BUSFIN 4229: ADVANCED INVESTMENTS
SPRING 2020

INSTRUCTOR:	Prof. Pirim
OFFICE:	242 Fisher Hall
E-MAIL:	pirim.1@osu.edu *(Please allow 24 hours to respond)*
WEB PAGE:	Carmen
CLASS TIMES AND ROOMS:	Tue/Thu 9:35 am – 10:55 am, Schoenbaum Hall 200 Tue/Thu 12:45 pm – 2:05 pm, Schoenbaum Hall 300 Tue/Thu 2:20 pm – 3:40 pm, Schoenbaum Hall 300
OFFICE HOURS:	Tuesdays 3:45 pm – 5:00 pm OR by appointment, please email with a subject "BUSFIN 4229"
TEXTBOOK:	McDonald., R., "Derivatives Markets", 3rd Edition, Prentice Hall, Pearson. **ISBN-13:** 978-0321543080 (Hardcover)

Course Description

This course is designed to introduce you to financial derivatives market. *Financial derivatives* have become an indispensable part in today's economy. Examples are stock options, oil futures, currency contracts, credit derivatives and much more. They are used for *compensation*, *speculation*, *yield enhancements* of investments, and, most importantly, for *risk management*. Since every company is exposed to some sort of risk, there is virtually no company that does not deal with derivatives in some way.

The course starts with a general look at using futures and options to hedge exposure to different types of risk. We then analyze each of the main types of derivatives in turn, starting with forwards and futures moving on to options. This analysis will use no arbitrage arguments to determine how to construct a fair contract between the parties involved and how to value this contract as time and the value of the underlying asset change. As a side effect of the no arbitrage arguments we also construct arbitrage strategies to take advantage of any mispriced derivate products.

This course last explores the valuation of forwards, futures and options, forward-based, and option-based financial instruments. While the techniques for the valuation of options and futures at first might appear advanced and difficult, they are easily and conceptually digestible. Upon completion of the course you should have a good grasp of the practical uses of financial forwards/futures and option contracts as well as being able to calculate key parameters for each.

Course Objectives

By the end of this course, students should successfully be able to:

(1) understand the basic concepts and principles of financial derivatives contracts; forwards, futures and options.

(2) learn skills used in derivative contract analysis and valuation,

(3) evaluate trading and speculation opportunities available in the current financial markets, and

(4) assess the influence of economic events upon pricing.

Course Materials

Required Textbook

Title: "Derivatives Markets", 3rd Edition, and Prentice Hall-Pearson

Author: Robert L. McDonald

ISBN-13: 978-0321543080 (Hardcover)

Lecture Materials

There will be lecture materials for each week. Each week, copies of these lecture materials will be available on course web site. Lecture and any other reading materials will be posted in the form of MS Word, Power Point and/or Adobe Acrobat files. It is your responsibility to print them out before/after the class. You are responsible for all material covered in class. Lecture may go beyond the scope of the textbook for certain topics. Therefore, it is important for you to attend class. You are responsible for all announcements made in class. Class lectures will sometimes involve working through problems. Thus, **you are required to bring a calculator** to every class so that you may work on problems and participate in class discussions.

Suggested End-of-Chapter Problems (Optional)

The course textbook has a set of problems at the end of each chapter. These questions are designed to help students assess their understanding of chapter topics. Some of these problems/questions will be selected from each chapter and will be posted on Carmen. Students should try to answer these problems after they finish reading a chapter to check their understanding of the topics covered.

Suggested Readings (Optional)

Wall Street Journal: www.wsj.com
Financial Times: http://www.ft.com/home/us
Bloomberg: www.bloomberg.com
Yahoo! Finance: http://finance.yahoo.com/
Freakonomics: http://freakonomics.blogs.nytimes.com/
Real Time Economics (WSJ): http://blogs.wsj.com/economics/
Calculated Risk: http://www.calculatedriskblog.com/
Economy and Economics of Everyday Life: http://economix.blogs.nytimes.com

Course Website

The course website is located on Carmen. A student must be registered for the course to access the course web site.

