

**COURSE SYLLABUS**  
**FOR FULL-TIME UNDERGRADUATE PROGRAMS**

*(Issued under Decision No.1380/QĐ-ĐHKTQĐ on 15/8/2016 by the University President)*

**1. COURSE NAME:** The Models for Analyzing and Evaluating the Financial Assets 2

Code: TOTC1109

Number of Credits: 03

**2. DEPARTMENT IN CHARGE OF INSTRUCTION:**

*Department of Mathematical Finance*

**Office:** Faculty of Economic Mathematics

**Office Hours:** Working hours, the working day

**Office Telephone:** (84) 04 3628 3007

**3. PRE-REQUISITE:**

The models for analysing and valuating the financial assets 1.

**4. COURSE DESCRIPTION:**

The model for analyzing and valuating the financial assets 2 is a specialized course for 3rd or 4th year student majoring in Financial Mathematics .

The course mainly focuses on *applying mathematical methods to model the analyzing and evaluating process of assets on financial market*. Through the building , analyzing mathematical models from simple to sophisticated ones corresponding to several assets categories, learners can directly apply in securities investment advisory, portfolio management and financial market analysis, empirically test financial processes and security investment on Vietnamese and regional data. The course provides operational tools for students majoring in Mathematical Finance after graduation.

**5. COURSE OBJECTIVES:**

✓ Provide knowledge: Multifactor models and Arbitrage pricing theory, methods of pricing bonds, stocks and options.

✓ Provide skills in analyzing models: Multifactor models, Bond pricing models, Stock pricing models, Option pricing models, using real data on financial market.

## 6. COURSE CONTENT:

### TENTATIVE SCHEDULE

| No | Contents     | Total hours | In details |                             | Notes                                  |
|----|--------------|-------------|------------|-----------------------------|--|
|    |              |             | Theory     | Practice, Discussion, Exams |  |
| 1  | Chapter 5    | 6           | 5          | 2                           | Computer practice and report in groups |
| 2  | Chapter 6    | 13          | 9          | 4                           |  |
| 3  | Chapter 7    | 13          | 9          | 4                           |  |
| 4  | Chapter 8    | 13          | 9          | 4                           |  |
|    | <b>Total</b> | <b>45</b>   | <b>30</b>  | <b>15</b>                   |  |

### Chapter 5 – MULTIFACTOR MODELS AND ARBITRAGE PRICING THEORY

#### Main contents:

- ✓ Multifactor models with interest rate of return on assets;
- ✓ Application of multifactor models in portfolio analysis;
- ✓ Arbitrage pricing theory.

#### 5.1. Multifactor models

- 5.1.1. Some brief history
- 5.1.2. Multifactor models
- 5.1.3. Some applications of Multifactor models
- 5.1.4. Factor portfolio

#### 5.2. Arbitrage Pricing Theory (APT)

- 5.2.1. Arbitrage Pricing Theory
- 5.2.2. Estimation and Test of APT
- 5.2.3. Relationship between CAPM and APT

#### Chapter References:

- 1) Hoang Dinh Tuan (2010), *The models for analyzing and valuating the financial assets*, Science & Technics Publishing house.
- 2) David Blake (2000), *Financial Market Analysis*, John-Wiley & Sons Ltd.

### Chapter 6 – ANALYZING AND VALUATING BONDS

#### Main contents:

- ✓ Introducing some concepts related to bonds;
- ✓ Presenting some methods for calculating the return of bonds;
- ✓ Valuating bonds and analyzing characteristics related to the interest rate risk of bonds.

#### 6.1 . Bonds and related characteristic

#### 6.2 . Bond valuation principles

#### 6.3 . Measuring the returns of bonds, Yield To Maturity and properties

6.4 . Bond valuation

6.5 . Analyzing the interest rate risk of bonds and applications

Chapter References:

- 1) Hoang Dinh Tuan (2010), *The models for analysing and valuating the financial assets*, Science & Technics Publishing house.
- 2) David Blake (2000), *Financial Market Analysis*, John-Wiley & Sons Ltd.

## **Chapter 7 - ANALYZING AND VALUATING STOCKS**

*Main contents:*

- ✓ *Presenting basic methods used in the analysis & valuation of common stock;*
- ✓ *Analyzing the dynamics of stock prices through some models corresponding to Geometric Brownian Motion.*

7.1. Basic analysis methods and valuation principles

7.2. Intrinsic value of stock and influencing factors

7.3. Stock valuation

7.3.1. Valuation based on dividends: Dividend growth models

7.3.2. Valuation based on income: EPS growth models

7.3.3. Binary tree models

7.3.4. Brownian motion model (Black – Scholes model) and other models

Chapter References:

- 1) Hoang Dinh Tuan (2010), *The models for analysing and valuating the financial assets*, Science & Technics Publishing house.
- 2) David Blake (2000), *Financial Market Analysis*, John-Wiley & Sons Ltd.

## **Chapter 8 - ANALYZING AND VALUATING OPTIONS**

*Main contents:*

- ✓ *Presenting basic methods used in the analysis & valuation options on common stocks.*

8.1. Presenting Black – Scholes models in valuating European options

8.2. Derivatives and options

8.3. Derivative evaluating principle, Delta hedging

8.4. Payoff of Option on stocks and impact factors

8.5. Bounds of option prices, Put – Call parity

8.6. Option valuation

8.6.1. Binary tree models

8.6.2. Black – Scholes models

8.6.3. Valuation principles with risk-neutral probabilities

Chapter References:

- 1) Hoang Dinh Tuan (2010), *The models for analysing and valuating the financial assets*, Science & Technics Publishing house.

- 2) Paul Wilmott (1998), *Derivatives – The Theory and Practice of Financial Engineering*, John-Wiley & Sons Ltd.
- 3) John C. Hull (1997), *Options, Futures and other Derivatives*, Prentice Hall.

## **7. REQUIRED TEXTBOOKS & COURSE MATERIALS:**

- 1) Hoang Dinh Tuan (2010), *The models for analysing and valuating the financial assets*, Science & Technics Publishing house.

## **8. RECOMMENDED TEXTS & OTHER READINGS:**

- 1) David Blake (2000), *Financial Market Analysis*, John-Wiley & Sons Ltd.
- 2) Paul Wilmott (1998), *Derivatives – The Theory and Practice of Financial Engineering*, John-Wiley & Sons Ltd.
- 3) John C. Hull (1997), *Options, Futures and other Derivatives*, Prentice Hall.

## **9. ASSESSMENT & GRADING POLICY:**

According to regulation

- ✓ Attendance enough hours under Regulation (at least 80% specified number of hours): 10%
- ✓ Discussion and exercises: Lecturer requests.
- ✓ Practices, presentations: 30%.
- ✓ Final exam: 60%.

*Hanoi, 2016*

**HEAD OF DEPARTMENT**

**PRESIDENT**

(signed)

(signed)

**PhD. Hoang Duc Manh**

**Prof.Dr. Tran Tho Dat**