

FINQ 764 Derivatives and Risk Management
Spring 2020
Lee Business School
University of Nevada, Las Vegas

Lectures: TBA
Office Hours: TBA
Instructor: Ankur Pareek

Office: BEH 525
Phone: TBA
Email: ankur.pareek@unlv.edu

Course Description:

The course will focus on the application of financial derivatives and financial engineering to the issues and problems of financial risk management. The first part of the course concentrates on introduction and pricing of derivative securities such as forwards, futures, options and swaps. The second part focuses on the application of these derivative securities for financial risk management within corporations and financial institutions. Topics will include introduction to derivatives markets, pricing futures and forwards, Binomial model for pricing options, introduction to stochastic calculus, Ito's lemma, no arbitrage pricing of options and Black Scholes model, option greeks, pricing swaps, managing market risk, credit risk and liquidity risk. The course will also cover real world case studies to illustrate practical application of financial derivatives to solve complex risk management problems.

Course prerequisites: Admission in MSQF program or approval by Director of MSQF program; FIN 708 and FIN 710.

Course Material:

The material for the course consist of two required textbooks, case studies, additional readings including research articles and lecture slides available for download on the course website (Canvas).

Required Textbooks:

Options, Futures and other Derivatives 2018 by John Hull, 10th Edition, Pearson.

Value at Risk: The New Benchmark for Managing Financial Risk 2006 by Philippe Jorion, 3rd Edition, McGraw-Hill Education.

Recommended Readings:

When Genius Failed: The Rise and Fall of Long-Term Capital Management by Roger Lowenstein.
Big Bets Gone Bad: Derivatives and Bankruptcy in Orange County. The Largest Municipal Failure in U.S. History by Philippe Jorion, Robert Roper.

Case Studies

We will work on four case studies in this class. The cases are group projects. You can work in groups of 3 to 4 students. You can choose your group yourself. If you have trouble finding a group, let me know and I will assign you to a group. Word-processed write-ups (one per group) are due in class at the start of the case discussion. The four cases for which you are required to write a team report are:

- American Barrick Resources Corporation: Managing Gold Price Risk HBS Case No. 9-293-128
- 2012 Fuel Hedging at JetBlue Airlines UVA Case No. 6682
- J.P. Morgan Private Bank: Risk Management during the Financial Crisis 2008-09 HBS Case No. 9-311-003
- Long-Term Capital Management, L.P. (A) HBS Case No. 9-200-007

All students should come to class ready to discuss issues relevant to the assigned case. The cases are an integral part of the course design. For each case, I will provide you with a question sheet designed to help focus your analysis. The following are some general guidelines for case discussions and preparing case write-ups:

- Identify the objective and the main issues of the case.
- The write up should contain the answers and detailed analysis/steps corresponding to the questions outlined in the question sheet.
- The main body of your analysis should be self-explanatory and reasonably self-contained. That is, the reader should be able to replicate your results by tracing through the write-ups.
- State clearly the inputs to your analysis and the chosen methodology. If you feel that certain assumptions need to be made to justify a solution technique or a parameter choice, please make the assumption explicit.

Student learning outcomes:

1. Use knowledge of key concepts in Finance to facilitate financial decision making.
2. Think critically about financial risk management problems and provide potential solutions.
3. Develop a strong understanding of derivative instruments and their applications.
4. Communicate effectively.

Canvas: This course requires an ongoing constant use of canvas. All announcements, assignments, changes, etcetera are posted there. I also use Canvas to contact you via email therefore it is important that you be sure that your correct email address is in your profile on Canvas.

In addition to the textbook and required readings, you are encouraged to read popular financial press articles during the term. The course will occasionally discuss relevant current events. Recommended sources include:

Wall Street Journal - the old standard

Business Week - good general business magazine

Financial Times - the best international business newspaper

The Economist - the best all around source of information

Yellowdig: We will use this new online platform to share content e.g. research articles, news articles and videos etc.

