

## FIN4340 Options and Futures Markets, Spring 2017

Prof. Feng Zhao

SOM 14.508; 972-883-5815; [feng.zhao@utdallas.edu](mailto:feng.zhao@utdallas.edu)



**Pre-requisites:** FIN 4300 or 4310

### Course Description

This course covers topics on pricing and hedging in futures, options and other derivatives markets. It is of fundamental importance for various players in the economy to understand the risks involved in these markets, from making investment decisions to devising economic policies. Misuse of financial derivatives often causes damages to institutions, markets and the entire economy. The goal of this class is to help you develop a framework for analyzing and using these financial instruments. By the end of the class, you should have a good understanding of the commonly used derivative products and an analytical toolbox for hands-on applications.

The first half of the class covers forward, futures and swaps. Using simple algebra, we will develop pricing models for these securities. This part of the course emphasizes the economic intuition on no-arbitrage pricing principle. The second half examines advanced materials for options, such as the Binomial option pricing model and risk management. This part of the course develops the technical skills necessary for conduct model-based pricing and hedging with various derivatives.

Applications of derivative securities are discussed throughout the course. These applications include hedging and risk management, portfolio insurance, index arbitrage and corporate finance.

At the end of the class, the students should be able to

- Analyze the risks within various derivative securities
- Conduct risk management with derivatives
- Master the fundamental of derivative pricing models

### Required Texts & Materials

Lecture notes are the primary resource for the class and they are distributed via eLearning. Parts of the notes are left blank intentionally to be completed in class.

We will refer to the following textbooks for this course:

*An Introduction to Derivative Securities, Financial Markets, and Risk Management*, by Robert A. Jarrow, Arkadev Chatterjea, W W Norton & Company, 2013

*Options, Futures, and Other Derivatives*, by John C. Hull, Prentice Hall, 8th edition, 2011

I also recommend the study guide for the textbook as a source for extra questions and practice.

### Suggested Texts, Readings, & Materials

The following books are also useful for the history of the development of option pricing theories. *When Genius Failed: The Rise and Fall of Long-Term Capital Management*, by Roger Lowenstein, Random House, 2000. *Inventing Money: The Story of Long-Term Capital Management and the Legends Behind It*, by

Nicholas Dunbar, John Wiley & Sons, 2000. The *Wall Street Journal*, *Financial Times*, *CNBC* or other financial news outlets are also recommended for reading about practical applications of financial derivatives.

### **Class Participation, Homework, Exams and Grading**

There are two in-class exams given in the middle and at the end of the semester. The exams are closed-book with the exception of one page of notes, letter-sized and double-sided. There is one group project. Homework assignments are given about every two weeks and they require independent work. Class participation is highly encouraged and will positively affect your grade. Your grade for the entire course is determined by the following:

|                     |     |
|---------------------|-----|
| Exam 1&2            | 50% |
| Project             | 20% |
| Homework            | 20% |
| Class Participation | 10% |

### **Class Schedule**

|         |                                                                                                       |
|---------|-------------------------------------------------------------------------------------------------------|
| Week 1  | Introduction and Course Overview<br><i>Readings: Chapter 1, 4 and 8 of JC, Chapter 1 of Hull</i>      |
| Week 2  | Forward and Futures Contract<br><i>Readings: Chapter 8, 11 of JC, Chapter 2 and 5 of Hull</i>         |
| Week 3  | The Cost-of-Carry Model<br><i>Readings: Chapter 11 and 12 of JC, Chapter 2 and 5 of Hull</i>          |
| Week 4  | Hedging Using Futures Contracts<br><i>Readings: Chapter 13 of JC, Chapter 3 of Hull</i>               |
| Week 5  | Swaps<br><i>Readings: Chapter 7 and 22 of JC, Chapter 7 of Hull</i>                                   |
| Week 6  | Introduction to Options, Options Market<br><i>Readings: Chapter 5 and 14 of JC, Chapter 9 of Hull</i> |
| Week 7  | Principles of Option Pricing<br><i>Readings: Chapter 16 of JC, Chapter 10, 11 of Hull</i>             |
| Week 8  | Review for Exam 1                                                                                     |
| Week 9  | Exam 1                                                                                                |
| Week 10 | Spring Break                                                                                          |
| Week 11 | Options Strategies<br><i>Readings: Chapter 15 of JC, Chapter 11 of Hull</i>                           |
| Week 12 | The Binomial Model of Option Pricing I<br><i>Readings: Chapter 17 of JC, Chapter 12 of Hull</i>       |
| Week 13 | The Binomial Model of Option Pricing II<br><i>Readings: Chapter 18 of JC, Chapter 12 of Hull</i>      |

