Course overview of ACT 470 – University of Toronto

Course contents / approach ACT 470 covers and introduces the students to the fundamental concepts of pension funding and actuarial cost methods. The course focuses in on private pension plans, pricing and valuation of liabilities and assets. Emphasis in also placed on gain loss analysis and selection of actuarial assumptions.

The course material is based on Anderson, Pension Mathematics for Actuaries and on Aitken, Pension Funding and Valuation. The course is taught over a 12 week period – problem sets, Midterm and Final exam.

The material is broken down as follows:

- Introduction to pension plans ,legislation ,terms and conditions and different types of plans and funding implications – defined benefit vs defined contribution
- Calculations of pension benefits and prevalence inthe Canadian market – Career Average vs Final Average vs Flat dollar plans. Advantages of each benefit calculation and plan terms
- Actuarial cost method introductions and detailed development of methods from first principles. Definition of Normal Cost and Actuarial labiality and application to valuation reports
- Further work on cost methods – level dollar methods ,level % of pay methods – example of application of Unit Credit ,Entry Age normal, Attained age normal ,Aggregate Method ,Frozen Initial liability method.
- Development of Gain / Loss by source and by plan as a whole. Development of each term of Gain and Loss
- Asset review ,application of various asset valuation methods and gain/ loss application
- Actuarial equivalent and postponed retirement
- Appropriate actuarial assumptions and development and choosing appropriate terms
- Contributory plans and further development of cost methods
- Further development of gain and loss – review of actuarial report and application of various cost methods to specific plan

The student once they complete this course should be very familiar with all of the cost methods and able to apply and develop from first principles and work through all types of gain / loss scenarios. They should also be very familiar with a valuation report and able to .articulate movements and changes given the course material

PENSION MATHEMATICS (ACT 470H1)

Course Outline

Date	Week#	Description
January 10	1	Intro to Pensions/Anderson ch. 1.2.1
January 17	2	Anderson ch. 2.2-2.6
January 24	3	Anderson ch. 2.7-2.11
January 31	4	Anderson ch. 3.1-3.5
February 7	5	Anderson ch. 3.6, 4.1-4.4
February 14	6	Anderson Ch 3
February 21		Reading Week
February 28	7	Mid Term
March 7	8	Anderson ch. 5/6
March 14	9	Anderson ch. 6/7
March 21	10	Cost Methods revisited
March 28	11	Review
April 4	12	Review

Assignment #1 – due January 31rst – by email to howard.lyons@aon.com – 9 pm
Assignment #2 – due March 7th – by email to howard.lyons@aon.com – 9 pm

Assignment # 3 – due March 28th – by email to howard.lyons@aon.com – 9 pm

PENSION MATHEMATICS (ACT 470H1)

Course Readings

Pension Mathematics for Actuaries (Third Edition), by A.W. Anderson, Chapters 1-7.

Grading Outline

Assignments (3x10)	30%
Mid-term Exam	30%
Final Exam	40%
Total	100%