Grading:

For the coverage of the exam, anything in the lectures, problem sets or the reading assignments is fair game. In case you miss the exam for a verifiable and acceptable reason, you should contact me at the earliest possible to schedule a make-up test.

Problem Sets	20%
Case Studies	40%
Final Exam	40%

Problem Sets

Solving problems is crucial to learning the course material. I will assign graded problem sets and a few practice problem sets that will help prepare you for the exams. The solutions to the problem sets will be available on Canvas after they are due. You are welcome to work in groups or alone on the problem sets. However, you need to write up your individual solution. If you work in a group, note the names of all group members on your problem set.

Class Participation

Attendance in class is expected. Presence in class permits you to listen, ask questions of clarification and engage in discussions about the topic covered. In addition, you are responsible for knowing what goes on in class, which may include material not covered in the readings, modifications to the syllabus, and announcements concerning exams.

Detailed Schedule (Subject to revision!):

Week	Topic	Reading
1	Introductions to Futures Markets Hedging strategies using Futures	Hull Chap. 1-3
2	Pricing of Forwards and Futures Swaps	Hull Chap. 5-7
3	Mechanics of Options Markets Properties of stock options Trading strategies involving options	Hull Chap. 10-12
4	Binomial trees Stochastic processes and Ito's Lemma	Hull Chap. 13,14
5	The Black-Scholes-Merton Model Options on stock indices and currencies	Hull Chap. 15, 17
6	Option Greeks Volatility Smile	Hull Chap. 19, 20
7	<u>The Rationale for Risk Management</u> Case Study: American Barrick Resource Corporation: Managing Gold Price Risk (HBS Case # 9-293-128)	Jorion Chap.1-2 Hull Chap. 35
8	<u>Financial Risk Management in a Non-Financial Corporation: Managing Market Risk</u> Case Study: 2012 Fuel Hedging at JetBlue Airlines (UVA Darden Case # 6682)	Hull Chap. 35
9	<u>Managing Credit Risk</u> Value at Risk: Building Blocks Expected Shortfall	Jorion 3-7, 18
10	<u>Managing Risk within a Complex Financial Institution</u> Value at Risk: Applications Case Study: JP Morgan Private Bank: Risk Management during the Financial Crisis 2008 - 2009 (HBS Case # 9-311-003)	Jorion 15-17
11	<u>Managing Liquidity Risk</u> Stress Testing	Jorion 13-14
12	<u>Managing Liquidity Risk</u> Case Study: Long Term Capital Management, L.P. (A) (HBS Case # 9-200-007) Review	Jorion 21 Hull 37
13	Final Exam	

University Policies:

Academic Misconduct—Academic integrity is a legitimate concern for every member of the campus community; all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility, and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling at UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's function as an educational institution. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another, from the Internet or any source, without proper citation of the sources. See the *Student Academic Misconduct Policy* (approved December 9, 2005) located at: <https://www.unlv.edu/studentconduct/student-conduct>.

Classroom Conduct—Students have a responsibility to conduct themselves in class and in the libraries in ways that do not interfere with the rights of other students to learn or of instructors to teach. Use of electronic devices such as pagers, cellular phones, or recording devices, or potentially disruptive devices or activities, are permitted only with the prior explicit consent of the instructor. The instructor may rescind permission at any time during the class. If a student does not comply with established requirements or obstructs the functioning of the class, the instructor may initiate an administrative drop.

Copyright—The University requires all members of the University Community to familiarize themselves with and to follow copyright and fair use requirements. You are individually and solely responsible for violations of copyright and fair use laws. The university will neither protect nor defend you, nor assume any responsibility for employee or student violations of fair use laws. Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional information can be found at: <http://www.unlv.edu/provost/copyright>.

Disability Resource Center (DRC)—The UNLV Disability Resource Center (SSC-A 143, <http://drc.unlv.edu/>, 702-895-0866) provides resources for students with disabilities. If you feel that you have a disability, please make an appointment with a Disabilities Specialist at the DRC to discuss what options may be available to you. If you are registered with the UNLV Disability Resource Center, bring your Academic Accommodation Plan from the DRC to the instructor during office hours so that you may work together to develop strategies for implementing the accommodations to meet both your needs and the requirements of the course. Any information you provide is private and will be treated as such. To maintain the confidentiality of your request, please do not approach the instructor in front of others to discuss your accommodation needs.

