

**HOWARD**  
**UNIVERSITY**  
School of Business  
**COURSE SYLLABUS**

**FINANCIAL DERIVATIVES: FUTURES AND OPTIONS**

Faculty:	Jin G. Jeong	Semester:	Spring 2011		
Department of	Finance	CRN:	18290		
Office:	SB 520	Classes			
Office Hours:	Mon and Wed 10:30-11:00 am 12:30-2:00 pm Fri 11:00 a.m.-1:00 p.m. or by appointments	Course # -Section #	Days	Hours	Room No.
Contact Information: Phone:	<b>6-1657</b>	FINA 365-01	Mon & Wed	11:10-12:30PM	417
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<input type="checkbox"/> Departmental Core Course [ ] Required for all majors in	<input checked="" type="checkbox"/> Prerequisites for this course [X] FINANCE PRINCIPLES (311) and PRINCIPLES OF INVESTMENTS (330)
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**COURSE DESCRIPTION**

The objective of this course is to study derivative assets whose prices are derived from the prices of their underlying assets such as commodities, stocks, bonds, and real estates. The types of derivative contracts (or assets) studied in this class include forwards, futures, options and swaps. Each contract will be discussed in detail with respect to its mechanics and institutional features, trading strategies, and equilibrium pricing relationships. Upon the successful completion of the course, students will acquire knowledge and skills on the topics listed in the course outline.

**COURSE LEARNING GOALS**

As we all know, the topics to be covered in this course are timely issues, and are directly related to the recent global financial melt-down. Specifically, we all know that the main cause of the current global financial crisis is reckless uses of derivative contracts such as credit default swaps (CDS) and derivatives on collateralized debt obligations (CDO) and mortgage backed securities (MBS) for speculative purposes, in addition to the burst in real estate prices globally.

Although we have three types of market participants- speculators, hedgers, and arbitrageurs- in any financial, commodities, and real estate markets, we will clarify that the primary purpose of using derivative contracts is not speculation (to take a risk), but hedging (to avoid a risk).

Thus, the course intends to provide students with a sound understanding on how to use derivative contracts in the process of hedging or risk management with respect to price risk, interest rate risk, foreign exchange rate risk, credit risk, etc.

Furthermore, no company or individual in the world is free from the effects of financial risk due to changes in prices, interest rates and foreign exchange rates. Specifically, as we have

seen, major U.S. corporations, including finance companies, are significantly exposed to financial risk. Therefore, management of financial risk is an essential task for the companies to maintain stable annual profits and to survive in ever-changing financial environment.

As it has been reported in financial press, the pricing of derivative assets is found to be critical for the survival of any company. Students will understand the causes of the collapse of many finance companies such as Bear Sterns and Lehman Brothers. Students will also understand the causes of the turmoil experienced by AIG, Merrill Lynch, Citi Group, Fannie Mae, and Freddie Mac. At the end of the semester, students will possess a solid understanding of theoretical foundations of hedging (managements of financial risk) and pricing of derivative assets. Students will also be able to practically apply the theory of financial derivatives to real world examples and cases.

#### **COURSE LEARNING OBJECTIVES**

After successful completion of the course, students should be able to obtain knowledge and skills described in course learning goals by studying the topics listed in the course outline. To achieve course learning objectives, students are required to do the following activities: lectures, trading simulations, assignments, exams, class participation, presentations, group projects, and computer projects.

#### **CORE COMPETENCIES EMPHASIZED**

During the semester, the following areas of core competencies will be emphasized through the aforementioned activities in class:

- Solid foundation in uses of derivative assets (Forward, futures, options, and swaps contracts)
- Business ethics and speculative uses of derivative assets
- Computer proficiency with special emphasis on Microsoft Excel programming
- Analytical expertise and skills
- Knowledge and understanding of the current events in global financial markets
- Written and oral communication skills
- Understanding of the global linkage of finance and business
- Knowledge and understanding of working in teams
- Entrepreneurship

#### **COURSE MATERIALS**

##### **Required Readings**

Hull, John C., Fundamentals of Futures and Options Markets, 7th ed.,  
Pearson Prentice Hall, 2011 (ISBN-13: 978-0-13-610322-6)

Other Materials: Database, Software, and online data service in the SLR lab

##### **Suggested Readings**

The Wall Street Journal, Financial Times, Risk

#### **ASSESSMENT METHODS/GRADING POLICIES**

Evaluation will be based entirely upon performance on tests, homework assignments, class participation, projects and presentations. The tests will be based on the text, class lectures, homework assignments, and any handout materials.