|         |                                                                                                                              |
|---------|------------------------------------------------------------------------------------------------------------------------------|
| Week 14 | Black-Scholes Option Pricing Model<br><i>Readings: Chapter 19 of JC, Chapter 13, 14 of Hull</i>                              |
| Week 15 | Risk Management, Financial Crisis of 2007-2008<br>Review for Exam 2<br><i>Readings: Chapter 26 of JC, Chapter 35 of Hull</i> |
| Week 16 | Exam 2                                                                                                                       |
| Week 17 | Make-up exam                                                                                                                 |

## Course Policies

Make-up Exams: Pre-arrangement required.

Extra Credit: Pre-arrangement required.

Late Work: Penalty applied.

Class Attendance: Strongly urged. You will improve your class participation grade by regular attendance.

Classroom Citizenship: Classroom conduct will affect the class participation grade.

## Academic Integrity

The faculty and administration of the School of Management expect from our students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work. We want to establish a reputation for the honorable behavior of our graduates, which extends throughout their careers. Both your individual reputation and the school's reputation matter to your success.

The Judicial Affairs website lists examples of academic dishonesty. Dishonesty includes, but is not limited to cheating, plagiarism, collusion, facilitating academic dishonesty, fabrication, failure to contribute to a collaborative project and sabotage. Some of the ways students may engage in academic dishonesty are:

- Coughing and/or using visual or auditory signals in a test;
- Concealing notes on hands, caps, shoes, in pockets or the back of beverage bottle labels;
- Writing in blue books prior to an examination;
- Writing information on blackboards, desks, or keeping notes on the floor;
- Obtaining copies of an exam in advance;
- Passing information from an earlier class to a later class;
- Leaving information in the bathroom;
- Exchanging exams so that neighbors have identical test forms;
- Having a substitute take a test and providing falsified identification for the substitute;
- Fabricating data for lab assignments;
- Changing a graded paper and requesting that it be regraded;
- Failing to turn in a test or assignment and later suggesting the faculty member lost the item;
- Stealing another student's graded test and affixing one's own name on it;
- Recording two answers, one on the test form, one on the answer sheet;
- Marking an answer sheet to enable another to see the answer;
- Encircling two adjacent answers and claiming to have had the correct answer;
- Stealing an exam for someone in another section or for placement in a test file;
- Using an electronic device to store test information, or to send or receive answers for a test;
- Destroying or removing library materials to gain an academic advantage;
- Consulting assignment solutions posted on websites of previous course offerings;
- Transferring a computer file from one person's account to another;
- Transmitting posted answers for an exam to a student in a testing area via electronic device;
- Downloading text from the Internet or other sources without proper attribution;
- Citing to false references or findings in research or other academic exercises;

- Unauthorized collaborating with another person in preparing academic exercises.
- Submitting a substantial portion of the same academic work more than once without written authorization from the instructor.

<http://www.utdallas.edu/judicialaffairs/UTDJudicialAffairs-Basicexamples.html>

Plagiarism on written assignments, especially from the web, from portions of papers for other classes, and from any other source is unacceptable. On written assignments, this course will use the resources of [turnitin.com](http://turnitin.com), which searches the web for plagiarized content and is over 90% effective.

