Course homepage: http://carmen.osu.edu/

Lecture slides, extra notes, assignments, datasets, links, and announcements will be posted here, so it is important that you regularly check the course homepage.

The best way to contact me is via e-mail. It is very important that you either e-mail me, make an appointment for extra office hours, or talk to me after class if you are having difficulty with topics that we have discussed in class or the problem sets.

1 Goals & Prerequisites

The goal of this course is to develop the basic skills to value options, futures, and related derivatives. Students are also expected to acquire techniques of arbitrage and speculation conducted through derivative markets. The first one-third of the course introduces the basic building blocks of derivatives, including futures/forward pricing & hedging; in the following two weeks we would consider miscellaneous aspects of stock options; the last third of the course will focus on option pricing. This course is an intensive 7-week course and I expect that it will be one of the more quantitative courses at Fisher College. You should expect to apply many formulas and do many calculations. In some cases, you will need to use Excel to do calculations.

- How does this course fit into the curriculum and finance careers?

  Derivative instruments are one of the largest markets in the world and are used daily by corporate and portfolio managers. All financial professionals should understand the basics of their use, pricing, and hedging. Financial engineers specialize in the valuation of derivatives and the creation of new derivatives. This course provides an introduction to these skills.

The main prerequisites for this course are Business Finance 4220 (Investments I) and Business Mgmt & HR 2291 (Applied Business Skills and Environment II). I will assume that you have some familiarity with:

- Present Value
- Short-selling financial assets
- Compounding of interest rates
- The CAPM

If you are unfamiliar with these concepts, it will simply mean a little bit more work for you before class.

The course will focus largely on classroom lectures and discussions, as well as problem assignments.
2 Course Materials

• Optional Textbooks:
  – *Options, Futures, and Other Derivatives*, 9th edition, John C Hull
  – *Derivatives Markets*, 3th edition, Robert L. McDonald

*Comments:*
1. The first few weeks of the course will be closest to Hull’s book and the last part will be closest to McDonald’s book.
2. Neither textbook is required. If you are interested but on a tight budget, you can get older editions. The introductory version of Hull’s book, i.e. *Fundamentals of Futures and Options Markets*, does not make a big difference as well.

• Lecture Slides: to be posted on the course homepage
• Assignments: to be posted on the course homepage
• Practice Exam: to be posted on the course homepage

3 Course Evaluation

• Homework Assignments: Doing your homework assignments is a key to success in this course. It enhances your understanding of the material and your achievement. In addition, you will never forget problems that you solved yourself. Tentatively, there will be four assignments:
  1. Introduction to Derivatives
  2. Forward and Futures Pricing
  3. Option Properties and Trading Strategies
  4. Binomial Option Pricing
They are to be handed in and can be done in groups of up to four students.

• Final Exams: The final exam will be closed book. It would consist of 25 multiple-choice questions totaling 100 points. You will be allowed to use a calculator (but not a computer) and bring a one-page “cheat sheet” (front-back). The date and time of the final will be determined by the GPO. The best way to prepare for the exam is to attend class, solve suggested problems and review lecture materials.

• Quizzes: Under option 2 of the course evaluation (described below), quizzes will account for 20% of your grade. All quizzes will be taken at the end of selected classes; they will be based upon learning objectives given at the beginning of the class. You may use your text while you are taking the quiz, but communication with someone else is not allowed. There will be five or six quizzes and I will take the highest four scores. If you participate in all five quizzes and your lowest quiz score is higher than your lowest assignment score, I will substitute your lowest quiz score for your lowest assignment score.

Grading Options:
• Option 1: 30% Assignments, 70% Final
• Option 2: 30% Assignments, 20% Quizzes, 50% Final
• Option 3: 100% Final

I will calculate your numerical average for each option and take the highest of the three numerical averages. I will then determine your grade based on where you fall in the distribution for the class.
4 Policies

*Fairness.* I will make every effort to treat students with dignity and fairness and to be sensitive to the diversity that exists within the student body. Students with disabilities who request help will be given reasonable accommodation with the assistance of the University Office of Disability Services (292-3307, http://www.ods.ohio-state.edu/). Please feel free to speak to me in private about any related issues.

*Academic Misconduct.* Students are expected to abide by the Fisher College of Business Honor Code. Among other things, please do not submit plagiarized work or give or receive information during exams and please provide proper acknowledgment in work when applicable.

*Classroom Conduct.* Please silence all cell phones. Laptops and tablets will be permitted in class for note-taking purposes, but please do not distract your classmates by using your laptop to surf the internet or conduct other business during lecture. I also ask that students remain professional and respectful during class discussions.

*Questions Outside of Class.* For any questions that have not been sufficiently answered in class, please e-mail me or make an appointment for office hours.

*Absences from the Final Exam.* Absences from the final exam will only be excused with written documentation from an appropriately accredited professional (e.g. a medical doctor).

5 Course Outline

The following schedule is tentative and subject to change based on how the class progresses. All listed readings are optional, though they may help to enhance your understanding of the lecture slides.

**Forward and Futures Contracts**

1. Introduction to Derivatives
   - Hull 1, McDonald 2
2. Futures Markets
   - Hull 2, McDonald 5.4
3. Introduction to Risk Management
   - Hull 3, McDonald 4
4. Forward and Futures Pricing
   - Hull 5, McDonald 5

**Stock Option Market**

5. Mechanics of Options Markets
   - Hull 10
6. Parity and Other Option Relationships
   - Hull 11, McDonald 9
7. Trading Strategies Involving Options
   - Hull 12, McDonald 3
Option Pricing

8. Binomial Option Pricing: One-Period Models
   • Hull 13, McDonald 10

9. Binomial Option Pricing: Multi-Period Models
   • Hull 13, McDonald 10&11

10. The Black-Scholes-Merton Model
    • Hull 15, McDonald 12