Assessment methods	Percent of Grade
1. Mid-term exam (March 9, 2011) (See a)	20 pts (20%)

2. Final exam ( April 25, 2011) (See a)	25 pts (25%)
3. Computer assignments (See b, c, d)	5 pts ( 5%)
4. Research paper (See e)	5 pts ( 5%)
5. Class participation (See f)	25 pts (25%)
6. Homework assignments (See g)	10 pts (10%)
7. Presentation (See h)	10 pts (10%)
Total	100 pts (100%)

- a. Each exam is composed of problem-solving, short essay questions and oral explanations. Old exam questions will be posted on Blackboard.
- b. Trading simulations: Participation in on-line trading simulations through the Internet (Stock-Trak Portfolio Simulations: The Stock Challenge) is encouraged. The School of Business is equipped with the SLR lab (Room 568). You are required to use the lab for trading simulations of financial derivatives such as options and futures contracts, in addition to underlying assets such as stocks and currencies.
- c. Computer software: You may need to use the SLR lab in order to do the assignments and projects.
- d. Internet exercises: I will provide informative Web site addresses in the financial derivatives area. You will be required to access the web sites and prepare a short report on them along with a copy of relevant pages.
- e. As you read The Wall Street Journal or other financial press this semester, select an article related to any topic discussed in class and write an essay on the relevance of the topic in real world. More weight should be given to analytical parts rather than descriptive and anecdotal parts. Maximum length of the final paper is 4 double-spaced pages excluding references and appendices such as tables and graphs. Due Date of one-page proposal: April 4, 2011 (Monday). Due Date of the final paper: April 20, 2011 (Wednesday). It is required for student to perform oral presentation of his/her final paper in class.
- f. Students are expected to demonstrate their understanding as scheduled in required readings and course outline. Instructor will grade students' level of understanding and preparation as class participation.
- g. During the semester, students are required to do approximately 20 homework assignments. Students are required to use Microsoft Excel, an essential skill set for survival. Students will use MS Excel to calculate (using financial functions and programming) and to draw graphs and charts (graphs and charts). Students submit their homework at the beginning of class on the due date. Homework assignments will be graded based on efforts, accuracy and professional neatness. Students will be asked to redo the same homework until the final outcome is satisfactory. The weight of each homework assignment will be the same.
- h. Students are required to do two 5-minute presentations on current events and relevant articles in financial press in relation to the topics being covered in class. Students are encouraged to use MS PowerPoint for their presentation.

The numerical percentage result obtained will be converted to an equivalent final letter grade for the course in accordance with the following scale:

<u>Numerical Percentage</u>	<u>Grade</u>
90 – 100	A
80 – 89.9	B

70 – 79.9	C
60 – 69.9	D
0 – 59.9	F

**EXAMINATION FORMAT**

Problem solving, short essay, oral explanation

**TEACHING METHODOLOGY/INSTRUCTIONAL METHODS**

Lectures, Trading simulations, Case studies, Students’ presentations

The numerical percentage result obtained will be converted to an equivalent final letter grade for the course in accordance with the following scale:

<u>Numerical Percentage</u>	<u>Grade</u>
90 – 100	A
80 – 89.9	B
70 – 79.9	C
60 – 69.9	D
0 – 59.9	F

**COURSE REQUIREMENTS, RESPONSIBILITIES, AND GUIDELINES**

Attendance, Tardiness, and Decorum: All students are expected to attend classes regularly and promptly. Absences and tardiness can detrimentally impact your grade. **For each unexcused absence**, the professor will **deduct 25 percent of a letter grade** (as determined by the professor). In the event that you miss a class, it is your responsibility to find out from your classmates what topics were discussed, what additional assignments may have been made, and what material may have been distributed in class.

Students are also expected to arrive to class on time. **For each occurrence of tardiness**, the professor will **deduct 12.5 percent of a letter grade**. The professor also has the authority to refuse to admit students into the classroom once instruction has started and to refuse to allow students to re-enter the classroom if they leave before the end of the session. **All cell phones, iPods, and any other electronic communication devices must be turned to the “off” or “vibrate” position during class and examinations.** Students are required to act in a professional, respectable, and courteous fashion at all times in each and every interaction with other students and with members of the faculty. Unprofessional and disrespectful conduct includes, but is not limited to, text messaging or talking on cell phones, talking among and between students outside of the context of the classroom discussion, throwing pens, pencils, or any other items, and the wearing of headgear by males or earphones by any student. After providing the student a written notice, the professor has the authority to deduct 5 percent from a student’s grade for continued unprofessional conduct or, in more extreme cases (as determined by the professor), to expel the student from the class. Students who use a laptop computer during the class are expected to refrain from surfing the internet or engaging in any other

distracting activities during class time. Also, note that no food or drinks are allowed in the classroom.

