

**Math 418C Spring 2018**  
**Financial Mathematics III**

**Instructor:** Dr. Kathy Temple

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**Office Hours:** MWF 1 - 1:50PM, T 1:30 - 2:30 PM, 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; we will also cover some material that is on Exam MFE/IFM. This quarter, we will cover:

- Duration, convexity, and immunization;
- Interest rate swaps;
- Determinants of interest rates;
- 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; and
- Forwards and futures.

**Prerequisite:** Math 418B.

**Required Texts:** Vaaler & Daniel, *Mathematical Interest Theory*, 2nd Edition; this quarter we will cover 9.1 - 9.4. McDonald, *Derivatives Markets*, 3rd edition; all or parts of chapters 1, 2, 3, 4, and 5. You will also need three study notes for Exam FM, available from the SOA webpage.

**Evaluation:**

- Two in-class exams (20% each); tentative testing dates: Wednesday, April 25, and Wednesday, May 16.
- Comprehensive final exam (30%); given Tuesday, June 5, from 12-2PM.
- Homework (30%).

Grades will be assigned according to the following scale:

	A	93-100%	A-	90-92.99%	
B+	87-89.99%	B	83-86.99%	B-	80-82.99%
C+	77-79.99%	C	73-76.99%	C-	70-72.99%
D+	67-69.99%	D	63-66.99%	D-	60-62.99%
	F	59.99%			and 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 BAI+ or the BAI+ Professional. I will assume on exams that you have access to such a calculator.
- **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, use correct mathematical notation, 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, but I will drop one homework score.

I may also assign smaller homework assignments from time to time of the form, "Read this section in the book/study note and respond to these questions." These will probably have a much shorter turn-around time than the regular homework assignments and, in particular, I may ask you to do this before the next class meeting.

- **Exams:** Any changes to the tentative exam schedule will be announced in advance. Make-up arrangements must be made prior to an exam unless you can document an unexpected circumstance beyond your control that prevented you from taking the exam.
- **Office Hours:** In addition to scheduled office hours, the block between 9AM and noon on Mondays, 9 - 9:50 on Wednesdays, and 10 - noon on Fridays will often be good times to find me. Late afternoons most Mondays and Fridays should be good, as well. I am tentatively planning on not being in the office before 1:30 on Tuesdays or all day Thursdays. I am, however, happy to make appointments - just please request an appointment before 5PM the day before (and please understand that you may have to be somewhat flexible about the time). If you are coming in to office hours to ask a question, please bring your class notes with you, and (for homework questions) the work you have done so far on the problem.
- **Other Information:** Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any barriers to learning, discuss your concerns with the instructor. Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations. Student Disability Services is located in Hogue 126. Call (509) 963-2214 or email ds@cwu.edu for more information.

I reserve the right to adjust policies in this syllabus if necessary during the quarter.

During the last week of class, you will have regular homework assignments due. We will be covering new material up to and possibly including the last day of class.