

# Derivatives and Financial Strategies

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## Textbooks:

John Hull, Options, Futures and Other Derivatives, Prentice Hall, Fourth Edition, 2005.

Salih Neftci, Principles of Financial Engineering, Elsevier, 2004.  
Recommended

## Exams

- The Exam will be on January 8.
- In 3 week intervals I will give two brief (i.e. 45 minute) quizzes.

## Comments:

- The course will not be “quantitative”. However this is a relative term in finance. Some mathematics is unavoidable.
- There will be quite a bit of emphasis on practical applications. Some of these are listed at the end of the “Contents.” These can change as the course progresses.
- Attendance is very important. You cannot understand derivatives fully from books. Classes will be fun anyways.
- I intend to distribute elaborate *practice exam questions*.
- I will post all the material on the internet.

## Course content

### 1. Introduction: Cash flows and replication:

- Decomposing cash flows for derivatives.
- Linear assets and cash flow analysis.
- Non-linear assets and cash flow analysis.
- The notion of Hedging and Hedging needs
- Examples of Hedging

### 2. Forwards, futures. First a brief into to the FX markets:

- Participants
- The spot market, forward market
- Spot quotations, cross rates,
- Arbitrage and triangular arbitrage
- Some interesting puzzles
- Managing a forwards “book”

### 3. Forward and Futures markets

- Quotes, participants, organization of exchanges
- Forward premium and discount
- Hedging accounts payable and receivable
- Pricing formulas for Forwards and Futures
- Examples:
  - Pricing a Currency Forward
  - Comparison with a FRA
- Quotations, participants
- Forward premium and discount
- Hedging payables and receivables

### 4. Introduction to Bond and Swap Markets:

- Zero-coupon yield curve
- Plain vanilla swaps
- What the *swap logic*?
- More complex swap structures
- Examples of swaps
- Pricing swaps
- Hedging with swaps

### 6. Options

- **What is an option?**
- **Some puzzles**
- **Examples: Plain vanilla options**
- **Exotic options and their uses**

#### **7. Constructing options synthetically**

- **Replicating portfolios and self-financing strategies**
- **Pricing options: Theory**
- **Brief intro to Black-Scholes formula**
- **Examples to the use of options**
- **Why is volatility smile important?**

#### **8. Application I: Callable Libor Exotics**

#### **9. Application II: Principal-protected products**