

SIMON FRASER UNIVERSITY
Faculty of Business Administration

BUS 419
ADVANCED DERIVATIVE SECURITIES

DETAILED COURSE SYLLABUS

Prof. Geoffrey Poitras (email: poitras@sfu.ca, website: www.sfu.ca/~poitras)
Phone: 778-782-4071 Office: WMX 3333

Recommended Texts:

G. Poitras, *Risk Management, Speculation and Derivative Securities* (Academic Press, 2002)
G. Poitras, *Commodity Risk Management: Theory and Application*, (Routledge, 2013)

Supplementary Materials:

Supplementary readings, past exams and lecture notes are posted on the class webpage.

Course Description: This course provides a more advanced treatment of topics covered in BUS 316. More precisely, the course provides an historical, theoretical and practical examination of the most common derivative securities: forward, futures, option and swap contracts. Theoretical topics include: pricing future, forward and option by arbitrage. Real world topics include corporate risk management using derivative securities.

Course Objectives: At the end of the course, students will be able to understand the derivation of the Black-Scholes model and how to use the model to structure portfolios and design trade strategies. In addition, by directly examining the relevant sections of the financial statements in public filings, the uses of derivative securities in the financial risk management decisions faced by financial and non-financial corporations are explored.

Grading:

20% Participation (futures/options game)

20% Group Presentation

30% Midterm Exam (Take home)

30% Final Exam

100%

WEEKLY CLASS SCHEDULE ADVANCED DERIVATIVE SECURITIES

NOTE: Much of what is required for the course is in the lecture notes and other material on the class webpage. Readings given below are for those seeking more background and deeper level of information about the topics being covered.

RSD is a reference to *Risk Management, Speculation and Derivative Securities*. CRM is a reference to *Commodity Risk Management* Poitras (2000) is the *Early History of Financial Economics*, Poitras (1997) is "Turtles, Tails and Stereos...", *Journal of Derivatives* (download from webpage).

Week 1 Introduction: Institutional and Theoretical Basics

- 1.1 Math/Statistics Pretest and Game Description
 - 1.2 Types of Pure Derivative Securities
 - 1.3 Definitions, Profit Functions and Margins
 - 1.4 Regulations, Exchanges and Available Contracts
- Readings: RSD Sec. 1.1, 1.2, 1.3, 1.4, 1.5, 2.1; CRM 1.1

Weeks 2 and 3 History of Derivative Securities

- 2.1 Derivative Contracting in Ancient Markets
 - 2.2 The Beginnings of Exchange Trading
 - 2.3 Boom and Bust in Derivative Security Trading
 - 2.4 Renaissance in Derivative Securities
 - 2.5 Exchange Demutualization and Role of OTC Markets
 - 2.6 Lessons from Recent Derivative Debacles
- Readings: CRM 1.2, 1.3; Poitras (2000) Ch. 9.

Week 4 Hedgers, Speculators and Arbitrageurs

- 3.1 Basis Relationships and Absence of Arbitrage
 - 3.2 Cash and Carry Arbitrage
 - 3.3 Covered Interest Arbitrage
 - 3.4 When-Issued Arbitrage
 - 3.5 Stock Index Arbitrage
- Readings: RSD, Sec. 4.1-4.4.

Week 5 Speculative Strategies: The Mechanics of Spread Trading

- 5.1 Basic Speculative Trading Strategies
 - 5.2 Tails, Butterflies and Turtles
 - 5.3 Metal Turtle Trades
- Readings: RSD Ch. 5; Poitras (1997).

Week 6 Hedging and Risk Management

- 6.1 Risk Management or Speculation?
 - 6.2 Transactions Hedging and Optimal Hedging
 - 6.3 Are Forward Prices Unbiased Predictors?
 - 6.4 Corporate Risk Management in Practice
 - 6.5 Hedging Corporate Foreign Exchange Exposure
- Readings: CRM 2.1, 2.2, 2.3; RSD, Sec. 2.3, 3.1, 3.2, 3.3, 6.1, 6.2.

Week 7 Optimal Hedging and Transactions Hedging

- 7.1 Risk Minimization or Speculation?
 - 7.2 A Stylized Risk Management Decision Problem
 - 7.3 Hedging Techniques: Transactions Hedging and Optimal Hedging
 - 7.4 Hedging Corporate FX Exposure
- Readings: CRM, Sec. 2.2; RSD Ch.6

Week 8 Review of Option Basics

- 7.1 Definitions and Expiration Date Profit Diagrams
 - 7.2 Hedging with Options vs. Hedging with Forwards
 - 7.3 Replication Trades and Put-Call Parity
 - 7.4 Spread Trades and Strategies
- Readings: RSD, Sec. 7.1, 7.2, 7.3.

Weeks 9-10

GROUP PRESENTATIONS OF CORPORATE HEDGING POLICIES

Examples of previous presentations link on class webpage

Reading: CRM 3.1, 3.2, 3.3

Week 11 Option Valuation: I

- 8.1 Distribution Free Properties of Options
 - 8.2 Beyond Expiration Date Profit Diagrams
 - 8.3 Deriving the Black-Scholes Model
 - 8.4 Delta, Gamma, Theta and Other Greeks
- Readings: RSD Sec. 8.2.

Week 12 Option Valuation II

- 12.1 Extending the Black-Scholes Model
 - 12.2 Application: Currency Options
 - 12.3 Portfolio Management: Delta, Theta, Gamma
- Readings: RSD Sec. 8.4.

Week 13 Applications of Options Valuation Techniques

- 13.1 Option Spread Trades and Strategies
 - 13.2 Application: Portfolio Insurance
 - 13.3 Exotic Options (Time Permitting)
- Readings: RSD Sec. 9.1, 9.2, 9.3; Class Notes on Exotic Options.