Important Resources on the Course Website:

- Course syllabus
- Supplemental course material used (or mentioned) in class
- Lecture notes (PowerPoint slides)
- Course announcements
- Problem sets and solutions
- Detailed solutions for suggested end-of-chapter problems in the course text
- Posted exam scores (privately for each student)
- Exam formulas
- **Logging in Carmen**: Be sure you are logging in to the course in Carmen each week, including weeks with holidays or weeks with minimal online course activity. (During most weeks you will probably log in many times.) If you have a situation that might cause you to miss an entire week of class, discuss it with me *as soon as possible.*

Course Technology:

Baseline technical skills necessary for this course

- Basic computer and web-browsing skills
- Navigating **Carmen**

Technology Support for Carmen

As instructor, my responsibility is the course content and evaluating performance. Please contact me about any concerns in these areas. However, I am generally not able to assist in matters relating to technology, connectivity or Carmen access. Such issues may be addressed directly to either Carmen Technical support or Help desk.

Hence sources of help are available from helpdesk@osu.edu (or by phone at 292-8976) and carmen@osu.edu or 614-688-HELP at any time.

Course Requirements and Policies:

Exams:

There will be two examinations. Exam questions will be similar to the examples and problem sets used in class, and I reserve the right to make any changes appropriate for the administration and evaluation of the class.

All exams are closed-book and closed-notes however a formula sheet will be provided during each exam. Each exam will cover certain topics in the course. The topics and related textbook chapters covered by each exam can be found in the **Tentative Course Schedule.**

Students will be provided with a Formula Sheet for use in each exam. A copy of the formula sheet will be posted on the course website before the exam. A copy also will be handed out at the exam. By giving students formula sheets at exams, students will not waste time in memorizing mathematical expressions hence they will concentrate to understand important financial concepts.

Students should bring to each exam:

1. A financial calculator
2. A valid picture ID. You will not be permitted to take an exam without presenting a **valid photo ID**.
3. Several #2 pencils, which you will need for the "bubble sheet"

Please remember that all exams are "closed book/notes". Except for a Formula Sheet provided by the proctor, students may not use any reference material to help them answer exam questions. Students will be given scrap paper at the exam. No student is permitted to use his or her own scarp paper.

Exam rules:

You should be in your seat 5 minutes before the exam starts. All electronic devices other than your calculator must be turned off and put away during exams. All other course materials must be out of sight. All hats and hoods must be off your head. Your exam grades will be posted on Carmen. Exams are NOT returned to the students, but you may view your exam during office hours.

Make-up Exams:

As a general rule, make-up exams are NOT given in this course. However, a student may be allowed to take a make-up exam, if in the opinion of the instructor, there are special or extenuating circumstances. Without permission to take a make-up exam, failure to take an exam will result in grade of zero on the exam in question. Every effort should be made (e.g. email, voicemail, message with the Finance Department Office) to notify the instructor at least 24 hours in advance. The date/time of the make-up exam will be scheduled according to the instructor's schedule by the instructor.

Under no circumstances will a student be excused from an exam

Petition for Exam Re-Grading:

If a student believes his or her exam was not graded correctly and wants a question re-graded, the students must submit a request to Prof. Pirim in writing (must be submitted as an attached document in an email). The request must be received no later than fifteen (15) days from the date of the exam in question. The request should carefully explain why the student wants his or her exam re-graded.

Problem Sets:

There will be total 6 problem sets. The problem sets will be posted on Carmen no later than 5:00 pm on the day indicated below in Table 1 and will be due at the beginning of class on the due day given in the Table 1. Solutions will be posted on the due dates, and no late problem sets will be accepted. If you submit a print-out from a spreadsheet, please make sure to label it carefully. You must submit a paper copy of your solution. I **will NOT** accept electronic copies. You can work in a group **no more than three people** and submit **one copy per group**. Also, please remember that **late assignments will not be accepted**.

Case Studies:

There will be three case studies in this course. These cases are critical learning opportunities for you. For each case you should prepare an analysis for the assigned questions and be ready for class discussion. In case reports I will grade your thought process, your capability to apply concepts and theories into these questions.

The cases are key learning tools in this class and play an important role in applying your theoretical knowledge into real life problems. You should be prepared to invest a significant amount of time before class case discussion. You are expected to submit a summary report prior to the discussion of the cases.

You can purchase the three cases via Harvard Business Publishing Education online course pack link; https://hbsp.harvard.edu/import/690408

First click on the link and follow the instructions to register on the HBS site. You need to create a user name and password. After you complete the process click on the above link once more. This time login by using your user name and password. Then purchase the course pack for Advanced Investments at The Ohio State University by Birsel Pirim.

