Math 418C Spring 2009
Financial Mathematics III

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Office Hours: MWTh 2:00-2:50PM, F 10-10:50AM, and by appointment.

Course Goals: This sequence of courses (418A, B, and C) is designed to provide students with 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. The third quarter will also include an introduction to financial instruments, including derivatives, and the concept of no-arbitrage as it relates to financial mathematics. The sequence is designed to prepare students for Exam FM/2 offered by the Society of Actuaries and the Casualty Actuarial Society. For more detailed learning objectives, see the syllabus for this exam at http://www.soa.org/files/pdf/edu-2008-fall-exam-fm.pdf. This quarter, we will cover:

- Introduction to derivatives and short-selling

- Basics of forwards and call and put options

- Caps, floors, synthetic forwards, spreads, collars, straddles, and butterfly spreads

- Hedging and insurance

- Forwards and futures

- Commodity and interest rate swaps

Prerequisite: Math 418B.

Required Text: McDonald, *Derivatives Markets*, second edition. We will be covering all or parts of chapters 1, 2, 3, 4, 5, and 8. If we have time, we will also cover chapter 9, which is on the syllabus for Exam MFE/3F.

Evaluation:

- Two in-class exams (20% each); tentative testing dates: Wednesday, April 29 and Wednesday, May 20.

- Comprehensive final exam (30%), given Tuesday, June 9, 12-2PM; more on this below.

- Homework (15%).

- In-class review 'quizzes' (15%), given approximately every other Friday (tentatively, April 10, April 24, May 8, and May 29); more on these below.

Course Conduct:

- **Required Materials:** The textbook is required. You will also need at least a scientific calculator. I strongly recommend a financial calculator, in particular either the BAII+ or the BAII+ Professional.

- **Homework:** Homework will be assigned often in class and due dates will be announced at the time of the assignment. Homework must be done neatly, *stapled*, and written on clean-edged paper (no notebook fringes). Your work should be clear, in a logical order, and provide sufficient explanation. What's sufficient explanation? A good guide is to think about whether another student in the class who didn't know how to do this particular problem could understand your solution. This will also help you understand your solution later! Collaboration on homework is permitted, but **copying is not permitted.** A good rule of thumb is that you should write up a problem on your own, even if you worked with others to figure it out. Credit will not be given to any party for work which is identical. I reserve the right to change this syllabus, including evaluation procedures, if copying becomes a problem. Credit will not be given for late homework.

- **Exams:** Any changes to the tentative exam schedule will be announced in advance. Make-up arrangments must be made prior to an exam unless you can document an unexpected circumstance beyond your control that prevented you from taking the exam. The two mid-terms will cover the material from *Derivatives Markets* that we have covered in that section of the course. The final exam will be cumulative. If you take Exam FM/2 in May and pass (and can show me your unofficial pass report from the testing center), you do not have to take the final exam and will be given an 'A' for that portion of your grade.

- **Quizzes:** Fridays will, in general, be devoted to reviewing material for the actuarial exam. Approximately every other week, this will take the form of an in-class 'quiz'. The quiz will be cumulative over everything we have covered so far this year, and will be scaled so that the amount of time for each problem is the same as it would be on an actuarial exam. While I realize this could be challenging, the goal is for you to be able to see some improvement over the course of the quarter.

- **Other Information:** Students with disabilities who wish to set up academic adjustments in this class should give me a copy of their "Confirmation of Eligibility for Academic Adjustments" from the Center for Disability Services as soon as possible so we can discuss how the approved adjustments will be implemented in class. Students without this form should contact the Center for Disability Services, Bouillon 205 or dssrecept@cwu.edu or 963-2171.