Course Outline

FN211: Financial Mathematics and Statistics

Semester 1/2023

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

Prerequisite: -

General Information:
This class provides 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 on the algebra of time value of money, linear algebra (matrices), derivatives and integrals with applications to optimization. The second half focuses on probability, statistics, and regression analysis. Emphasis is on computation and interpretation of risk and return statistics.

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.

Grading Criteria:

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

Midterm Examination (TBA)	35%
Final Examination (TBA)	35%
4 Quizzes & class Participation	30%
Total	100%

Quizzes and exams will mainly be in True/False and MCQ format on-site. I will announce all quizzes before hand so there will be no make up quiz. All types of calculators allowed. All quizzes and exams are closed book. All Quizzes/Exams are in English.

Type of evaluation	Evaluation Method	Evaluation date
Class participation and quizzes	Class participation and quiz	4 pre-announced date
Mid-term	Closed-book exam	TBA
Final	Closed-book exam	TBA

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) You are responsible for all announcements and changes made in class. However, there will be ***no make-up quiz, and no make-up midterm or 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.
3) There will be four pre-announced quizzes. I will pick best three of four. For those who are frequently participating in class, your participation score can also replace a quiz if it is better.

Main Text:
(RB) Raymond Barnett, Michael Ziegler, and Karl Byleen, College mathematics for Business, Economics, Life Sciences, and Social Sciences, Pearson.

Recommended Texts & Materials

รศ. ธีระศักดิ์ อุรัจนานนท์ ความน่าจะเป็นและสถิติประยุกต์ เล่ม 1 : สำนักพิมพ์ SE-ED

Wichai Witayakiattilerd 2020 คณิตศาสตร์การเงินและการประยุกต์ (Financial Mathematics with applications) in Thai.

(JS) James Stewart, Calculus, 8th ed., Thomson Brooks/Cole, 2016.

(PP) Pantisa Pavabutr, Mathematics for Financial Applications: Thammasat Business School, 2017. (Check TU Bookstore and on-line class posting)
(DF) DeFusco, McLeavery, Pinto, and Runkle, 2004. Quantitative investment analysis, CFA Investment Series, Wiley.

Tentative Class Schedule:

Note: Course content may be changed as appropriate.

Session/Date & Time	Topics	Activities/Text & Materials/ Media
#1: Thurs 17 Aug	Exponential and logarithmic functions Applications: Growth and decay, time value of money	RB Ch 2,3
#2: Thurs 24 Aug	Linear equations Constant vs linear vs quadratic Applications: Demand, supply functions	RB Ch 1 and 2
#3: Thurs 31 Aug	Quadratic equations Applications: Revenue, cost, profit functions	RB Ch 4
#4: Thurs 7 Sep	Linear systems and matrices	RB Ch 4
#5: Thurs 14 Sep	Introduction to limits and continuity Basic derivatives and marginal analysis in financial economics	RB Ch 10 JS Ch. 2/ JS Ch.3
#6: Thurs 21 Sep	Applications of differentiation: Optimization	RB Ch 11, 13 JS Ch.4
#7 Thurs 28 Sep	Applications of differentiation: Intro to integrals	DF Ch 3
	Mid-term exam	
#8: Thurs 12 Oct	Probability	DF Ch 4 PP Ch. 4

#9: Thurs 19 Oct	Discrete distribution: Uniform, binomial	DF Ch 5 PP Ch. 5
#10: Thurs 26 Oct	Continuous distribution: Uniform, normal, standard normal	DF Ch 5 PP Ch. 5
#11 Thurs 2 Nov	Data summary: Univariate Descriptive statistics and hypothesis testing	DF Ch 6,7
#12: Thurs 9 Nov	Hypothesis testing	DF Ch 8
#13: Thurs 16 Nov	Bivariate statistics: Covariance and correlation	DF Ch 8
#14: Thurs 23 Nov	Multivariate statistics: Single variable regression	DF Ch 9
#15: Thurs 30 Nov	Multivariate statistics: Multi- variable	
	Final exam	

BACHELOR OF ECONOMICS
THAMMASAT UNIVERSITY

ACADEMIC CALENDAR & HOLIDAY
SEMESTER 1/2023

Semester 1/2023 (August 15 – December 4, 2023)	
the TU Office of the Registrar (TU REG) will process the registration (semester 1/2023) for all BE students who have completed the pre-registration via BE Portal.	July 17 – 20, 2023
Tuition Fee Payment Period (Via TU Greats App)	July 21 – August 11, 2023
Create Plan from Quota via TU Greats App (*ID.66)	August 1 - 9, 2023
Registration via TU Greats App (*ID.66)	August 10, 2023
Classes Begin	August 15, 2023
Add-drop period	August 15 – 28, 2023 *(from 9.00 AM of August 15 to 10.30 PM of August 28)*
Tuition Fee Payment Period (Via TU Greats App)	August 15 – 29, 2023 *(9 AM - 10.30 PM)*
Mid-term Examination Period	October 1 – 7, 2023
*H.M. King Bhumibol Adulyadej The Great Memorial Day**	*October 13, 2023*
*King Chulalongkorn's Day**	*October 23, 2023*
Withdrawal period with "W" on record	September 4 – October 22, 2023 *(from 9.00 AM of September 4 to 10.30 PM of October 22)*
Special Withdrawal with "w" on record	October 24 – November 20, 2023
Last day of class for Semester 1/2023	December 4, 2023
Final exam period	December 12 – 23, 2023
*H.M. King Bhumibol Adulyadej The Great's Birthday**	*December 5, 2023*
*Constitution Day**	*December 10, 2023*
*Substitution for Constitution Day**	*December 11, 2023*
Submitting Forms for Degree Conferral	August 15 – 28, 2023

Remark * Holiday, No classes during this period
Updated: July 24, 2023