Course Outline

FN211 Financial Mathematics and Statistics

Semester 2/2021 (January 10 - May 7, 2022)

Number of Credit: 3 credits (3-0-6)

Prerequisite: -

General Information:

This class develops background in mathematics and statistics that are crucial for study in corporate financial decision making and investments. The first half of the class introduces building blocks in calculus whereas the second half tackles the mathematical concepts of time value of money, probability, statistics, and matrix algebra.

Course Description:

Essentials of statistics and mathematics for financial applications: basic statistics, the concept of risk and return, probability, regression analyses, basic calculus (e.g. introduction to derivatives, integration, and integral), optimization, and basic matrices

Course Objectives:

1. Acquaint students with the financial mathematics tools necessary for assessment of risk and return in financial decision making and investment management.
2. Learn techniques to organize and analyze data.
3. Develop scientific thinking and overcome anxiety about applying calculus and statistics in finance work.
4. Develop familiarity with use of excel statistics functions.

Class Time and Logistic

Class day: Tuesday

Class time: 2.00 – 5.00 PM

Teaching Materials Platform: Facebook Group at https://www.facebook.com/groups/211be22021

Meeting Platform: Zoom with Facebook Live at https://kmutt-ac-th.zoom.us/j/4203053967

Instructor:

Name:	Dr. Winai Homsombat
Office Hours:	By appointment
Email:	winai.hom@kmutt.ac.th

Grading Criteria:

The course grades will be based on two exams (individual performance) and homework or quizzes (individual performance). Grading scheme is as follows.

Class participation	10%
Quiz and Assignment	20%
Mid-term examination	30%
Final examination	40%

Type of evaluation	Evaluation Method	Evaluation date
Class participation and Assignment	Written assignment or quiz (Essay questions)	During Week 1-15
Mid-term	Examination	TUESDAY, MARCH 1, 2022; 3.00 – 5.00 PM
Final	Examination	WEDNESDAY, MAY 18, 2022; 09.00 AM - NOON

Class policies:

1) Lectures will stress the most important issues addressed in the readings. You are responsible for all material covered in class and assigned readings. Lectures may go beyond the scope of the textbook. Therefore, it is important for you to attend and participate in class.
2) There will be assignments as deemed appropriate to accommodate effective learning. Each assignment will be graded based on the quality of the analysis and the ability to apply the principles of financial management for managerial decision. Lecture notes, exercises, and guided solution to each lecture, as well as other useful materials, could be accessible from class Moodle.
3) You are responsible for all announcements and changes made in class. However, there will be no make- up quiz and final examination without prior consent from the instructor. If a student has a legitimate, verifiable reason (e.g., doctor' s note), a separate comprehensive examination will be given.

Main Text:

- Wackerly, D.D., Mendenhall III, W., and Scheaffer, R.L. (2002). Mathematical Statistics with Applications. 6th ed. Thomson Learning.
- Stewart, J. (2016). Calculus. 8th ed. Thomson Brooks/Cole.

Recommended Texts & Materials

- Anderson, D.R., Sweeney, D.J., Williams, T.A., Camm, J.D., and Cochran, J.J. (2017). Statistics for Business and Economics. Thirteenth Edition. Cengage Learning.
- Ruppert, D. (2011). Statistics and data analysis for financial engineering (Vol. 13). New York: Springer.
- Miller, M. B. (2013). Mathematics and statistics for financial risk management. John Wiley & Sons.

Tentative Class Schedule:

Week	Content
1	Review of basic statistics and calculus
2	Discrete Random Variables and Their Probability Distributions - Basic Definition and the probability Distribution for a Discrete Random Variable - The Expected Value of a Random Variable or a Function of a Random Variable - The Binomial Probability Distribution
4 – 5	Continuous Random Variables and Their Probability Distributions - Introduction and The Probability Distribution for a Continuous Random Variable - Expected Values for Continuous Random Variables - The Uniform Probability Distribution - The Normal Probability Distribution - Other Expected Values
6 – 7	Multivariate Probability Distributions - Introduction - Bivariate and Multivariate Probability Distributions - Marginal and Conditional Probability Distributions - Independent Random Variables - The Expected Value - The Variance and Covariance of Two Random Variables - The Multinomial Probability Distribution - Conditional Expectations
	Mid term Exam: TUESDAY, MARCH 1, 2022; 3.00 – 5.00 PM
8 – 9	Risk and Return - Asset Return and Risk - Introduction to VaR
10 – 11	Basic Matrices - Matrix Notation - Matrix Operations - Vector Spaces - Applications
12 – 13	Regression Analyses - Simple Regression - Multiple Regression - Applications
14 – 15	Optimization - Constrained Optimization - Unconstrained Optimization - Applications
	Final Exam: WEDNESDAY, MAY 18, 2022; 09.00 AM - NOON

Note: Course content may be change as appropriate.

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ACADEMIC CALENDAR 2021

Event	Semester 1 (August - December 2021)	Semester 2 (January - May 2022)	Summer Session (June - July 2022)
Pre-Registration period (BE Portal-EE)	April 5, 7-8, 2021	April 5, 7-8, 2021	April 5, 7-8, 2021
Pre-Registration period (BE Portal-Non EE)	June 24-25, 28, 2021	TBA	TBA
Course Registration (Reg TU) *for 1st year	August 2, 2021		
Course Registration (Reg TU)	July 13 - 15, 2021	December 1 - 4, 2021	May 17 - 20, 2022
Payment (TU Greats App)	July 16 - 18, 2021	December 7 - 9, 2021	May 21 - 23, 2022
Classes Begin	August 9, 2021	January 10, 2022	June 13, 2022
Adding and Dropping Courses W/O Record	August 16 - 19, 2021	January 17 - 20, 2022	June 14 - 16, 2022
Payment via TU Greats App	August 20 - 22, 2021	January 21 - 23, 2022	June 17 - 19, 2022
Mid-term Examination Period	September 26 - October 3, 2021	February 27-28 - March 6, 2022	-
Course Withdrawal With "W"	October 11 - November 15, 2021	March 14 - April 25, 2022	July 4 - 10, 2022
Last Day of Classes	November 27, 2021	May 7, 2022	July 22, 2022
Final Examination Period	November 29-30, December 1-3, 7-9, 11-17, 2021	May 9-14, 17-25, 2022	July 24 - 27, 2022