National Tsing Hua University
College of Technology Management
Course Syllabus

科號 Course Number	QF314901	學分 Credit	3	人數限制 Size of Limit	40
中文名稱 Course Title	數理統計二				
英文名稱 Course English Title	Mathematical Statistics II				
任課教師 Instructor	劉鋼				
教師聯絡方式 Contact Information	E-Mail: KANGERNESTLIU@NTU.EDU.TW				
上課時間 Time	Wed.13:20-14:20 (Periods 5-7)	上課教室 Room	台積館 206		
先修科目 Prerequisite(s)	數理統計一成績需 D 以上				

本課程對應之學習目標與核心能力 Aligned Learning Goals and Learning Objectives

以堅實理論為基礎，理解財金體系運作機制，應用財金分析技術，實際解決財金問題。 To understand the mechanism of the finance system through solid theoretical foundation and to apply quantitative financial analysis to solve real-world financial issues.	40%
具備厚實財金基礎知識，包括財務管理與公司理財、衍生性商品訂價與風險管理 To learn the knowledge of financial management, corporate finance, financial derivatives, and risk management.	40%
具備創新管理，開發新領域的能力 To acquire the ability to innovate, integrate, and develop new research areas.	10%
培養跨領域工作的能力 To develop the ability to work across different disciplines.	NA
具備團隊合作的精神，有效溝通的能力，以及人文素養與國際觀。 To develop teamwork spirit, to acquire the ability to communicate effectively, and to have broad knowledge across humanities, social science and natural science with international perspective.	10%

課程目標 Course Objectives

This is an advanced undergraduate level course which emphasizes the laws of **probability** needed for making proper **inference** from data. The objectives of this course are threefold:

1. To be acquainted with the theoretical background of statistical models as a set of suitable probability distributions.
2. To understand the core concepts and fundamental principles of statistical inference.
3. To prepare students with a solid foundation in statistical theory in solving practical problems in the real world.

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課程說明 Course Description

Some in-depth explanations about this course should be helpful to students who are interested in developing their knowledge of mathematical statistics.

1. Even though mathematics are crucial in studying this course, the mathematical prerequisite is a thorough knowledge of first-year college calculus including sums of infinite series, differentiation, and single and double integration.
2. It is critical that students (you) work the problems with critical thinking on the reasoning and/or logics behind those problems. Some problems can be worked using several methods which can help you discover how many ways you can work each exercise. A selection of problems will be assigned according to the progress making in this course; try as many as you can.
3. The pace of this course is fairly rapid. There are about 300 pages of text to be covered; therefore, if you are having difficulty keeping up or simply have questions that we do not get to in class, please come and see me. The lectures cover the key and/or subtle points of the course material (at least as I see them!). I will assume that you are reading the book; therefore, I will not attempt to cover every detail of every section. However, you are responsible for the text material in addition to the lectures. I am always happy to answer questions about this material, but depending on the question, I may want to discuss with you outside of lecture.

指定用書 Textbooks

Wackerly, D.D., W. Mendenhall III, and R.L. Scheaffer (2008) Mathematical Statistics with Applications, Seventh Edition, Thomson Learning, Inc., ISBN 0-495-38508-5

參考書籍 References

1. Hogg, R.V., J.W. McKean, and A.T. Craig (2005) *Introduction to Mathematical Statistics*, Sixth Edition, Pearson Education, Inc., ISBN 0-13-122605-3
2. 林惠玲、陳正倉 合著（2004），「統計學－方法與應用」，三版，雙葉書廊有限公司，ISBN 986-7433-03-3 （上冊）ISBN 986-7433-06-8 （下冊）

教學方式 Teaching Approach

A hybrid of (1) group discussion, (2) in-class discussion, (3) synchronous and/or asynchronous lectures, and (4) written and/or oral exams

評分標準 Grading

(40%) In-class participation

(25%) Midterm Exam (to be held on Week 9: Wednesday, April 17)

(35%) Final Exam (to be held on Week 15: Wednesday, May 29)

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教學進度 Course Schedule
1. Review fundamental concepts in mathematical statistics (Chapters 1-5) 3 hours 2. Functions of Random Variables (Chapters 6) 8 hours 3. Sampling distributions and the Central Limit Theorem (Chapters 7) 8 hours 4. Estimation (Chapters 8) 8 hours 5. Properties of Point Estimators and Methods of Estimation (Chapters 9) 8 hours 6. Hypothesis Testing (Chapters 10) 13 hours
課程相關連接 Course Related Links