Three cases:

1) 2012 Fuel Hedging at JetBlue Airways
2) Ito's Delight
3) Ito's Dilemma

The main body of the report should be limited to three (3) double spaced pages. Exhibits, tables and calculations can be attached to the report as required. Please make sure to answer the following questions in your report. Each case summary should be submitted in both hard copy and electronic form via carmen. E-files should be in word and excel format. Late submissions after the case discussion will not be accepted.

2012 Fuel Hedging at JetBlue Airways Assignment Questions (Due date Feb 6th)

1) Given the high price of fuel at the end of 2011, should JetBlue hedge its fuel costs for 2012? And if so, should it increase or decrease the percentage hedged for 2012?
2) Focusing on the 2007 to 2011 period, which commodity; crude oil, Brent crude oil, or heating oil moved more closely to the price of jet fuel?
3) Should JetBlue switch to Brent hedging?
4) What risks are being hedged, and what risks are left unhedged?

Ito's Delight Assignment Questions (Due date April 14th)

1) How does a call option premium change as the stock price gets higher relative to the strike price?
2) How does a call option premium change as the time to maturity decreases?
3) How does a call option premium change as the volatility of the option increases?
4) How would your answers change to question 1, 2, and 3 for a put option?
5) Use the worksheet provided in the spreadsheet file to compute intrinsic value and time value for each of the options. Do those values look sensible?

Ito's Dilemma Assignment Questions (Due date April 16th)

1) Using Black-Scholes pricing function in Excel, compute an option value for each strike price and maturity date in case Exhibit 2. For simplicity, assume zero dividend yield. Also, use Louise Ito's volatility estimates, provided in case Exhibit 1. Use the supplementary spreadsheet.
2) Does the model yield logical estimates with respect to intrinsic value and time-to-maturity? What happens to the option premium as you change the volatility? Can you explain why volatility affects prices in such manner?
3) Using the Black-Scholes pricing function in Excel, calculate how sensitive IBM's March 110 call price is to change in stock price. How much does the call price vary for $0.50 changes in IBM share price when the option is at the money (assume stock price=$110), in the money (assume stock price = $115), and out of the money (assume stock price = $105)? What does this sensitivity analysis tell you?

Attendance and Participation:

Etiquette guidelines and professionalism will be followed. It is expected that students treat others, their ideas, and their time with respect by arriving class on time. ***Please mute phones, laptops, tablets and any other electronic devices. Laptops and tablets are permitted in class to be used ONLY for note taking and in-class assignments.***

You are strongly encouraged to participate in this class. I encourage you to ask questions and participate in discussions. This makes lecture more interesting. I also encourage you to give me any suggestions that you have about improving the course.

Attendance will be checked occasionally. You are responsible for all information covered in class. If you miss class, obtain the information missed. To enhance your understanding, **you should read the assigned material beforehand**. As a matter of professional courtesy, I expect an email or phone message, if you are unable to attend class.

If you **do not miss more than one class** then you will be eligible for an **extra point** towards your overall grade.

For your class participation grade, you can earn up to max 5 bonus points this semester that will go towards your final exam grade. If you answer a question that day, you can earn either 1 point or 2 points; and if you really advance the thinking of the class, then you can earn 3 points that day. I keep track of your points during class and then provide participation grade update every 4 weeks so you know where you stand. However if you have earned a bonus point, please stay after class so l can record your point.

Disenrollment:

Fisher College University Rule 3335-8-33 provides that a student may be dis-enrolled after the third instructional day of the quarter, the first Friday of the quarter, or the student's second-class session of the course, whichever occurs first, if the student fails to attend the scheduled course without giving prior notification to the instructor.

NOTE: I also wanted to remind you all that The University and College expectation is that students spend two hours outside of class for every hour spent in class. Since this course meets almost 3 hours per week, you should expect to spend around 6 hours per week outside of class on course-related work. Thus, you should be spending at least six hours per week outside of class on this course alone. That time should be spent reading the required material, taking notes on what you were reading, meeting with class colleagues in going over what you have learned, working on homework problems, reading current investment news to see how concepts learned tie into the course, and thinking about how the course concepts tie together.

Email Policy:

Any inquiries regarding the explanation of course subjects, solution to a problem, information already included in syllabus such as curve and grading policies, exam date/time & materials, any grading policy, technical problems such as calculator & Carmen **will NOT be answered via email**. However, you may schedule an appointment with me, in addition to the office hours, and/or use the discussion board on course Carmen site for these kinds of inquiries that could also be answered by your classmates.

