: The Actuarial Control Cycle*, 2nd Edition. Institute of Actuaries of Australia, 2010.
- Atkinson and Dallas. *Life Insurance Products and Finance*. The Society of Actuaries, 2000.
- Insurance Code. RA 10607, Chapter III, Titles 5 (excluding Section 219), 9 Sections 232-233, and 10.
- Lombardi. *Valuation of Life Insurance Liabilities*, 4th Edition. ACTEX Publications, 2006. (Omit Canadian practices portion)

Supplementary References

- Jones and Silver. *Principles of Insurance*. LL Global, 2011.
- Insurance Commission Circular Letter
 - 27-2005 & 32-2011 *Expedient Approval of Traditional Life Insurance Products*
 - 23-2005 & 16-2006 *Guidelines on Sales Illustrations on Life Insurance Proposals*
 - 30-1992 *Standard Asset Share Format*
 - 14-1993 *Standard Life Insurance Policy Provisions*
 - 4-2013 Revised Life Annual Statement
 - 3-1987 Preparation of the Annual Statement
 - 42A-2014 *Valuation Standards for Life Insurance Policy Reserves*
- Insurance Commission *Guidelines on Variable Life Insurance Contracts*

Instructor

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Consultation: By E-mail