Final Examinations—The University requires that final exams given at the end of a course occur at the time and on the day specified in the final exam schedule. The general schedule is typically available at the start of the semester, and the classroom locations are available about a month before the end of the semester. See the schedule at: <http://www.unlv.edu/registrar/calendars>.

Incomplete Grades—The grade of "I"—Incomplete—can be granted when a student has satisfactorily completed three-fourths of course work for that semester/session but for reason(s) beyond the student's control, and acceptable to the instructor, cannot complete the last part of the course, and the instructor believes that the student can finish the course without repeating it. The incomplete work must be made up before the end of the following regular semester for undergraduate courses. Graduate students receiving "I" grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the time indicated, a grade of "F" will be recorded and the GPA will be adjusted accordingly. Students who are fulfilling an Incomplete do not register for the course but make individual arrangements with the instructor who assigned the "I" grade.

Library Resources—Librarians are available to consult with students on research needs, including developing research topics, finding information, and evaluating sources. To make an appointment with a subject expert for this class, please visit the Libraries' Research Consultation website: <http://guides.library.unlv.edu/appointments/librarian>. You can also ask questions via chat and text message at <http://ask.library.unlv.edu/>.

Rebelmail—By policy, faculty and staff should email students' Rebelmail accounts only. Rebelmail is UNLV's official email system for students. As such, it is a primary way students receive official university communications such as information about deadlines, major campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the university. **Emailing within WebCampus is acceptable.**

Missed Classwork—Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the instructor within the first 14 calendar days of the course for fall and spring courses (excepting modular courses), or within the first 7 calendar days of the course for summer and modular courses, of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit: <http://catalog.unlv.edu/content.php?catoid=6&navoid=531>.

In accordance with the UNLV Faculty Senate-approved policy regarding class time and assignments missed, students who represent UNLV in any official extracurricular activity shall also have the opportunity to make up assignments, provided that the student provides official written notification to the instructor no less than one week prior to the missed class(es).

The spirit and intent of the policy is to offer fair and equitable opportunities to all students, including those representing the university in extracurricular activities. Instructors should consider, for example, that in courses which offer a "drop one" option for the lowest assignment, quiz, or exam, assigning the student a grade of zero for an excused absence for extracurricular activity is both contrary to the intent of the Faculty Senate's policy, and an infringement on the student's right to complete all work and fairly earn her or his grade in the course.

This policy shall not apply in the event that completing the assignment or administering the examination at an alternate time would impose an undue hardship on the instructor or the university that could reasonably have been avoided. There should be a good faith effort by both faculty and student to come to a reasonable resolution. When disagreements regarding this policy do arise, they can be appealed to the department chair/unit director, college/school dean, and/or the Faculty Senate Academic Standards Committee.

For purposes of definition, extracurricular activities may include, but are not limited to: fine arts activities, competitive intercollegiate athletics, science and engineering competitions, liberal arts competitions, academic recruitment activities, and any other event or activity sanctioned by a college/school dean, and/or the Executive Vice President and Provost.

Transparency in Learning and Teaching—The University encourages students to use a transparency template to discuss with their instructors how assignments and course activities benefit student success: https://www.unlv.edu/sites/default/files/page_files/27/TILT-Framework-Students.pdf.

Tutoring and Coaching—The Academic Success Center (ASC) provides tutoring, academic success coaching and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, visit <http://www.unlv.edu/asc> or call 702-895-3177. The ASC building is located across from the Student

Services Complex (SSC). Academic success coaching is located on the second floor of SSC A (ASC Coaching Spot). Drop-in tutoring is located on the second floor of the Lied Library and College of Engineering TBE second floor.

UNLV Writing Center—One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 702-895-3908. The student's Rebel ID Card, a copy of the assignment (if <http://writingcenter.unlv.edu/>).