Faculty feedback and response time:

I am providing the following guidelines to give you an idea of my intended support throughout the course.

Grading and feedback:

- Problem set grades will be posted on Carmen within 7 days after the due date.
- Exam scores should be posted on Carmen within 7 days after the test date.

E-mail:

I will generally reply e-mails within 48 hours on school days and on many weekends.

Course Grading Policy:

Your final course grade will be determined by the following:

Category	Date	Max Points	Percentage of total grade
Class Participation	All Semester	5 points	Bonus Point / Final Exam
Midterm Examination	February 20th, Thursday	100 points	25%
Problem Sets (Best 5 out of 6, max 20 points each)	Assessment Timetable	100 points	20 %
Case Summary Reports (Best 2 out of 3, max 50 points each)	Assessment Timetable	100 points	20 %
Final Examination	TBA	100 points	35%

Total Course Grade = 0.35 x (Final Exam Grade) + 0.25 x (Midterm Exam 1 Grade) +0.2 x (5 Best Problem Sets Grade) +0.2x (2 Best Case Report Grade)

After the total course grade has been calculated for all students, the average for the class is calculated. If the course class average is below 75%, a curve adjustment is applied. The curve adjustment equals 75% minus the course class average. If the course class average is equal or above 75%, a curve adjustment is not applied (that is curve adjustment is zero). **There will be NO extra credit work available in this course.**

The course grade will be converted to a letter grade for the course using the following grading scale:

Grading scale:

A	93 – 100	B+	87–89.9	C+	77–79.9	D+	67 –69.9	E	Below 60
A-	90 – 92.9	B	83–86.9	C	73–76.9	D	60 –66.9		
		B-	80–82.9	C-	70 –72.9				

Prof. Pirim reserves the right to correct grades recorded on the course website, should he determine such entries were posted incompletely or incorrectly

Academic Integrity Policy:

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University, or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's *Code of Student Conduct* is never considered an "excuse" for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Accommodations for Accessibility:

Requesting accommodations

If you would like to request academic accommodations based on the impact of a disability qualified under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, contact your instructor privately as soon as possible to discuss your specific needs. Discussions are confidential.

In addition to contacting the instructor, please contact the Office for Disability Services at 614-292-3307 or ods@osu.edu to register for services and/or to coordinate any accommodations you might need in your courses at The Ohio State University. Go to http://ods.osu.edu for more information.

Assessment Timetable: The following table shows the due dates for all the problem sets in this class. The problem sets will be posted on Carmen no later than 5:00 pm on the day indicated below in Table 1 and will be due at the **beginning of class** on the due day given in the Table 1. **Solutions will be posted on the due dates, and no late problem sets will be accepted.** Please remember that I **will NOT** accept electronic copies. You can only work in a group up to **three people** and submit one copy per group. **Also, please remember that late assignments will not be accepted.**

Table 1: Assessment Timetable

Problem Set	*Date Issued (Posted on Carmen)*	*Due Date (Beginning of class)*
Problem Set 1	January 16th, Thursday	January 23rd, Thursday
Problem Set 2	January 23rd, Thursday	January 30th, Thursday
Case 1- JetBlue Airway Report is due on Feb 6th in class		
Problem Set 3	Feb 4th, Tuesday	Feb 11th, Tuesday
MIDTERM EXAMINATION February 20th, Thursday (During Regular Class Time)		
Problem Set 4	Mar 5th, Thursday	March 19th, Thursday
Problem Set 5	March 19th, Thursday	March 26th, Thursday
Optional Problem Set 6	April 7th, Tuesday	April 14th, Tuesday
Case 2; Ito's Delight Report is due on April 14th, Tuesday		
Case 3: Ito's Dilemma Report is due on April 16th, Thursday (Last day of class)		
COMMON COMPREHENSIVE FINAL EXAMINATION **TBA**		

Tentative Course Schedule

The following describes the tentative course schedule. The topics covered on each proposed day may change as the semester progresses, but the general order will not vary. Students are strongly urged to read the appropriate chapters BEFORE the lecture so as to learn more during the lectures. To do well, you **must keep up with the reading and stay focused during class**. **It is easy to get behind** in the study of derivatives. **You should read through the chapters prior to class**. This will help your understanding of the concepts as they are discussed. Reread the material after class. If you have any questions, please feel free to come and see me. The following outline is the order of study (I reserve the right to change this outline when necessary).

