

## **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 1

Code: TOTC1108

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-REQUISITES:**

Microeconomics; Macroeconomics; Computer Skills ; Econometrics (A specialized course for Applied Mathematics in Economics); Theory of Economics Mathematical Model 1; Optimization 1; Theory of Finance and Monetary.

#### **4. COURSE DESCRIPTION:**

The Model for Analyzing and Evaluating the Financial Assets 1 is a specialized course for 3rd or 4th year students majoring in Applied Mathematics in Economics.

This course mainly referred to the application of some mathematical methods for modeling the process of analysis and valuation of the assets on the financial market. By developing and analyzing both the basic model as well as the complex model corresponding to different types of financial assets, learners can apply directly in the security investment advisory, portfolio management and financial market analysis. Moreover, students also empirically practice models with Vietnamese and regional data.

#### **5. COURSE OBJECTIVES:**

- The course provides learners with basic contents: modelling methods in analyzing and evaluating assets, the portfolio theory and the well-known models for analyzing and evaluating the financial assets.

- The course provides learners with portfolio analysing and assets pricing skills. Moreover, the course also delivers analytical skills of the experimental models on the Vietnamese and international financial markets.

## 6. COURSE CONTENT OVERVIEW

### LECTURE SCHEDULE

<i>No.</i>	<i>Contents</i>	<i>Number of teaching periods</i>	<i>In details</i>		<i>Note</i>
			<i>Theory</i>	<i>Exercises, discussion, examination</i>	
1	Chapter 1	7	5	2	Computer practice and report in groups
2	Chapter 2	10	7	3	
3	Chapter 3	13	8	5	
4	Chapter 4	15	10	5	
	<b>Total</b>	<b>45</b>	<b>30</b>	<b>15</b>	

### Chapter 1 – CONCEPTS AND BASIC PRINCIPLES IN FINANCIAL ANALYSIS

*This chapter includes the following contents:*

- *Introducing the role of the financial market in the economy.*
- *Introducing the general characteristics of the structure and the operational modes of the financial market.*
- *Mentioning Modeling approaches in analyzing financial market based on some basic principles*

1.1. Model of analysing Consumption – Investment behavior and the role of the financial market

1.2. Goods in the market and classification of financial assets

1.3. Concepts and basic principles in analyzing and evaluating financial assets

1.3.1. Assets and Portfolio: Return, Volatility /risk

1.3.2. Principles: No-Arbitrage, Diversification, Discount, Financial Leverage.

References:

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

## **Chapter 2 – MODELING RISKY ACTIVITIES**

*This chapter covers following contents:*

- *Modeling risky activities of individuals*
  - *Modeling agent's choice in uncertain environments.*
  - *Modeling and measuring attitudes of investors to risk (risk appetite)*
- 2.1. The risky environment and modeling
  - 2.2. The selecting model in the risky environment
    - 2.2.1. Set of gambles and the order of preference
    - 2.2.2. The expected utility function, the attitude to risk of investors and measuring
    - 2.2.3. Real-valued utility function, expected utility function depending on mean and variance of yields
    - 2.2.4. Applying the Real-valued utility function in insurance and investment in risky assets

References:

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

## **Chapter 3 – ANALYZING AND MANAGING INVESTMENT PORTFOLIO**

*This chapter covers following contents:*

- *Mean – Variance Analysis for choosing the optimal portfolio*
  - *Analyzing efficient portfolios*
  - *Simple Index Model and Elton – Gruber – Padberg algorithm (EGP) for finding out the efficient portfolios*
  - *The process of adjusting and evaluating the implementing portfolio, analysing and managing portfolio's risk using VaR model.*
- 3.1. Expectation – Variance Expectation method (Markowitz method)
    - 3.1.1. The assumptions and concepts
    - 3.1.2. Portfolio and holding portfolio
    - 3.1.3. The model for identifying frontier portfolio and efficient portfolio (cases with and without the risk-free asset): assumptions, model, solutions of model, properties, static comparative analysis
  - 3.2. Simple Index Model (SIM) and applications
  - 3.3. Portfolio management
    - 3.3.1 Strategies of portfolio management
    - 3.3.2. Making optimal portfolio
    - 3.3.3. Assessing portfolio implementation

### 3.4. VaR method in analyzing value of risk

#### References:

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

## **Chapter 4 – CAPITAL ASSET PRICING MODEL (CAPM)**

*This chapter includes following contents:*

- ✓ *The contents related to CAPM in terms of theory and practice asset pricing.*
  - ✓ *Introducing the method of estimating and verifying CAPM.*
  - ✓ *Expansion of CAPM*
- 4.1. Capital Asset Pricing Model – CAPM
    - 4.1.1. Some brief history of CAPM
    - 4.1.2. CAPM model
  - 4.2. Applications of CAPM
    - 4.2.1. Analyzing risk of asset and portfolio
    - 4.2.2. Computing  $\alpha$ -coefficient of asset and portfolio
    - 4.2.3. Asset pricing
  - 4.3. Estimating and testing CAPM
    - 4.3.1. Estimating parameters of CAPM
    - 4.3.2. Testing CAPM
    - 4.3.3. The process of estimating and testing CAPM
  - 4.4. Expansion of CAPM
    - 4.4.1. In case: Market prohibits short selling
    - 4.4.2. In case: Borrowing interest is different from lending interest
    - 4.4.3. In case: Without risk – free asset
    - 4.4.4. In case: Asset return is not normal distribution
    - 4.4.5. In case: some assets are not traded in the market
    - 4.4.6. In case: there is no uniformity in the assessment of the operation of the market among investors.
    - 4.4.7. In case: Existing dividend in duration
    - 4.4.8. In case: Multiple durations

#### References:

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

- 3) Paul Wilmott (1998), *Derivatives – The Theory and Practice of Financial Engineering*, John-Wiley & Sons Ltd.

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

- 1) Hoang Dinh Tuan (2010), *The models for analyzing and evaluating 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:**

- ✓ 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**