

DSE I: MDF 606: DERIVATIVES AND RISK MANAGEMENT

Course Objectives:

To equip students with principles and techniques of Derivatives and its Greeks, and Risk Management through stock market.

Learning Outcomes:

The course will help the student to:

1. Understand derivative in detail such as forward, futures, options, Greeks, swaps etc.
2. Understand of option pricing models
3. Understand the concept of hedging, speculation and arbitrage.

Course Contents:

Unit I (3 weeks)

Introduction: History of derivatives and origin of derivatives in India. Concepts of Early delivery, extension & cancellation of forward contracts, Why hedge, Basis risk and its effect on hedgers (Through numerical). Forwards and Futures, Interest rate futures and currency futures, and their hedging strategies, Determination of forward and futures prices

References:

Chapter 1 (Section 1.6)– [S.L Gupta]

Chapter 5 (Section 5.1-5.4)– [S.L Gupta]

<https://www.fedai.org.in/>; and P.G. Apte

Chapter 3 (Section 3.1-3.3) - [J.C Hull]

Chapter 5 (Section 5.1-5.13) - [J.C Hull]

Chapter 6 (Section 6.1-6.3) - [J.C Hull]

Unit II (3 weeks)

Options and its type, Factors affecting option Prices. Put & call parity theorem. Trading strategies involving options: payoffs call & Put (both buyer and seller), Spreads (Bull, Bear, Box, Butterfly and Calendar Spread), combinations (Straddle, Strangle, Strip, Straps), Options on Stock Indices and currency.

References:

Chapter 9 (Section 9.1) - [J.C Hull]

Chapter 10 (Section 10.1, 10.4) - [J.C Hull]

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Chapter 11 (Section 11.1-11.5) - [J.C Hull]

Chapter 15, Chapter 15.-15.6) - [J.C Hull]

Unit III

(3weeks)

Binomial model: One Period, Two Period and multiple Period. Black-Scholes option model (for stock and currency both). Concept and calculation of delta, gamma, rho, theta and Vega options.

References:

Chapter 12 (Section 12.1, 12.3-12.7) - [J.C Hull]

Chapter 17 (Section 17.1-17.9) - [J.C Hull]

Unit IV

(3 weeks)

Delta Hedging, Gamma Hedging. Making a portfolio Delta Neutral, Gamma Neutral, Delta positive Gamma Neutral and Delta positive Gamma Neutral, Introduction to Swaps, Interest rate swaps, currency swaps, cross-currency swaps

References:

Chapter 12 (Section 12.1, 12.3-12.7) - [J.C Hull]

Chapter 17 (Section 17.1-17.9) - [J.C Hull]

Chapter 7 (Section 7.1-7.4, 7.10-7.13) - [J.C Hull]

Text Books:

1. John C. Hull. Options, Futures and Other Derivatives (Eighth ed.). Pearson Education.

Additional Readings:

1. Jurgen Franke, Wolfgang Hardle and Christian Hafner. Introduction to Statistics of Financial Markets.
2. R. Madhumathi, M. Ranganatham. Derivatives and risk management (1st ed.) Redhead, K. Financial Derivatives- An introduction to futures, forwards, options, swaps. Prentice Hall of India
3. McDonald, Derivatives Markets, (latest ed.), Pearson.
4. Robert Reitano, 2010, Introduction to Quantitative Finance, MIT Press.
5. Chance, 2003, Analysis of Derivatives for the CFA Program.

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6. Gupta, S.L, Financial Derivatives: Theory, Concepts and Problems (latest ed.), PHI Learning Publications.

Teaching Learning Process:

Class room lecture, Case study discussion, Numerical Problem solving, Class presentation on the assigned topic by students individually or in group, Workshop, Tutorials, Role play

Assessment Method:

1. Internal evaluation of 25% marks
 - a. Attendance 5% marks
 - b. Two internal evaluations by the teacher with 10% marks each out of which one must be a class test and other may be another test or home assignment or presentation. Faculty may take more than two assignments and (or) tests but total will be only 20% marks.
2. End term University Exam of 75% marks

Key words:

Forward Contracts; Financial Futures; Options; Delta Hedging; Binomial model; Financial Swaps