電信所博士班
資格考參考書目及範圍

隨機過程

*A Papoulis and S. Unnikrishna Pillai, *Probability, Random Variables, and Stochastic Processes*, McGraw-Hill, 4th Ed.

範圍:

Chapter9: **General Concepts**
9-1 Definitions / 9-2 Systems with Stochastic Inputs / 9-3 The Power Spectrum / 9-4 Discrete-Time Processes

Chapter10: **Random Walks and Other Applications**
10-1 Random Walks /10-3 Modulation / 10-4 Cyclostationary Processes / 10-5 Bandlimited Processes and Sampling Theory / 10-6 Deterministic Signals in Noise

Chapter11: **Spectral Representation**
11-1 Factorization and Innovations / 11-2 Finite-Order Systems / 11-3 Fourier Series and Karhunen-Loève Expansions / 11-4 Spectral Representation of Random Processes

Chapter12: **Spectrum Estimation**
12-1 Ergodicity / 12-2 Spectrum Estimation / 12-3 Extrapolation

Chapter13: **Mean Square Estimation**
13-1 Introduction / 13-2 Prediction / 13-3 Filtering and Prediction

Chapter14: **Entropy**
14-1 Introduction / 14-2 Basic Concepts / 14-3 Random Variables and Stochastic Processes

數位通訊

* John G.Proakis, Masoud Sale Ri, *Digital Communications*, 5th Ed.
範圍：Chapters 1-1~1-4,2-1~2-2,2-7~2-9,3-1~3-4,4-1~4-8,6-5~6-6,9-1~9-4,12-1~12-2,13-1~13-5

排隊理論

* G. Harris, *Fundamentals of Queueing Theory,* 3rd Ed.
範圍： Chapters 1~5, Chap.6.1~6.4

計算機網路

* William Stallings, *High-Speed Networks and Internets*, 2nd Ed.

* A. Leon-Garcia, and I. Widjaja, *Communication Networks Fundamental Concepts and Key Architectures*, McGRAW-HILL, 2nd Ed.

數位信號處理

*Oppenheim & Schafer, *Discrete-time Signal Processing*, 3rd Ed., Prentice Hall, 2009.
範圍： Chapter 1~10.5.

**Digital signal processing*, third edition, Mcgraw-hill, 2006, Sanjit Mitra
範圍： Chapter 1 - 11

檢測與估計

*Fundamentals of Statistical Signal Processing: Estimation Theory (Vol1) by Steven M. Kay
範圍： Chapter 1~13 (Kalman filte

高等電磁學

*Akira Ishimaru, Electromagnetic Wave Propagation, Radiation, and Scattering, Prentice Hall, 1991
範圍： Chapter 1 - 5

物 理 數 學

*G. Arfken, Mathematical Methods for Physicists, 6th Ed.

天 線 理 論

*W. L.Stutzman and G. A. Thiele, Antenna Theory and Design, John Wiley & Sons, 2nd Ed.

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* David M. Pozar, Microwave Engineering, John Wiley & Sons, 2005, 3rd Ed.,
範圍：Chapters 2 – 8.

演算法

參考書目：
1. Cormen, Leiserson, Rivest, and Stein, “Introduction to Algorithms”, 2nd Ed., McGraw Hill/The MIT Press, 2001.
2. Dasgupta, Papadimitriou, Vazirani, “Algorithms”, 1st Ed., McGraw Hill, 2006.

考試範圍：
Topics may include but not limited to:
* Algorithmic fundamentals: mathematical foundations, growth of functions, and recurrences
* Sorting and order statistics
* Dynamic programming, greedy algorithms, and amortized analysis
* Advanced data structures: Heap, binary search trees, RB trees, disjoint sets
* Graph algorithms: graph representations, searching, minimum spanning trees, shortest paths, and network flow
* Computational geometry
* NP-completeness, computational complexity, and approximation and randomized algorithms
* Advanced algorithms such as meta-heuristics

電 腦 輔 助 電 路 設 計 與 分 析

* Farid N. Najm, "Circuit Simulation," 2010, Wiley & Sons.

數值半導體元件模式

*D. Vasileska, S. Goodnick, and G. Kilmeck, “Computational Electronics,” CRC Press, 2010