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| **Faculty Information** | **Name** |  |
| **E-mail** |  |
| **Home University** |  |
| **Department** |  |
| **Homepage** |  |
| **Course Information** | **Class No.** |  | **Course Code** |  | **Credits** | 3 |
| **Course Name** | ***Derivatives Valuation and Risk Management*** |
| **Lecture Schedule** | **Total Contact Hours** | 45 hours |
| **Lecture Hour** | 8:30-11:30, Mon-Fri |
| **Course Description** | This course offers advanced insights into the design, application, and pricing of derivatives in financial risk management. Focusing on derivative securities and risk mitigation strategies, it integrates theoretical foundations with practical applications in futures, options, and swaps. Students will master core types of derivative contracts, valuation techniques (e.g., Black-Scholes-Merton model), and advanced quantitative methods to address real-world risk management challenges in global financial markets. |
| **Course Objective** | Upon successful completion, students should be able to:• Develop a comprehensive understanding of derivative securities and their roles in risk management;• Apply valuation models for futures, options, swaps, and exotic derivatives;• Analyze hedging strategies using derivatives to manage market, credit, and liquidity risks;• Evaluate the impact of derivative instruments on portfolio performance and financial stability;• Communicate complex risk management concepts through case analyses and technical presentations. |
| **Prerequisite** | Students are expected to have completed Foundations of Derivatives or possess equivalent knowledge of derivatives and mathematics fundamentals. |
| **Materials/Textbooks** | Hull, J. (2012). *Options, futures, and other derivatives* (8th ed). Prentice Hall. **ISBN: 978-0132164948** |
| **Daily****Lecture Plan** | **Week 1** | **Day** | **Topic** | **Assignment** |
| Day 1 | Fundamentals of Derivative Securities | Group Discussion: Forwards, Futures, and Options |
| Day 2 | Mechanics of Futures Markets; Interest Rates and Interest Rate Futures I | Theories of Interest Rate Term Structure |
| Day 3 | Hedging Strategies with Futures | Forward vs. Futures Pricing Analysis |
| Day 4 | Mechanics of Futures Markets; Interest Rates and Interest Rate Futures II | Team Project: Interest Rate Modeling |
| Day 5 | Currency Swaps and Securitization | Valuation of Currency Swaps and Credit Risk |
| **Week 2** | Day 1 | Introduction to Option Trading Strategies | Group Discussion: Option Strategies |
| Day 2 | Binomial Option Pricing Models; Wiener Processes and Ito’s Lemma | Binomial Model Practice Exercises |
| Day 3 | The Black-Scholes-Merton Model | Group Discussion: Option Valuation Theory |
| Day 4 | Portfolio Analysis with Multiple Stocks | Case Study: Two-Stock Portfolio Optimization |
| Day 5 | Field Trip to a Fortune 500 Company | Field Trip Report |
| **Week 3** | Day 1 | Futures Options, Exotic Options, and Real Options | Group Discussion: Advanced Derivatives Types |
| Day 2 | Numerical Procedures in Derivatives Valuation | Alternatives to Black-Scholes Model |
| Day 3 | Credit Derivatives; Energy and Commodity Derivatives | Pricing Weather and Insurance Derivatives |
| Day 4 | Engineering Institutions and Standard Derivative Contracts | Group Presentation: Derivatives in Practice |
| Day 5 | Comprehensive Course Assessment | Closed-Book Examination |
| **Grading Policy** | **Assessment Component** | Attendance | 10% |
| Case Studies & Group Work | 40% |
| Final Exam | 50% |
| **Total** | **100%** |
| **Academic Integrity** | **Academic integrity is a core principle of this course, and any form of academic dishonesty will be strictly penalized.** | **Prohibited behaviors include, but are not limited to：**1. **Plagiarism:**

Submitting unoriginal work without proper attribution, including copied text, ideas, or analytical structures.1. **Collusion:**

Presenting collaborative work as independent without prior approval.1. **Cheating:**

Falsifying data, using unauthorized materials, or misrepresenting contributions to group work.1. **Examination Misconduct:**

Unauthorized communication, device use, or impersonation during exams.1. **Other Violations:**

Altering records, bribery, or fabricating references.  |
| **All violations will be addressed in accordance with university regulations.** |