During tests and quizzes, students in this section are not allowed to have with them any food or drinks, scratch paper, course materials, textbooks, notes, invisible ink pens, or electronic devices, including iPads, iPhones, iPods, MP3 Players, earphones, radios, smart phones, cameras, calculators, multi-function timepieces, or computers. When possible, students should sit in alternating seats, face forward at all times, and remove any clothing which might conceal eye movements, reflect images of another's work, or hide course material for copying. Exam proctors will monitor any communication or signaling between students by talking, whispering, or making sounds, or by using your hands, feet, other body movements, the test paper itself or your writing implement.

Students in this course suspected of academic dishonesty are subject to disciplinary proceedings, and if found responsible, the following minimum sanctions will be applied:

1. Homework – Zero for the Assignment
2. Case Write-ups – Zero for the Assignment
3. Presentations – Zero for the Assignment
4. Group Work – Zero for the Assignment for all group members
5. Tests – F for the course

These sanctions will be administered only after a student has been found officially responsible for academic dishonesty, either through waiving their right for a disciplinary hearing, or being declared responsible after a hearing administered by Judicial Affairs and the Dean of Student's Office .

In the event that the student receives a failing grade for the course for academic dishonesty, the student is not allowed to withdraw as a way of preventing the grade from being entered on their record. Where a student receives an F in a course and chooses to take the course over to improve their grade, the original grade of F remains on their transcript, but does not count towards calculation of their GPA.

The School of Management also reserves the right to review a student's disciplinary record, on file with the Dean of Students, as one of the criteria for determining a student's eligibility for a scholarship.

### **Judicial Affairs Procedures**

Under authority delegated by the Dean of Students, a faculty member who has reason to suspect that a student has engaged in academic dishonesty may conduct a conference with the student in compliance with the following procedures:

- (i) the student will be informed that he/she is believed to have committed an act or acts of academic dishonesty in violation of University rules;
- (ii) the student will be presented with any information in the knowledge or possession of the instructor which tends to support the allegation(s) of academic dishonesty;
- (iii) the student will be given an opportunity to present information on his/her behalf;
- (iv) after meeting with the student, the faculty member may choose not to refer the allegation if he/she determines that the allegations are not supported by the evidence; or
- (v) after meeting with the student, the faculty member may refer the allegations to the dean of students along with a referral form and all supporting documentation of the alleged violation. Under separate cover, the faculty member should forward the appropriate grade to be assessed if a student is found to be responsible for academic dishonesty;
- (vi) the faculty member may consult with the dean of students in determining the recommended grade;
- (vii) the faculty member must not impose any independent sanctions upon the student in lieu of a referral to Judicial Affairs;
- (viii) the faculty member may not impose a sanction of suspension or expulsion, but may make this *recommendation* in the referral documentation

If the faculty member chooses not to meet with the student and instead forwards the appropriate documentation directly to the dean of students, they should attempt to inform the student of the allegation and notify the student that the information has been forwarded to the Office of Dean of Students for investigation.

The student, pending a hearing, remains responsible for all academic exercises and syllabus requirements. The student may remain in class if the student's presence in the class does not interfere with the professor's ability to teach the class or the ability of other class members to learn. (See Section 49.07, page V-49-4 for information regarding the removal of a student from class).

Upon receipt of the referral form, class syllabus, and the supporting material/documentation from the faculty member, the dean shall proceed under the guidelines in the *Handbook of Operating Procedures*, Chapter 49, Subchapter C. If the respondent disputes the facts upon which the allegations are based, a fair and impartial disciplinary committee comprised of UTD faculty and students, shall hold a hearing and determine the responsibility of the student. If they find the student in violation of the code of conduct, the dean will then affirm the minimum sanction as provided in the syllabus, and share this information with the student. The dean will review the student's prior disciplinary record and assess additional sanctions where appropriate to the circumstances. The dean will inform the student and the faculty member of their decision.

#### **Withdrawal from Class**

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

#### **Student Grievance Procedures**

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's *Handbook of Operating Procedures*.

In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.

Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

#### **Incomplete Grades**

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of **F**.