

Western  DAN Management and
Organizational Studies
Faculty of Social Science

**MOS 4312b: Derivatives
Winter 2014**

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Mondays and Wednesdays 3:30pm - 5:30pm in SSC 2028

Course Objectives

The goal of this course is to provide students with a framework for understanding the design and valuation of derivative securities and their use in managing corporate financial risk. This course is designed to familiarize students with the instruments and institutions of international financial markets, focusing particularly on "derivatives" markets (forwards, futures, options, swaps, etc.). Students will also be exposed to various computational models of option risk analysis via a series of simulation exercises in excel spreadsheet.

Excel Spreadsheet Exercises:

This course attempts to familiarize students with real world applications of derivatives. There will be three excel spreadsheet exercises designed to train students to apply theory to real world data. Each exercise will be based on the related topic we cover in class. Students will be required to work in groups of four (4) outside the class. The required data and detailed instructions on how to complete each exercise will be provided before each exercise is assigned. Each group will hand in SOFT and HARD copies of their Excel spreadsheet, a two page written summary and recommendations based on their spreadsheet computations.

Examinations:

There will be two close book exams - midterm and final. The exams will comprise of short essay questions and short computational exercises.

Text Books:

Required:

John C. Hull,” Fundamentals of Futures and Options Markets”, Eighth Edition, Pearson Canada Education Inc. 2014 and “Solutions Manual and Study Guide for Fundamentals of Futures and Options Market”, Eighth Edition by John Hull

Recommended:

Daily issues of the Globe and Mail/The Wall Street Journal

Pre-requisite: MOS 3310 a/b or 2310 a/b

Anti-requisite: MOS 3312 a/b

Evaluation:

Midterm	30% (After Week 6; exact date to be announced)
Final (Exam Period)	40% (To be scheduled by the Registrar’s Office)
Excel Spreadsheet Exercises	20% (as we cover related topics)
Class Contribution/Participation	10%

COURSE OUTLINE

Topic 1: Week 1

Introduction / the Rationale for Risk Management

- Futures Contracts
- Forward Contracts
- Options Contracts
- Hedgers, Speculators and Arbitrageurs

Required Readings

Hull: Ch. 1

Froot et al., Framework for Risk Management, Harvard Bus. Review, Nov. 1994.

Topic 2: Week 2 & 3

Futures: Mechanics and Hedging Strategies

- Mechanics of Futures Markets
- Convergence of Futures Price to Spot Price
- The Margin Requirements
- Stock Index Futures
- Basis Risk
- Cross Hedging

Required Readings

Hull: Ch. 2 & 3

Topic 3: Week 3, 4 & 5

Interest Rates and the pricing of Forwards and Futures

- Forward Rate Agreements
- Futures Prices of Stock Indices

- Futures on Commodities, and Currencies
- The Value at Risk (VaR)
- Simulation, Stress Testing and Back Testing
- Estimating Volatilities and Correlations

Required Readings

Hull: Ch. 4, 5 & 18

Spreadsheet Exercise #1, Value at Risk (VaR)

Topic 4: Week 5 & 6

Swaps – Introduction and Mechanics

- Interest Rate Swaps
- Swap Rates
- Determining LIBOR/Swap Zero Rates
- Valuation of Interest Rate Swaps
- Valuation of Currency Swaps

Required Readings

Hull: Ch. 7

Spreadsheet Exercise #2, Valuing Swaps

Topic 5: Week 7 & 8

Options – introduction and mechanics

- Stock Options
- Options Positions and other Mechanics
- Warrants, Executive Stock Options, and Convertibles
- Factors Affecting Options Prices
- Put-Call Parity Relations
- Early Exercise on Calls and Puts
- Effects of Dividends

Required Readings

Hull: Ch. 8 & 9

Topic 6: Week 8 & 9

Trading Strategies Involving Options

- Single Option and a Stock
- Spreads
- Combinations

Required Readings

Hull: Ch. 10

Topic 7: Week 9 & 10

Valuation of Nonlinear Payoffs: the Binomial Trees

- Introduction Binomial Trees
- Risk Neutral Valuation
- Two Step Binomial Trees

- American Options

Required Readings

Hull: Ch. 11

Spreadsheet Exercise #3, Topic: Binomial pricing.

