Course Syllabus

1. **Program of Study** Bachelor of Business Administration Program
   Faculty/Institute/College Mahidol University International College

2. **Course Code** ICMF 478
   Course Title Risk Management

3. **Number of Credits** 4 **(Lecture/Lab/Self-Study)** (4-0-8)

4. **Prerequisite(s)** ICMF 375

5. **Type of Course** Required Course

6. **Trimester / Academic Year** First, Second, Third Trimester/2007-2008

7. **Course Conditions** 20-40 students

8. **Course Description**
   Introduction to the management of financial risks, market risk, credit risk, operational risk, implementation of risk management techniques, the value at risk, the reduced-form approach, and the structural approach used by corporate and financial institutions in the identification, assessment, and monitoring of risk.

9. **Course Objective(s)**
   After successful completion of this course, students will be able to
   9.1 familiarize with many aspects of risk management techniques.
   9.2 apply the techniques currently used in corporate and financial institutions.

10. Course Outline

Week	Course Outline				Instructor
	Topics	Lecture	Lab	Self-Study	
1	Introduction A Model of the behavior of stock prices ➢ The Markov property ➢ Continuous-time stochastic processes ➢ The process of stock prices ➢ Ito's lemma ➢ The lognormal property	4	0	8	JNS
2	Option pricing ➢ Principles of Option Pricing ➢ The Binomial Model	4	0	8	JNS
3	The Black-Scholes model ➢ Lognormal property of stock prices ➢ The distribution of the rate of return ➢ The expected return ➢ Volatility	4	0	8	JNS
4	The Black-Scholes model ➢ Concept underlying the Black-Scholes-Merton differential equation ➢ Risk-neutral valuation ➢ Black-Scholes pricing formulas ➢ Cumulative normal distribution function	4	0	8	JNS

5	Volatility ➢ Estimating volatility ➢ The Exponentially weighted moving average model ➢ The GARCH (1,1) model ➢ Choosing between the models ➢ Using GARCH (1,1) to forecast future volatility	4	0	8	JNS
6	Modeling credit risk ➢ Elements of credit risk ➢ Default risk ➢ Introduction to credit risk models	4	0	8	JNS
Week	**Course Outline**				**Instructor**
	Topics	**Lecture**	**Lab**	**Self-Study**	
7	Reduced-form approach ➢ Jarrow and Turnbull: the discrete approach ➢ Duffie and Singleton: the continuous approach	4	0	8	JNS
8	Structural approach ➢ Merton's approach on firm valuation ➢ Measuring default probability – empirical method ➢ Measuring default probability – the options theory method ➢ KMV model	4	0	8	JNS
9	Loan portfolio ➢ Expected loss ➢ Loss given default ➢ Mathematical derivation of expected loss ➢ Unexpected loss ➢ Quantifying portfolio credit risk	4	0	8	JNS
10	Market risk modeling ➢ Term Structure of interest rate ➢ Duration ➢ Principal component analysis	4	0	8	JNS

11	Value at Risk (VaR) ➢ Daily Volatility ➢ Calculation of VaR in simple situations ➢ A linear model ➢ How interest rates are handled ➢ Monte Carlo simulation ➢ A non-linear model	4	0	8	JNS
	Total	**44**	**0**	**88**	

11. Teaching Method(s)

All materials will be covered by lecturing during the class time. Examples and case studies will be discussed through question-answer time. Class participations are encouraged. Students will have a chance to practice exercises through in-class quizzes and assignments.

12. Teaching Media

N/A

13. Measurement and Evaluation of Student Achievement

Students achievement is measured and evaluated by

13.1 The ability in understand many aspects of risk management.

13.2 The ability in applying the techniques currently used in corporate and financial institutions.

Student's achievement will be graded according to the faculty and university standard using the symbols: A, B+, B, C+, C, D+, D, and F.

Student must have attended at least 80% of the total class hours of this course.

Ratio of mark	
1. Midterm	45%
2. Final	45%
3. Quizzes and assignments	10%

14. Course Evaluation

14.1 Students' achievement as indicated in number 13 above.

14.2 Students' satisfaction towards teaching and learning of the course using questionnaires.

15. Reference(s)

Cossin D., and Pirotte H. **Advanced Credit Risk Analysis**, Wiley

Hull, J. C. **Option Futures & Other Derivatives**, Prentice Hall
Jorion P. **Value at Risk**, McGraw-Hill
Ong M. K. **Internal Credit Risk Models**, Risk books
Ramaswamy S. **Managing Credit Risk in Corporate Bond Portfolios**, Wiley

16. **Instructor(s)**
    Dr. Jiranart Sutthirat

17. **Course Coordinator**
    Program Director of Finance Major