

# 博士班資格考試筆試各科目考試範圍與參考書目

## 機率與統計

考試範圍：

### **Probability:**

Probability measures, Basic integration theorems, Differentiation under integral sign, Inequalities, Law of large numbers, Moment generating functions, Convergence of distributions, Markov chains.

### **Mathematical Statistics:**

Modes of convergence, Slutsky theorems, continuous mapping theorem and delta method, Central limit theorems, Distribution of functions of r.v.'s, multivariate normal, Quadratic forms in normal r.v.'s, sufficient statistics, Exponential family, Completeness, Loss and risk functions, Bayes, Minimax, Admissible, UMVUE, Asymptotic relative efficiency, Maximum likelihood estimation, Hypothesis testing, Likelihood ratio tests, Uniformly most powerful tests

### **Statistical Methods:**

Linear regression, Linear Models, Generalized linear models, Classical experimental design, General linear models for designed experiments.

參考書目：

- [1] Billingsley, P. (1995). Probability and Measure 3rd ed, Wiley.
- [2] Bickel, P.J. and Doksum, K.A. (2001) Mathematical Statistics, Basic Ideas and Selected Topics, Vol. 1, 2nd ed, Prentice.
- [3] Searle, S.R.(1971). Linear Models, Wiley.
- [4] McCullagh, P. and Nelder, J.A. (1999). Generalized Linear Models, 2nd ed. Chapman and Hall/CRC.