MATH 312
Theory of Interest (3 units)

Course Outline

Topics	# of Weeks
Chapter 0: Calculator Basics - Different Calculator Approaches: Algebraic and Chain Methods, Using Parenthesis and memory. Why require Exam calculators?--Special Functions; Registers.	0.5
Chapter 1: Growth of Money - Simple interest, Compound interest, Force, Effective rates, Nominal rates, Equivalent rates, Discrete vs. Continuous interest, The effect of Inflation, Basic notation: a, A, d, i, i(m), delta	1.0
Chapter 2: Equations of Value - The Time Line tool, Single and Multiple Deposit problems, Equations of Value, Yield Rates: IRR (Internal Rate of Return), Dollar vs Time weighted approaches (Funds)	1.0
Chapters 3,4: Annuities - Annuities-PV, AV, a, a:, s, s:, Payments: Level, "arithmetic" progression, "Geometric" progression Solving for n & i: Fractional year parts, Investment vs Portfolio Method, Yield Rate, Reinvestment rates, Book Value, (Market Value - Not in book), Payment period not equal to Conversion period, Continuous Annuities	2.0
Chapter 5: Loans - Amortization Schedules, Amortization vs Sinking Fund methods, Alternative Payment methods (non-level, different periods), Replacement of Capital	2.0
Chapter 6: Bonds - Bond notation and 4 basic formulae, Bond amortization schedules, Bond valuation: before, on and after issue-date, Callable Bonds. (omit sections 6.8.2-3, 6.10)	2.0
Chapter 7: Stocks - (primarily sections 1, 2 & 4) Dividend Discount Model for Stock Price, Investment vehicles: (CD, GNMA, Money Markets), Margin (Section 7.2), Short Selling (Section 7.4)	1.0
Chapter 8: Terem Structure - (primarily sections 3, 4 & 8) Spot and Forward Rates, Forward Contracts (Section 8.4), Options: Puts, Calls, Put-Call Parity (Section 8.8)	1.0
Chapter 9: Sensitivity - (sections 1, 2 & 4) Modified vs. Macaulay Duration, Duration of a single and a series of investment, Reddington vs Full Immunization	1.5
Web Resources: Derivatives - Hedging, Collars, spreads, Straddles	1.0
Tests	1.0

<u>Textbooks:</u>   Mathematical Interest Theory by James Daniel and Leslie Vaaler

SOA Resources:
        Problems, Past Exams, Extra Questions, Calculator Usage / Tips
        NOTE: This material is part of course readings and will be used throughout course
        Students are required to have internet access.

        http://www.soa.org/ ===> (Top) Exams and Jobs ==>
        Spring 2007 Catalog (Right margin) ===>
        Examination and Other Requirement Details ==>
        Exam FM (Bottom)

Calculator
        All students must possess or obtain an accepted Society of Actuary calculator:
        That is either the **Texas-Instrument BA-35** or the **Texas Instrument BA-II**.

Web Resources - Derivatives

http://www.investorguide.com/igu-article-504-options-basics-options-and-their-features.html
        http://www.riskglossary.com/link/options_spread.htm
        http://agebb.missouri.edu/mgt/risk/lho.htm
        http://agebb.missouri.edu/mgt/risk/shf.htm
        http://agebb.missouri.edu/mgt/risk/lhf.htm

        (Note: Links change over time; Above is current as of Jan 2007)

Adopted: January 2007