Table 2: Tentative Course Schedule

Class Date	*Topics, Assignments, and Deadlines*	*Reading*
Week 1 Jan 7th and Jan 9th	Chapter 1: Introduction to Derivatives/ Forwards and Options **Assignment for this week:** 1. Read the syllabus 2. Read Chapter 1 from our textbook 3. Download slides from Carmen and bring it to class	Syllabus and McDonald Ch.1
Week 2 Jan 14th and Jan 16th	Chapter 2: Forwards and Options **Assignment for this week:** 1. Read Chapter 2 from our textbook 2. Download slides from Carmen and bring it to class	McDonald Ch.2
Week 3 Jan 21th and Jan 23rd	Chapter 3: Insurance, Collars, and Other Strategies **Assignment for this week:** 1. Read Chapter 3 from our textbook 2. Download slides from Carmen and bring it to class 3. Problem Set #1 is due (Jan 23rd)	McDonald Ch.3
Week 4 Jan 28th and Jan 30th	Con't Chapter 3 and Chapter 4: Introduction to Risk Management **Assignment for this week:** 1. Read Chapter 4 from our textbook 2. Download slides from Carmen and bring it to class 3. Problem Set #2 is due (Jan 30th)	McDonald Ch. 4

Week 5 Feb 4th and Feb 6th	Con't Chapter 4 and Case 1: **2012 Fuel Hedging at JetBlue Airways** **Assignment for this week:** 1. Read JetBlue Airways Case before class 2. Case JetBlue Airways Report is due (Feb 6th)	
Week 6 Feb 11th and Feb 13th	Chapter 5: Financial Forwards and Futures **Assignment for this week:** 1. Read Chapter 5 2. Download slides from Carmen and bring it to class 3. **Problem Set # 3 is due (Feb 11th)**	McDonald Ch. 5
Week 7 Feb 18th, Tuesday	Con't Chapter 5 and Review for Midterm Exam I	
Feb 20th, THURSDAY	**MIDTERM EXAM I**	Topics: **McDonald Ch.** **1,2,3, 4 and 5**
Week 8 Feb 25th and Feb 27th	Chapter 9: Parity and Other Option Relationships **Assignment for this week:** 1. Read Chapter 9 2. Download slides from Carmen and bring it to class	McDonald Ch.9
Week 9 Mar 3rd and Mar 5th	Chapter 10: Binomial Option Pricing: Basic Concepts **Assignment for this week:** 1. Read Chapter 10 2. Download slides from Carmen and bring it to class	McDonald Ch. 10
Mar 9th and Mar 13th	**NO CLASS - SPRING BREAK**	

Week 10 Mar 17th and Mar 19th	Chapter 11: Binomial Option Pricing: Selected Topics Cont'd. **Assignment for this week:** 1. Read Chapter 11 2. Download slides from Carmen and bring it to class 3. **Problem Set # 4 due (Mar 19th)**	McDonald Ch.11
Week 11 Mar 24th and Mar 26th	Cont'd Chapter 11: Binomial Option Pricing: Selected Topics Chapter 12: The Black-Scholes Formula **Assignment for this week:** 1. Read Chapter 12 2. Download slides from Carmen and bring it to class 3. **Problem Set # 5 due (March 26th)**	McDonald Ch.11 Ch.12
Week 12 Mar 31th and Apr 2nd	Cont'd Chapter 12: The Black-Scholes Formula **Assignment for this week:** 1. Read Chapter 12 2. Download slides from Carmen and bring it to class.	McDonald Ch.12
Week 13 April 7th and April 9th	Chapter 13: Market-Making and Delta- Hedging **Assignment for this week:** 1. Read Chapter 13 2. Download slides from Carmen and bring it to class	McDonald Ch.13
Week 14 April 14th	Case 2: Ito's Delight **Assignment for this week:** 1. Read Ito's Delight Case before class 2. **Case Ito's Delight Report due (April 14th)** 3. **Optional Problem Set # due (April 14th)**	

Last day of our class April 16th	Case 3: Ito's Dilemma Assignment for this week: 1. Read Ito's Dilemma Case before class 2. Case Ito's Dilemma Report is due (April 16th)	
COMMON COMPREHENSIVE **FINAL EXAMINATION** **TBA** McDonald Chapters: 1, 2, 3, 4, 5, 9, 10, 11, 12 & 13		

Good Luck!