

The University of Iowa
College of Liberal Arts and Sciences
Department of Statistics and Actuarial Science
ACTS:4380 (22S:183) Mathematics of Finance II
1:30 - 2:20PM MWF 102 MH Spring Semester 2013

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Office Hours: Tuesday(1:30–2:20), Thursday(1:30–2:20), Friday(2:30–3:20), or by appointment
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Prerequisites: Grade of C+ or higher in 22S:174 (ACTS:4130), and grade of C+ or higher in
22S:180 (ACTS:3080) or 22S:179 (ACTS:3085)

This course is intended for students who want to master the material in Exam MFE (Models for Financial Economics) of the Society of Actuaries. The **required textbook** is R.L. McDonald, *Derivatives Markets*, 3rd edition, Pearson. The second edition is acceptable (but the third edition will be used in ACTS:6160, a required course for all M.S. students). You may find it useful to bring your book to every class. The course will review Chapter 9 and cover Chapters 10 to 14, 18, 20, 25 (24 in 2nd ed.), and parts of Chapters 19, 21, 23 (22 in 2nd ed.), and 24 (23 in 2nd ed.). Pearson has also published *Student Solutions Manual to Derivatives Markets* which provides solutions to even-numbered end-of-chapter questions in the textbook.

Optional textbook J. Hull, *Options, Futures, and Other Derivatives*, Pearson. It is a textbook for a later SOA examination; earlier editions of it can be obtained cheaply.

UI students can download the following books free of charge from

<http://link.springer.com/>

M. Jeanblanc, M. Yor & M. Chesney, *Mathematical Methods for Financial Markets*

R.-A. Dana & M. Jeanblanc, *Financial Markets in Continuous Time*

Y.-K. Kwok, *Mathematical Models of Financial Derivatives*

J. van der Hoek & R. J. Elliott, *Binomial Models in Finance*

N. J. Cutland & A. Roux, *Derivative Pricing in Discrete Time*

There will be three (3) evening midterm examinations, to be held on February 22 (Friday), March 25 (Monday), and April 19 (Friday) in 40 SH. **You are to use an official CAS/SOA calculator during exams.** Tentatively, the final grade (H.W. 7% + Midterms 3×21% + Final 30%) will be assigned as follows:

Undergrads F[0, 40); D–[40, 45); D[45, 50); D+[50, 55); C–[55, 60); C[60, 65);
C+[65, 70); B–[70, 75); B[75, 80); B+[80, 85); A–[85, 90); A[90, 95); A+[95, 100]

Graduate students F[0, 46); D–[46, 50.5); D[50.5, 55); D+[55, 59.5); C–[59.5, 64); C[64, 68.5);
C+[68.5, 73); B–[73, 77.5); B[77.5, 82); B+[82, 86.5); A–[86.5, 91); A[91, 95.5); A+[95.5, 100]

In 2013, the dates for Exam MFE are March 7-13, July 11-17, and November 13-19.

HW Set 1

Write legibly. Show your steps. **Explain** your reasoning. Simplify your answers.

Due at the beginning of class on Friday, January 25

1. (Chapter 5) A stock pays dividends continuously. Between time t and time $t+dt$, dividends of amount $0.04S(t)dt$ will be paid. (Thus, if the stock price is stochastic, the dividend payments are also stochastic.) The current stock price is 100.

What is the current price for the (stochastic) stream of dividends to be paid in the next 5 years?

2. (Chapter 9) The current dollar-yen exchange rate is $\$0.012/\text{¥}$. A 3-year dollar-denominated European put option on yen with a strike price of $\$0.008$ sells for $\$0.0005$. The continuously compounded risk-free interest rate on dollars is 2%. The continuously compounded risk-free interest rate on yen is 1%.

Calculate the price of a 3-year yen-denominated European put option on dollars with a strike price of $\text{¥}125$.

Administrative Home

The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS Academic Policies Handbook at <http://clas.uiowa.edu/students/handbook>.

Electronic Communication

University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences ([Operations Manual, III.15.2, k.11](#)).

Accommodations for Disabilities

A student seeking academic accommodations should first register with Student Disability Services and then meet privately with the course instructor to make particular arrangements. See www.uiowa.edu/~sds/ for more information.

Academic Honesty

All CLAS students have, in essence, agreed to the College's [Code of Academic Honesty](#): "I pledge to do my own academic work and to excel to the best of my abilities, upholding the [IOWA Challenge](#). I promise not to lie about my academic work, to cheat, or to steal the words or ideas of others; nor will I help fellow students to violate the Code of Academic Honesty." Any student committing academic misconduct is reported to the College and placed on disciplinary probation or may be suspended or expelled ([CLAS Academic Policies Handbook](#)).

CLAS Final Examination Policies

The final examination schedule for each class is announced around the fifth week of the semester by the Registrar. Final exams are offered only during the official final examination period. **No exams of any kind are allowed during the last week of classes.** All students should plan on being at the UI through the final examination period. Once the Registrar has announced the dates and times of each final exam, the complete schedule will be published on the Registrar's web site.

Making a Suggestion or a Complaint

Students with a suggestion or complaint should first visit with the instructor (and the course supervisor), and then with the departmental DEO. Complaints must be made within six months of the incident ([CLAS Academic Policies Handbook](#)).

Understanding Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI [Comprehensive Guide on Sexual Harassment](#) for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather

In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the [Department of Public Safety website](#).