University of Connecticut
Department of Mathematics

Math 2620: Financial Mathematics I, Spring 2011

Welcome to Math 2620!

This is an important foundation course in actuarial science and finance, with two

principal goals for students. The first, and most important, goal is to master the fundamental concepts of financial mathematics, as listed in the following section, "Learning Objectives." The second goal (for students majoring in Actuarial Science) is to begin preparation for SOA Exam FM (CAS Exam 2). However, this is not an exam preparation course; it covers many, but not all, of the topics for Exam FM/2. Math 3615 is the preparation course for Exam FM/2. In addition, this course provides students an introduction to the mathematical principles underlying personal financial management.

Learning Objectives:

Knowledge of Key Terms

∀ Simple interest, compound interest, and discount

∀ Nominal and effective rates of interest and discount

∀ Force of interest

∀ Equivalent interest measures

∀ Equation of value

∀ Present value, future value, and current value

∀ Annuities and perpetuities

∀ Yield rates

∀ Arithmetic and geometric average rates of return

∀ Spot rates and forward rates

∀ Duration, convexity, and immunization

∀ Yield curves and the term structure of interest rates

∀ Bonds, mortgages, stocks, and other financial instruments

Understanding of Key Procedures

∀ Calculate equivalent interest rates

∀ Calculate the value of an annuity or a perpetuity

∀ Calculate a present value or accumulated value (given a set of cash flows, the method of crediting interest, and the applicable interest rate(s))

∀ Calculate (using calculator functions) the yield rate for a given set of cash flows

∀ Calculate a loan payment amount and the corresponding loan amortization schedule

∀ Calculate the price, duration, and convexity of a bond

∀ Calculate the duration and convexity of a series of cash flows

∀ Calculate a spot rate curve, given a yield curve

∀ Calculate forward rates, given a spot rate curve

Syllabus - Spring 2011

Textbook: *Financial Mathematics: A Practical Guide for Actuaries and other Business Professionals (Second Edition)*, 2005, by Chris Ruckman, & Joe Francis

Calculator: A Texas Instruments **BA II Plus** calculator is required for this course. Although other financial calculators are able to perform all or most of the same functions as the **BA II Plus**, the specific procedures for the **BA II Plus** will be the basis of the calculator solutions and methods discussed in class and in the handouts. Only the **BA II Plus** will be permitted for use on quizzes, tests, and the final exam for this course. If you wish to use a different calculator, please see me to discuss the issue. **PLEASE BRING YOUR CALCULATOR TO EVERY CLASS.**

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Grading Plan:

8 Homework Assignments @ 20 points each = 160 points (16% of grade)

Late homework will be accepted but credited @ 10 points each (i.e. half)

3 Multiple Choice Tests @ 200 points each = 600 points (60% of grade)

1 Multiple Choice Final Exam @ 240 points = 240 points (24% of grade)

Potential 200 point extra credit opportunity within Tests and Final*.

*Test format is 12 questions at 20 points each (i.e. 40 potential extra credit points each)

Final format is 16 questions at 20 points each (i.e. 80 potential extra credit points)