

MATH 440 MATHEMATICAL THEORY OF FINANCIAL ECONOMICS
FALL 2018 (Sept 19-Nov 30)
MTWThF 10 - 10:50am in SAMUELSON 149

Instructor: Dr. Sooi-Hoe Loke
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Office Hours: MTWTh 11am-12pm and 1:30-2pm, and by
appointment

Required Text: McDonald, Derivatives Markets, 3rd edition, Pearson. We'll be covering all or parts of Chapters 9 – 14 and 18.

Optional Text: Berk and DeMarzo, Corporate Finance, 4th edition, Pearson. We'll be covering parts of Chapters 8 – 16 and 22-24.

Course Goals: The student will be able to give various constraints on the prices of options, use the binomial pricing model to price options, price European options using the Black-Scholes formula, apply the lognormal distribution to calculate probabilities for option values, implement the risk-neutral pricing using Monte-Carlo simulation, and apply various interest rate models. The student will also be able to perform mean-variance analysis, understand different methods for valuation of asset portfolio, understand behavioral finance, and conduct risk analysis.

Prerequisite: MATH 411B and MATH 418C, or permission.

Course Assessment: Your overall grade will be determined by the following:

- Two in-class exams (35% total); tentative dates: Oct 10 (Wed) and Oct 31 (Wed)
- Comprehensive final exam (25%); given Tuesday, Dec. 4, from 8 - 10am
- Homework (30%)
- Problem session, presentation, and participation (10%); see below for more information.

Course grades will be assigned based upon the following scale:

93-100%=A 90-92.9%=A- 87-89.9%=B+ 83-86.9%=B 80-82.9%=B- 77-79.9%=C+ 73-76.9%=C
70-72.9%=C- 67-69.9%=D+ 63-66.9%=D 60-62.9%=D- below 60%=F

Dr. Loke reserves the right to adjust the above scale (in the student's favor) if deemed appropriate.

Required calculator: A scientific or graphing calculator is required. If you are planning to take Exam IFM (see below), some recommended calculators are TI-30Xa, TI-30X II (IIS solar or IIB battery), or TI-30XS MultiView (or XB).

Exam IFM: This course covers roughly two-thirds of SOA Exam IFM material. The remaining material was covered in MATH 418C. For more information regarding Exam IFM, see <https://www.soa.org/Education/Exam-Req/edu-exam-ifm-detail.aspx>

Homework: Weekly homework will be assigned in class. Due dates will be announced at the time of the assignment. Homework must be done neatly, stapled, and written on clean-edged paper. Your work should be clear, in a logical order, and provide sufficient explanation. Credit will not be given for late homework. Collaboration on homework is permitted, but copying is not permitted. You must write up every 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.

Smaller homework assignments will also be given from time to time of the form, "Read this section in the book and respond to these questions." These will probably have a much shorter turn-around time than the regular weekly assignments and, in particular, you may be asked 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 at least one day prior to an exam unless you can document an unexpected circumstance beyond your control that prevented you from taking the exam.

Problem Session, Presentation, and Participation: We will have weekly “problem sessions” throughout the quarter, where instead of covering new material in class you will be given several problems to work on. At the end of class, you will be assigned to present or write up solutions to these problems. If time permits, we will have people present their solutions (using the doc cam) sometime in the next couple of class days. These problems must also be written up neatly and given to me either electronically or in a form suitable for scanning by class time on the third class day after the problems are distributed. You are required to present/write-up at least 2 problems over the course of the quarter. When presenting or writing up a problem, remember that it needs to be understandable to your fellow students. You are expected to attend, fully participate, and make a sincere effort in every problem session (not making a sincere effort includes working on material for other courses, chatting, leaving early, etc. and will result in lower participation grade)

Other Information: Dr. Loke will be taking a leave of absence tentatively from Nov 9 to Nov 20. During this time, Dr. Kathy Temple (Kathryn.Temple@cwu.edu) will be the substitute instructor.

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.

Dr. Loke reserves the right to change the policies contained in this syllabus as dictated by developments during the quarter. Changes will be announced in class and on Canvas.