THOMPSON RIVERS UNIVERSITY

Course Outline

Accounting and Finance
School of Business & Economics

FNCE 3180 - **3.00** - Academic

Derivative Securities

Rationale

Annual update of standard course outline in SOBE.

Course title, course description and requisites changed

Calendar Description

Students learn to value the main types of derivative securities and how to effectively utilize them in risk management, asset speculation and financial engineering. Topics include an introduction to forward and futures markets and hedging; mechanics of future markets; hedging with future contracts; theoretical and forward prices; introduction to options; calculating option contract profits; put-call parity and arbitrage bounds; option pricing models; exotic options; and swaps.

Credits/Hours

Course Has Variable Hours: No
Credits: 3.00
Lecture Hours: 3.00
Seminar Hours: 0
Lab Hours: 0
Other Hours: 0
Clarify:
Total Hours: 3.00
Delivery Methods: (Face to Face)
Impact on Courses/Programs/Departments: No change
Repeat Types: A - Once for credit (default)
Grading Methods: (S - Academic, Career Tech, UPrep)

Educational Objectives/Outcomes

1. Explain the mechanics of the futures and forward contracts.
2. Calculate profits or losses on future and forward contracts for hedgers and speculators.

3. Determine the futures prices for commodities and stock indices and describe how theoretical upward and lowerbounds impact possible prices.
4. Discuss the mechanics of options contracts and the markets they trade in.
5. Calculate theoretical option prices using one and two-stage binomial models, as well as under the Black-Scholesmodel.
6. Demonstrate how put-call parity works in options markets.
7. Show how technical analysis can be used in a trading strategy for futures or options markets.
8. Assess the importance of interest rate and currency swap contracts in hedging.
9. Explain how credit default swaps potentially reduce risk.
10. Describe the characteristics of alternative derivative contracts such as weather derivatives, energy derivatives,swaptions, and exotic options.

Prerequisites

FNCE 2120-Financial Management with
a minimum C+ or equivalent
ECON 2330-Economics and Business Statistics 2
with a minimum C- or equivalent

Co-Requisites

Recommended Requisites

Exclusion Requisites

BBUS 4170

Texts/Materials

Textbooks

1. **Required** Hull. *Options, Futures and Other Derivatives*, 8th ed. Pearson

Student Evaluation

The Course grade is based on the following course evaluations.

Tests/quizzes 30-40%
Case studies/research projects/assignments 30%
Final exam 30-40%
Students must pass the final exam to pass the course.

Course Topics

1. An Introduction to Forward and Futures Markets and Hedging

- Forward contracts
- Futures contracts
- Option contracts
- Swap contracts
- Other types of derivatives
- Hedging versus speculation

History of derivative markets

2. Mechanics of Futures Markets

- Price quotations
- Opening and closing contracts
- Features of futures contracts
  - Contract units, size, and asset specification
  - Delivery dates

    Volume and open interest
  - Volume and open interest
  - Long and short positions
- Profits and loss calculations
- Hypothetical profits from long and short positions

3. Hedging with Future Contracts

- Risks to be hedged
- Use of margin: initial and variation
- Short and long hedges
- Basis risk
- Cross hedging
- Minimum variance hedge ratio

Hedging stock portfolios

4. Theoretical and Forward Prices

Continuous versus discrete time approximation of theoretical price

- Pricing commodities
  - Pricing stock index futures
  - Pricing currency future
  - Return on commodities
  - Spreads
- Cost of carry and arbitrage bounds
  - Futures arbitrage
  - Discrete versus continuous approximation of bounds
  - Introduction to technical analysis
  - Trading strategies for future markets
    - Fundamental analysis versus technical analysis

      Technical trading rules
      - Support and resistance
      - Moving average rules
      - RSI and channel rules
    - Chart patterns

    Effectiveness of technical analysis: recent evidence

5. An Introduction to Options
    - Mechanics of options markets
    - Put and call options on stocks
        - Strike price
        - Stock price
        - Option price
        - Volume and open interest
    - Profits and losses

6. Calculating Option Contract Profits
    - Early exercise
    - Graphing payoffs
        - Put payoff
        - Call payoff
        - Combinations
        - Straddles and strangles
        - Bull and bear spreads
        - Calendar spreads
        - Butterflies and condors
        - Strips and straps

7. Put-call Parity and Arbitrage Bounds
    - Factors affecting option prices
    - Put-call parity
    - Upper and lower bounds on stock options
    - Creation of synthetic securities
    - Impact of dividends on option prices and bounds
    - Bounds for current and index options

8. Option Pricing Models
    - Binomial option pricing model
        - Riskless portfolio
        - Risk neutral valuation
        - One-stage binomial model
            - Binomial model for calls
            - Binomial model for puts
        - Two-stage binomial model
    - Black-Scholes option pricing model
        - Lognormal distribution and model assumptions
        - Inputs into the model
        - Estimating historical volatility
        - Implied volatility
        - VIX index
        - Greek letters and option prices
            - Delta
            - Gamma

Theta
Vega
Rho

9. Exotic Options
    - DerivaGem and online options calculators
    - Definition of exotic options
        - Binary options
        - Forward start options
        - Gap options
        - Lookback options
        - Chooser options
        - Asian options

    Shout options

10. Swaps
    - Interest rate swaps
    - Currency swaps
    - Comparative advantage swaps
    - Determination of swap rates
    - Credit default swaps and exotic derivatives

Methods for Prior Learning Assessment and Recognition

As per TRU Policy.

Last Action Taken

Implement by Submission Preview Subcommittee Chair Joanne (Retired) Moores

Current Date: 28-Oct-20