UCONN
UNIVERSITY OF CONNECTICUT

# Math 2620: Financial Mathematics I (Section 1) - Spring 2023

## Welcome to Math 2620!

This is an important foundational 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 below under "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, along with Math 3615, 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
- Bonds, mortgages, stocks, and other financial instruments
- Spot rates and forward rates
- Yield curves and the term structure of interest rates

### 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 and other attributes of bonds
- Calculate a spot rate curve, given a yield curve
- Calculate forward rates, given a spot rate curve

# Syllabus – Spring 2023

**Instructor:**
Andrew Niedzielski (Prof. N), FSA, MAAA
Class time: Tu/Th 11:00 PM – 12:15 PM
Office website: https://uconn-cmr.webex.com/meet/asn11001
Email: andrew.niedzielski@uconn.edu
Office: Monteith 204
Office Phone: (860) 486-4236

**Office Hours/Availability:** Office hours (subject to change) are Mondays 1-3 PM and Wednesdays 10-12 and 1:30-4:00PM in my office. With pre-arrangement, I can offer virtual support during in-person office hours, if that is more convenient. Whenever possible, please let me know ahead of time when you will be coming. I will also have some availability for office hours by appointment outside normally scheduled times. I strongly encourage students to take advantage of office hours. I observe a high correlation between attendance at office hours and academic improvement.

.

I will generally reply to e-mails within 24 hours. Should you need a reply faster than that, please state this in the subject line.

**Prerequisites:**
Math 1132 or 1152 or 2142 (Calc II)

**Course Website:**
HuskyCT

**Teaching Modality**
This course will be taught in-person. Classes will not be recorded.

**Required Course Materials:**

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

   This book will serve as the roadmap for my teaching. **I will be providing this book to you free of charge. No need to purchase this book. The book has also been posted electronically on HuskyCT.**

**Optional Course Material:** There are a variety of additional resources available to students, including but not limited to: The Infinite Actuary (TIA) online course, ACTEX Study Manual and GOAL question bank, ADAPT (Coaching Actuaries).

**Calculator:** A Texas Instruments **BA II Plus** calculator (recommended) or other Society of Actuaries' approved calculator is needed for this course. Only the **BA II Plus** or other approved