Readings and Assignments: The bulk of the readings will be from the course text. You may also have some supplemental materials. Students are expected to have completed all class assignments, including, but not limited to, assigned readings and case analyses **prior to each class**. All assignments are due to the professor at the *beginning* of the scheduled class. Assignments turned in after this time will not be accepted. Students are responsible for all areas covered by the assigned reading, regardless of whether we actively addressed a particular topic during class time. The final examination may draw upon any and all areas covered by the guest lecturers, in-class discussion, assigned readings, and supplemental materials.

#### **ACADEMIC INTEGRITY**

In every aspect of this course, you are required to maintain the standards of integrity set forth in the Howard University Academic Code of Student Conduct (see Howard University Student H-Book and Planner). Students accused of an infraction will respond to charges in a hearing before the appropriate School's Judiciary Committee. The School of Business has a *zero-tolerance* policy on student academic misconduct. After review by the Judiciary Committee, students found guilty of academic misconduct will be suspended for a minimum of one semester.

#### **LAST DAY TO WITHDRAW**

The last day to withdraw from this class is Friday, April 8, 2011.

#### **INCOMPLETE GRADES**

Although the student has the sole responsibility for making a formal written request to the instructor for an incomplete grade, the decision to assign an incomplete grade rests solely with the instructor. As a general rule, incomplete grades will not be assigned except in unusual circumstances and only to students who have attended and completed most of the course up to the last day to withdraw from classes but who, as a result of circumstances beyond their control (e.g., illness or family emergency), are unable to complete the remainder of the course. If the student has failed to complete the major portion of the course by the drop date, he/she is advised to withdraw from the course. If the instructor agrees to comply with the student's request, he/she must establish specific "make-up" conditions which must be recorded on the Incomplete Grade Processing Form (IGPF). Any grade of "incomplete" must be completed by the following semester in accordance with University policy. Note that only the portion of the course that was missed by the student is eligible to be completed. That is, incomplete grades are not given in order for a student to retake or re-do portions of the course that had already been completed in order to improve his/her grade.

#### **THE GRIEVANCE PROCESS**

Students should refer to the University's Policy on Student Academic Grievance Procedures for the informal and formal processes to be followed when a student wants to initiate a grievance against a faculty member.

#### **STUDENTS WITH DISABILITIES**

Howard University is committed to providing access and reasonable accommodations to persons with documented disabilities in accordance with the *Americans with Disabilities Act (ADA)* of 1990, Section 405 of the *Rehabilitation Act* of 1973, and in accordance with other pertinent federal, state, and local disability and anti-discrimination laws. *Students must self-identify in writing with the Office of the Dean of Special Student Services before any accommodations can be made.* The Office will then provide a document to the student regarding his/her disability status. The student, in turn, will present this document to the faculty member, who will provide those reasonable accommodations as deemed necessary by the Office of Special Student Services.

#### **EXAMINATION POLICIES AND PROCEDURES**

Examination Procedures: Unless otherwise stated by the professor, all assessments of students, including, but not limited to, examinations, tests, quizzes, and all other in-class or take-home assignments are “closed book” and, therefore, to be taken without the aid of any other person or materials.

Each student must place *all* items and materials, except those designated by the professor, at the front, back, or side of the classroom before the start of each assessment activity. Any and all devices that can transmit, receive, record, retrieve, or play back information (such as palm pilots, cell phones, two-way pagers, etc.) are prohibited and may not be used. Any student who uses the aforementioned for *any* reason will (1) not be allowed to continue the examination, (2) will not receive credit for any portion of the examination, and (3) will be subject to review by the appropriate School’s Judiciary Committee for academic misconduct.

Students are required to sit in every other seat whenever possible and are not permitted to share calculators or any other equipment, to wear headphones, or to take apart (disassemble) the examination. Once the examination has begun, any student who leaves the examination room for any reason will not be allowed to re-enter and continue the examination. Each student may be required to present a valid University ID in order to sit for an examination.

No absence will be permitted from any scheduled examination without prior written notification to and authorization from the professor and for reasons of health, death in the family, or other emergency. Each unexcused absence from an examination or presentation or any other assignment in which the student is graded will result in a grade of “zero” for that portion of the course. Students who are more than 15 minutes late will not be allowed to sit for any examination. Furthermore, a student who is late for any examination, presentation, or quiz will not be provided additional time to complete the assignment.

Make-up Test Policy: Tests must be taken at the assigned time. The professor retains complete discretion regarding the policy pertaining to examinations missed by students. In other words, students are not entitled to “make up” a missed examination. In this class, no make-ups will be given absent unusual circumstances (as determined by the instructor) and only then with advance notice to and permission from the instructor. Each

and every student must present satisfactory (as determined by the professor) written documentation of the reason for requesting a make-up opportunity.

**Research Paper Requirements:** Unless otherwise designated by the professor, any outside work submitted by the student, including but not limited to case studies, research papers, and writing assignments, must be the original and sole creation of the student, including, where appropriate, footnotes or endnotes and a bibliography. Please review the definition of plagiarism contained in the *Academic Code of Student Conduct*. All written assignments will be graded for content, organization, grammar, and clarity.

