

數學系課程核心教材內容

課程名稱：(中文) 機率論 (英文) Introduction to Probability				開課單位	學士班
				課程代碼	2102701
學分數	3	必/選修	必修	開課年級	二
<p>教學目標： This is an one-semester introductory probability course for sophomore-level mathematics students. The main goal is to help students understand the basic stochastic concept and deal with probability problems. This course attempts to present not only the mathematics of probability theory, but also the many diverse possible applications through numerous examples.</p> <p>課程概述： 介紹機率論基本概念，排列組合問題，重要機率分布，條件機率的觀念，及馬可夫鍊。</p> <p>先修科目或先備能力：</p>					
建議參考書目	Ross, M. S. (2006). A First Course in Probability. Prentice Hall. Hoel, P.G, Port, S.C. and Stone, C.J. (2004). Introduction to Probability Theory.				

課程大綱

單元主題	內容綱要	上課週數
Axioms of probability	Kolmogorv's axioms, problems of permutations and combinations.	2
Conditional probability	Independence of two events, definition and examples of conditional probability, application of Bayes' formula.	3
Random variables	Definitions of discrete and continuous random variables, some important probability distributions.	4
Joint distributions	Concept of jointly distributed random variables, marginal distribution, transformation of random variables.	3
Expectation and variance	Definitions of expectation and variance, computation of expectations in various models, conditional expectation.	2
Limiting theory	Markov's inequality, Kolmogorv's inequality, strong law of large numbers, central limit theorem.	2