

جامعة القاهرة

Dept. of Electronics and Electrical
Communications
Faculty of Engineering – Cairo University
Giza – Cairo - Egypt



قسم هندسة الإلكترونيات و الاتصالات الكهربائية
كلية الهندسة - جامعة القاهرة
الجيزة- القاهرة - جمهورية مصر العربية

Reading List for the PhD Admission Exam (Academic Year 2011– 2012)

Part I: Electronics Specialization

Responsible Faculty: Prof. Dr. Abdel-Halim SHOUSHA, Professor of Electronics, Cairo University

I- Undergraduate Level

Frequency Response of Amplifiers (Chapter 7)

Feedback (Reference I - Chapter 8)

MOS Digital Circuits and Semiconductor, memories (Chapter 13)

Textbook

A.Sedra and K. Smith, Microelectronic, Circuits,Saunders College Publisher

II) Graduate Level

Basic Concepts in RF Design (Chapter 2)

Transceiver Architectures (Chapter 5)

LOW Noise Amplifiers and Mixers (Chapter 6)

Textbook

B. Razavi, RF Electronics, Prentice-Hall



Part II: Communications Specialization

Responsible Faculty: Prof. Dr. Magdy FIKRI, Professor of Communications, Cairo University

I- Undergraduate Level

Baseband Pulse Transmission

Matched Filter – Error Rate – ISI – Nyquists' s Criterion for Zero ISI – Baseband M-ary PAM – Optimum Linear Receiver – Adaptive Equalization.

Passband Digital Transmission

Passband Transmission Model – CPSK – QAM – CFSK – Noncoherent Orthogonal Modulation – Noncoherent FSK – DPSK - Multichannel Modulation - Synchronization.

Textbook

S. Haykin, “Communication Systems”, 4th Edition, J. Wiley, 2001
Chapters: 4 and 6.

II) Graduate Level

Fading Channels

Characteristics of Multipath Fading – Diversity Techniques and BER for Different Modulation Schemes.

Multiple Access Techniques

FDM, TDM and CDMA – Derivation of Capacity – Multiuser Detection for CDMA.

Textbook

J. Proakis, “Digital Communications”, 5th Edition, McGraw – Hill, 2008.
Chapters: 13 and 16.



Part III: Computers Specialization

Part I: Computer Networks

Responsible Faculty: Prof. Dr. Khaled Elsayed, Professor of Communication Networks, Cairo University.

All textbooks are available at the Faculty of Engineering Library.

Slides can be borrowed from Dr. Khaled Elsayed, copied, and brought back in the same day.

Curriculum

The Internet

IP Protocol (Operation - Frame Format) - Routing in the Internet (Shortest Path Routing - OSPF Routing - BGP Routing) - TCP Protocol (Connection Management – Automatic Repeat Request Protocols - Sliding Window - Timer Management)

Local Area Networks

Types of LANs - The IEEE 802.x family of protocols - Ethernet Protocol Architecture - Multiple Access Techniques and Simplified Performance of the CSMA/CD protocol - LAN Interconnection and Extended LANS - Spanning Trees - Prim's Algorithm for MCST

Textbooks and Reading Material

- 1) Communication Networks: A First Course, Jean Warland, McGraw-Hill, 1998, Chapters: 3 and 4.
- 2) Computer Networking: A Top-Down Approach Featuring the Internet, Jim Kurose and Keith Ross, Addison-Wesley, July 2004. Chapters: 3 and 4.
- 3) Slides by Dr. Khaled Elsayed for 4th Year (available by request).

Part II: Computer Organization

Responsible Faculty: Assoc. Prof. Dr. Hossam Fahmy, Cairo University.

Processor pipelines:

Appendix A of "Computer Architecture: A Quantitative Approach" by David A. Patterson and John L. Hennessy, Morgan Kaufmann.

CUFE Library code: CAR 55 (fourth edition) and CAR 56 (third edition).

Caches and memory hierarchy:

Chapter 7 of "Computer Organization and Design: The Hardware/Software Interface." by John L. Hennessy and David A. Patterson, Morgan Kaufmann. CUFE Library code: CAR 32, CAR 41.

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Part IV: Electromagnetic Waves Specialization

Responsible Faculty: Prof. Dr. Essam HASHISH, Professor of Waves, Cairo University

I – Undergraduate Level

Chapter 5 : Transmission Lines, Pages 213-273

Chapter 12 : Radiation, Pages 584-636

Textbook

Fields and Waves in Communication Electronics, By Simon Ramo et al, John Wiley & Sons, 1994

II - Postgraduate Level

Chapter 5: Linear Arrays: Synthesis, Pages141 - 190

Textbook

ANTENNA THEORY AND DESIGN, By Robert S. Elliott, John Wiley & Sons, 2003.

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Part V: Control Specialization

Responsible Faculty: Prof. Dr. Mohamed SULTAN, Professor of Control, Cairo University

I – Undergraduate Level

Transient and Steady-State Response Analysis

Textbook

Modern Control Engineering by Ogata (Chapter 5)

II - Postgraduate Level

Parameter Estimation

Textbook

Systems: Decomposition, Optimization and Control by M.G.Singh and A. Titli (Chapter 10)