**OFFICE HOURS**

I will be available to meet and discuss any academic issues that may arise regarding the subject matter of the course or concerns that you may have during my office hours. Please note that office hours will not serve as an “alternative” class meeting, and I re-emphasize that it is your responsibility to find out from your classmates information that you have missed. Furthermore, any discussions we may have outside class will not count toward your grade.

**Disclaimer:** Syllabus and course outline are subject to change as deemed necessary by the instructor.

## **Course Outline and Assignments (Tentative)**

Course outline is subject to change as deemed necessary by the instructor. All changes, if any, will be announced in class and/or via Blackboard.

### I. Introduction and Derivatives Mishaps (Sessions 1-2)

The Nature of Financial Risk  
The Sources of Financial Risk  
Arbitrage, Speculation and Hedging

Lessons

Readings: Hull, Chapters 1 and 23

### II. Futures and Forward Markets (Sessions 3-4)

Contracting Problems in the Forward Market  
Evolution of the Futures Market  
Comparison of Forward and Futures Contracts  
Mechanics of Futures and Forward Markets  
    The specification of the Futures Contract  
    Newspaper quotes  
    The clearinghouse and Open interest  
    Marking to market  
    Margin account  
    Delivery options (Cash vs. Actual)

Readings: Hull, Chapter 2

### III. Hedging Strategies Using Futures (Sessions 5-6)

Basis risk  
Optimal hedge ratio  
Rolling the hedge forward

Interest Rate Futures  
Foreign Exchange Futures  
Commodity Futures  
Stock Index Futures

Readings: Hull, Chapters 3, 4, 5 and 6

### IV. The Determination of Futures and Forward Prices (Session 7)

The cost of carry  
Futures Prices and expected Future Spot prices  
    Normal Backwardation  
    Contango



Readings: Hull, Chapter 5

## V. Options Markets (Sessions 8-9)

### Mechanics of Options Markets

- Types of Options
- Specification of Stock Options
- Newspaper quotes
- Margins
- Warrants and Convertibles
- Exchange-traded options and OTC options
- The options clearing corporation

Readings: Hull, Chapter 8

### Properties of Stock Option prices

- Values of options at expiration
- Factors affecting option prices
- Put-call parity
- Effect of dividends
- Early exercise

Readings: Hull, Chapter 9

## VI. Option Trading Strategies (Sessions 10-11)

- Protective put
- Covered calls
- Combinations: Straddle, Spreads, and Collars

Readings: Hull, Chapter 10

## VII. Option valuation (Sessions 12-13)

- The behavior of stock prices
- Binomial option pricing
- Black-Scholes Option valuation
- Empirical evidence

Reading: Hull Chapters 11 and 12

## VIII. Hedging Positions in Options and other derivative assets (Sessions 14-15)

- Naked and covered positions
- Delta hedging
- The Greek Letters
  - Theta
  - Gamma

Vega  
Rho  
Portfolio insurance

Readings: Hull, Chapter 15

Options on Stock Indices  
Options on currencies  
Interest rate options  
Options on Futures

Readings: Hull, Chapters 13, 14 and 19

#### IX. Volatility Smiles and Exotic Options (Session 16)

Readings: Hull, Chapters 17 and 20

#### X. Swaps (Sessions 17-18)

Evolution of the Swaps market  
Varieties of Swaps  
Interest rate swaps  
Currency swaps  
Other swaps

Readings: Hull, Chapter 7

#### XI. Pricing of swaps (Sessions 19)

Readings: Hull, Chapter 7

#### XII. Credit Derivatives and Credit Default Swaps (Sessions 20-21)

Readings: Hull, Chapter 21

#### XIII. Value at Risk (Sessions 22-23)

Readings: Hull, Chapter 18

#### XIV. Weather, Energy and Insurance Derivatives (Sessions 24-25)

Readings: Hull, Chapter 22

**\*\*\* Final Exam (April 25, 2011 (Monday))**

## Financial Derivatives

Spring 2011

#	Homework Assignments	Assigned Date	Due Date	Points earned
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

<b>15</b>				
<b>16</b>				
<b>17</b>				
<b>18</b>				
<b>19</b>				
<b>20</b>				

**STUDENT ACKNOWLEDGMENT AND ACCEPTANCE**

I have received and read the attached course syllabus and agree to abide by all the requirements stipulated therein.

\_\_\_\_\_  
 Student's Signature  
 Date

\_\_\_\_\_

\_\_\_\_\_  
 Student's Printed Name

\_\_\_\_\_  
 ID#

**FINA-365-01 FINANCIAL DERIVATIVES:FUTURES AND OPTIONS (Spring 2011)**

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 Course