Topic 8: Week 11 & 12

Valuation of Nonlinear Payoffs: The Black-Scholes Analysis

- Assumptions Underlying Black and Scholes Model
- The Black and Scholes / Merton Model
- Calculating Volatilities
- Risk Neutral Valuation
- Impact of Dividend
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Required Readings

Hull: Ch. 12

Topic 9: Week 12 &/or 13

Derivative Mishaps and What We Can Learn From Them

Required Readings

Hull: Ch. 23

Exams

Exams are in short essays and calculations. Students are responsible for material covered in the lectures as well as the assigned chapters/sections in the text. Exams will not be returned to students but may be reviewed in the instructor's office. Students are **REQUIRED TO COMPLETE ALL COMPONENTS** of this course. There are no exceptions to this. Extra assignments to improve grades will **NOT** be allowed. Grades will not be adjusted on the basis of need. It is important to monitor your performance in the course. Remember: You are responsible for your grades in this course.

Calculators

Only non-programmable financial calculators will be allowed into the exams. I recommend Texas Instruments BAII Plus or Hewlett Packard 12C.

Illness

The University recognizes that a student's ability to meet his/her academic responsibilities may, on occasion, be impaired by medical illness. Illness may be acute (short term), or it may be chronic (long term), or chronic with acute episodes. The University further recognizes that medical situations are deeply personal and respects the need for privacy and confidentiality in these matters. However, in order to ensure fairness and consistency for all students, academic accommodation for work representing 10% or more of the student's overall grade in the course shall be granted only in those cases where there is documentation supplied (see below for process) indicating that the student was seriously affected by illness and could not reasonably be expected to meet his/her academic responsibilities.

Documentation shall be submitted, as soon as possible, to the appropriate Dean's office (the Office of the Dean of the student's Faculty of registration/home Faculty) together with a request

for relief specifying the nature of the accommodation being requested. These documents will be retained in the student's file, and will be held in confidence in accordance with the University's Official Student Record Information Privacy Policy [<http://www.uwo.ca/univsec/handbook/general/privacy.pdf>].

Once the petition and supporting documents have been received and assessed, appropriate academic accommodation shall be determined by the Dean's Office in consultation with the student's instructor(s). Academic accommodation may include extension of deadlines, waiver of attendance requirements for classes/labs/tutorials, arranging Special Exams or Incompletes, re-weighting course requirements, or granting late withdrawals without academic penalty.

Academic accommodation shall be granted only where the documentation indicates that the onset, duration and severity of the illness are such that the student could not reasonably be expected to complete his/her academic responsibilities. (Note: it will not be sufficient to provide documentation indicating simply that the student was seen for a medical reason or was ill.)

A form to be completed by off-campus physicians is available at:
<http://counselling.ssc.uwo.ca/forms/medicalNote.pdf>

Whenever possible, students who require academic accommodation should provide notification and documentation in advance of due dates, examinations, etc. Students must follow up with their professors and their Academic Counseling office in a timely manner.

In the case of a final examination in the course, the student must arrange for a Special Examination or Incomplete through their Dean's office, for which you will be required to provide acceptable documentation.

If you feel that you have a medical or personal problem that is interfering with your work, you should contact your instructor and the Faculty Academic Counseling Office as soon as possible. Problems may then be documented and possible arrangements to assist you can be discussed at the time of occurrence rather than on a retroactive basis. In general, retroactive requests for grade revisions on medical or compassionate grounds will not be considered.

Make Up Examinations

The student must write a make-up exam if the regularly scheduled exam is missed for reasons for which adequate documentation is received by the instructor (this documentation must be supplied by the Academic Counseling office).

Attendance

It is expected that students will attend all classes. The professor does not provide access to lecture notes. Students are encouraged to obtain missed lecture notes from a fellow student.

