國立台灣科技大學 114學年 第2學期　課程大綱

Spring 2026 NTUST Course Outline

授課教師：葉瑞徽

Instructor:Ruey-Huei Yeh

課程名稱：應用機率模型

Course Title：Applied Probability Models

2026/11/3

課程代號： IM7103701 Course Code 學分數： 3 Credits	必選修：選修/半學年 Required/Electve:Elective/Half Yr. 先修課程： Prerequisites
節次教室： Time/Location	T6(MA-207) T7(MA-207) T8(MA-207)
專業核心能力： Core Professional Competencies	
課程網址： Course Website	https://moodle2.ntust.edu.tw/
課程宗旨： Course Objectives	This course provides an introduction to elementary probability theory and stochastic processes and show how probability theory can be applied to engineering, computer science, management science, social science, and operations research.
課程大綱： Outline of Lectures	1.Introduction to probability theory 2.Random variables 3.Conditional probability 4.Discrete-time Markov chains 5.The exponential distribution and Poisson process 6.Continuous-time Markov chains 本課程主要介紹基本機率理論與隨機過程，藉由機率理論描述工程、資訊、或管理科學上隨時間改變的隨機過程，建構機率模型藉以分析系統的演進過程與穩態機率分布。內容包括： 1. 機率理論介紹。 2. 隨機變數。 3. 條件機率與條件期望值。 4. 離散時間馬可夫鏈。 5. 指數分配與布阿松過程。 6. 連續時間馬可夫鏈。
授課方式： Method of Instruction	講授 Lecture：80% 分組討論 Group discussion：0% 案例研討 Case study：0% 操做練習 Practical exercises：20% 講授 Lecture：%
教科書： Textbooks	Sheldon M. Ross. “Introduction to Probability Models” (11th Edition) Academic Press, 2014.
參考書目： References	

	(1) Sheldon M. Ross. “Stochastic Processes” (Second Edition) John Wiley & Sons, Inc., 1996. (2) Sheldon M. Ross. “A First Course in Probability” (Eighth Edition) Academic Press, 2010. (3) Sheldon M. Ross. “Applied Probability Models with Optimization Applications,” Holden-Day, Inc., 1970. (4) Ronald Wolff. “Stochastic Modeling and the Theory of Queues,” Prentice Hall, 1989. (5) Erhan Cinlar. “Introduction to Stochastic Processes,” Prentice Hall, 1975.
修課須知： Notice	If the time permits, we will cover Chapter 7 on Renewal Theory.
評量方式： Grading	1. Homeworks(作 業) 30% Every Wednesday, hand in your homework assigned in the previous week. 10 points per exercise problem. 2. Midterm Exam. (期中考) 30% Open books, open notes. 3. Final Exam. (期末考) 30 % Open books, open notes. 4. Participation (10%) 課堂參與。
備註說明： Notes	With probability and calculus background.