

# Statistics 98/198 Actuarial Finance Exam FM Decal Syllabus

Spring 2016

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**Faculty Sponsor:** Jim Pitman (pitman@stat.berkeley.edu)

**Units and Grade Option:** 2 units; P/NP

**Time and Location:** Monday from 4:00 p.m. to 6:00 p.m.; 289 Cory

**Course Email:** examfm@actuary.berkeley.edu

## Course Description:

This course introduces key concepts of financial mathematics and financial instruments with an emphasis on applications in the actuarial field. It is intended to prepare students for Exam FM/2 – Financial Mathematics, which is jointly sponsored and administered by the Society of Actuaries and the Casualty Actuarial Society.

Experience in mathematics (up to Math 1B level) and financial courses such as UGBA 103, ECON 136, or ENG 120 are recommended. This course is sponsored by the California Actuarial League.

Each class session consists of one hour of lecture and one hour of discussion and quiz. Starting with the second class, we use the Texas Instruments BA II Plus Professional financial calculator extensively. Freddy Xu will serve as the assistant for this course.

## Learning Goals:

Students will be expected to have an understanding of the fundamental concepts of financial mathematics, and how those concepts are applied in calculating present and accumulated values for various streams of cash flows as a basis for future use in: reserving, valuation, pricing, asset/liability management, investment income, capital budgeting and valuing contingent cash flows.

Students will also be given an introduction to financial instruments, including derivatives, and the concept of no-arbitrage as it relates to financial mathematics.

## Grading (P/NP):

A student's performance will be evaluated based on assignments, quizzes, midterm and final. A better final grade can be used to replace the midterm grade. **You need at minimum 60 points and attendance to the final in order to pass the course.**

Assignments	20 points (once a week)
Pop-up Quizzes	20 points
Midterm	30 points
Final	30 points
Total	100 points

## Assignments:

4 problems are assigned every week and are graded based on correctness. For each assignment, a 2 means that the student attempted all questions and provided a detailed solution, and 0 means that the student missed the assignment or did not provide

any details. The assignments are due in the beginning of the following lectures. No late or make-up assignments will be accepted. Homework solutions will be accessible on Piazza.

**Quizzes:**

10 open-book in-class pop-up quizzes on concepts and formulas will be randomly administered throughout the semester. For each quiz, a score of 3 means that the student got all questions correct, a score of 2 means they are on the right track but made minor mistakes, and a score of 0 means that the student missed the quiz. No make-up quizzes will be accepted. Solutions to quizzes will be given on the lecture following the quiz.

**Midterm and Final:**

Both midterm and final will consist of 15 multiple choice questions in 90 minutes. Each question is worth 2 points. The final exam will be cumulative. A better final grade can be used to replace the midterm.

**Reading Material:**

The ebook of *ASM Study Manual Exam Fm/2, 11th Edition FSA, MAAA, Rick Gorvett, FCAS, MAAA, ARM, FRM, Ph.D Harold Cherry* will be sent to every enrolled student after the first lecture. We will assign the corresponding readings in the book for every lecture.

**Course Schedule (tentative):**

- Lecture 1 (01/30): Introduction, Interest Rates & Discount Rates
- Lecture 2 (02/06): Force of Interest, Level Annuities & Perpetuities
- Lecture 3 (02/13): Varying Annuities, Perpetuities & Sinking Funds  
Administrative Holiday
- Lecture 4 (02/27): Amortization, Yield Rates and Returns
- Lecture 5 (03/06): Midterm
- Lecture 6 (03/13): Bonds
- Lecture 7 (03/20): Cash Flow Duration, Convexity & Immunization  
Spring Recess
- Lecture 8 (04/03): Derivatives: Short-selling & Options
- Lecture 9 (04/10): Derivatives: Forward Contracts & Put-Call Parity
- Lecture 10 (04/17): Derivatives: Hedging, Future Contracts & Swaps
- Lecture 11 (04/24): Final