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：黃啟賢

Instructor:Qi-Xian Huang

課程名稱：機率

Course Title：Probability

2026/11/3

課程代號： EE2022303 Course Code 學分數： 3 Credits	必選修：必修/半學年 Required/Electve:Required/Half Yr. 先修課程： Prerequisites
節次教室： Time/Location	M4(IB-410-2) T3(IB-410-2) T4(IB-410-2)
專業核心能力： Core Professional Competencies	1.解決電機工程問題：極高 2.解析電機工程數據：極高3.具備電機實務技巧：高4.元件系統設計能力：高5.團隊合作溝通管理：高6.發掘解析電機問題：高7.培養永續學習能力：高8.認識電機專業倫理：極高 9.基礎英語溝通能力：高
課程網址： Course Website	
課程宗旨： Course Objectives	This course begins by introducing probability models and their applications in the fields of electrical engineering and computer science. Next, we will cover the fundamental concepts of probability, including probability axioms, counting methods, conditional probability, independent events, and sequential experiments. We will then introduce the concept of random variables, exploring cumulative distribution functions (CDFs), probability density functions (PDFs), functions of random variables, expected values, Markov’s inequality, and various transforms. Subsequently, the course will extend the discussion of a single random variable to multiple random variables. Finally, we will investigate the properties of the sum of multiple random variables, introducing the sample mean, the Law of Large Numbers, and the Central Limit Theorem.
課程大綱： Outline of Lectures	1. Probability Models 2. Probability Axioms 3. Counting Methods 4. Conditional Probability 5. Independence 6. Random Variables 7. Mean and Variance 8. Functions of Random Variable 9. Transform Methods 10. Sums of Random Variables 11. Central Limit Theorem
授課方式： Method of Instruction	講授 Lecture：60% 分組討論 Group discussion：0% 案例研討 Case study：0% 操做練習 Practical exercises：40% 講授 Lecture：%
教科書： Textbooks	1. Fundamentals of Probability With Stochastic Processes, 4/e (Hardcover) 2. Probability and Stochastic Processes 4/e IA [Yates] 9781394304226

參考書目： References	（補充書目）機器學習（用到的機率與統計） 1. 機器學習的統計基礎 : 深度學習背後的核心技術 2. 機器學習工程師面試全破解：嚴選 124道 AI 演算法決勝題完整剖析
修課須知： Notice	office hour: Tue. 14:00-16:00, if you have any question about Probability quiz, feel free to make a reservation by emaeil.
評量方式： Grading	Attendance and Q&A: 20% Quizzes: 30% Midterm Exam: 25% Final Exam: 25%
備註說明： Notes	Calculus(required) Basic Set Theory(Recommended) Linear Algebra (Helpful but not required) signal and processing(Helpful but not required)