OFFICIAL SYLLABUS
MATH 340 – THEORY OF INTEREST
(Adopted Fall 2009; Committee: Z. Agustin, Ed Sewell)

Catalog Description: Measures of interest, annuities, yield rates, amortization schedules and sinking funds, economic rationale for interest, stochastic approaches to interest. Prerequisite: Math 152


Course Outline and Topics
Chapter 1 – Interest Rate Measurement
  1.1 Interest Rate Accumulation and Effective Rates of Interest
  1.2 Present Value and Equations of Value
  1.3 Nominal Rates of Interest
  1.4 Effective and Nominal Rates of Discount
  1.5 The Force of Interest
  1.6 Inflation and the “Real” Rate of Interest

Chapter 2 – Valuation of Annuities
  2.1 Level Payment Annuities
  2.2 Level Payment Annuities – Some Generalizations
  2.3 Annuities with Non-Constant Payments
  2.4 Applications and Illustrations (except Subsections 2.4.2 and 2.4.3)

Chapter 3 – Loan Repayment
  3.1 The Amortization Method of Loan Repayment
  3.2 Amortization of a Loan with Level Payments
  3.3 The Sinking-Fund Method of Loan Repayment

Chapter 4 – Bond Valuation
  4.1 Determination of Bond Prices
  4.2 Amortization of a Bond
  4.3.1 Callable Bonds: Optional Redemption Bonds

Chapter 5 – Measuring the Rate of Return of an Investment
  5.1 Internal Rate of Return and Net Present Value (except Subsection 5.1.4)
  5.2 Dollar-Weighted and Time-Weighted Rate of Return
  5.3 Applications and Illustrations (except Subsection 5.3.2)

Chapter 6 – The Term Structure of Interest Rates
  6.1 Spot Rates of Interest
  6.3 Forward Rates of Interest

Chapter 7 – Cashflow Duration and Immunization
  7.1 Duration of a Set of Cashflows and Bond Duration
  7.2 Asset-Liability Matching and Immunization

Chapter 8 – Additional Topics in Finance and Investment
  8.2.1 Stock Valuation
  8.2.4 Mutual Funds
  8.3.1 Certificates of Deposit
  8.3.2 Money Market Funds

Any instructor should cover all of the material specified, additional sections are optional.

* Changed to 5th edition of textbook in September 2015.