University Policy on Cheating and Academic Misconduct

Cheating on exams will not be tolerated; students are referred to the university policy on scholastic offenses (see section 9.0 below). Looking at the test of another student, allowing another student to view your exam, or obtaining information about a test in advance are all examples of cheating. Students found cheating will receive a zero (0%) on that exam. A number of safeguards will be employed to discourage cheating. For example, examination supervisors (proctors) of the tests may ask students to move to another seat during the exam, cover their paper, avert their eyes from other students' papers, remove baseball caps, etc. This is not meant as a personal affront nor as an accusation of cheating, rather as vigilant attempts at proctoring. A copy of guidelines about how to avoid cheating can be obtained from the office of the Ombudsperson, Room 251 University Community Centre, (519) 661-3573.

Students are responsible for understanding the nature of and avoiding the occurrence of plagiarism and other academic offenses. Students are urged to read the section on Scholastic Offenses in the Academic Calendar. Note that such offenses include plagiarism, cheating on an examination, submitting false or fraudulent assignments or credentials, impersonating a candidate, or submitting for credit in any course without the knowledge and approval of the instructor to whom it is submitted, any academic work for which credit has previously been obtained or is being sought in another course in the University or elsewhere. If you are in doubt about whether what you are doing is inappropriate, consult your instructor. A claim that "you didn't know it was wrong" will not be accepted as an excuse.

The penalties for a student guilty of a scholastic offense include refusal of a passing grade in the assignment, refusal of a passing grade in the course, suspension from the University, and expulsion from the University.

Procedures for Appealing Academic Evaluations

In the first instance, all appeals of a grade must be made to the course instructor (informal consultation). If the student is not satisfied with the decision of the course instructor, a written appeal must be sent to the Assistant Program Director or Designate of the BMOS program. If the response of the Assistant Director is considered unsatisfactory to the student, he/she may then appeal to the Dean of the Faculty in which the course of program was taken. Only after receiving a final decision from the Dean, may a student appeal to the Senate Review Board Academic. A Guide to Appeals is available from the Ombudsperson's Office.

Student Responsibilities

Material covered in lectures will not always be the same as material covered in the textbook. These two sources should be viewed as complimentary and not redundant. As such, students who want to do well in this course are strongly encouraged to attend lectures on a regular basis. Please note that the instructor will not be providing copies of lectures notes or overheads. Therefore, if you miss a lecture, you should try to obtain this material from another student.

In this class, some students may be unaware that their private discussions are distracting to other people. If you feel that students are distracting your attention from the material, then you should ask them to be quiet. If you feel uncomfortable doing this (or the problem persists), then please see the instructor. In addition, please avoid engaging in private discussions with other students during the lectures.

To avoid unnecessary distractions, please arrive to each class on time.

Support Services

Support Services

The Registrar's office can be accessed for Student Support Services at <http://www.registrar.uwo.ca> Student Support Services (*including the services provided by the USC listed here*) can be reached at: <http://westernusc.ca/services/> Student Development Services can be reached at: <http://www.sdc.uwo.ca/>. Students who are in emotional/mental distress should refer to Mental Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help."

Grade Policy

The Dan Program has a grade policy which states that for courses in the 3000 range, the class average must fall between 70% and 75% for all sections of a course taught by the same instructor. In very exceptional circumstances only, class averages outside this range

may be approved by the Assistant Director or the Director. Class averages are not grounds for appeals.

Short Absences.

If you miss a class due to minor illness or other problems, check your course outlines for information regarding attendance requirements and make sure you are not missing a test or exam. Cover any readings and arrange to borrow the missed lectures notes from a classmate.

Extended Absences.

If you are absent more than approximately two weeks or if you get too far behind to catch up, you should consider reducing your workload by dropping one or more courses. The Academic Counsellors can help you to consider the alternatives. At your request, they can also keep your instructors informed about your difficulties.

Academic Concerns.

If you are in academic difficulty, it is strongly recommended that you see your academic counsellor.

Other Information

- Bring student identification to exams.
- Nothing is to be on/at one's desk during an exam except a pencil, an eraser, and the individual's student card
- Do not wear baseball caps to exams
- Do not bring music players, cell phones, beepers, or other electronic devices to exams

**For The University of Western Ontario Senate Regulations, please see the Handbook of Academic and Scholarship Policy at:
<http://www.uwo.ca/univsec/handbook/>**