

EE 548 Advanced Topics in Communications Systems
Supplemental Reading Material
Spring 2006

Communications Systems Principles

- L. W. Couch II, “Digital and Analog Communications Systems”, 6th edition, Prentice Hall, 2001. Communications system theory, analog and digital signals.
- B. P. Lathi, “Modern Digital and Analog Communications Systems”, 3rd edition, Oxford University Press, 1998. Signals, modulation, random processes, noise, information theory.
- M. Schwartz, “Telecommunications Networks: Protocols, Modeling and Analysis”, Addison Wesley, 1987. Queuing theory, OSI architecture, packet and circuit networks. Examples of networks are dated, but presentation is excellent.
- James D. McCabe, “Network Analysis, Architecture, and Design”, 2nd edition, Morgan Kaufmann, 2003. Top down systems approach, with requirements driving architecture and design, technology selection and performance.
- H. Stern and S. Mahmoud, “Communications Systems: Analysis and Design”, Prentice Hall, 2004. Communications principles, modulation techniques, information theory.
- A. Leon-Garcia and I. Widjaja, “Communications Networks: Fundamental Concepts and Key Architectures”, McGraw Hill, 2004. Network architectures, applications, protocols.

Data Networks

- W. Stallings, “Data and Computer Communications”, 6th edition, Prentice Hall, 2000. Good overview of communications systems, architectures and protocols.
- A. S. Tanenbaum, “Computer Networks”, 2nd edition, Prentice Hall, 1989. Basics of the OSI model, classic text.
- Peterson and Davie, “Computer Networks: A Systems Approach” 3rd edition. Excellent presentation of data networking and the Internet.
- Christian Huitema, “Ipv6: The New Internet Protocol”, Prentice Hall, 1996. Discussion of Ipv6 and Internet improvements.
- Martin De Prycker, “Asynchronous Transfer Mode”, Ellis Horwood, 1991. Principles of ATM, early standards.
- Uyles Black, “TCP/IP and Related Protocols”, McGraw Hill, 1992. Nuts and bolts of data networking protocols.
- Daniel C. Lynch and Marshall T. Rose, “Internet System Handbook”, Addison Wesley, 1993. Internet architecture, protocols, operations and early applications. Detailed explanations.
- Michael A. Gallo and William M. Hancock, “Networking Explained”, 2nd edition, Digital Press, 2002. Answers to lots of questions about how data networks work and why...
- B. Forouzan, “Local Area Networks”, McGraw Hill, 2003. LAN protocols, Ethernet, VPNs

Wireless

- T. S. Rappaport, “Wireless Communications: Principles and Practice”, Second Edition, Prentice Hall, 2002. Wireless systems, physical and link layers, multiple access, standards
- K. Pahlavan and P. Krishnamurthy, “Principles of Wireless Networks”, Prentice Hall, 2002. Wireless network design.
- M. S. Gast, “802.11 Wireless Networks: The Definitive Guide”, O’Reilly, 2002. Details on 802.11 standard and WiFi applications. A “how to” guide.
- D. Tse and P. Viswanath, “Fundamentals of Wireless Communication”, Cambridge University Press, 2005. Wireless channel, cellular, OFDM, MIMO.
- M. Schwartz, “Mobile Wireless Communications”, Cambridge University Press, 2005. Introductory discussion of wireless channel, multiple access and modulation techniques, cellular system examples.
- K. Pahlavan and A. Levesque, “Wireless Information Networks”, 2nd edition, Wiley Interscience, 2005. Wide scope including propagation, modems, and systems (UWB, RF location sensing, wireless-optical, standards).
- S. Saunders, “Antennas and Propagation for Wireless Communication Systems”, Wiley, 1999. Propagation, channel models, adaptive antennas.
- T. Pratt, C. Bostian, J. Allnutt, “ Satellite Communications”, 2nd ed., Wiley, 2003. Orbits, link design, modulation, error control, geo and leo systems, vsats, dbs, gps systems.
- W. Trantor, K. Shanmugan, T. Rappaport, K. Kosbar, “Principles of Communications Systems Simulation with Wireless Applications”, Prentice Hall, 2004. Simulation techniques, Monte Carlo simulations, methods of simulating wireless systems, case studies.

Ad hoc networks

- C. Perkins, “Ad Hoc Networking”, Addison Wesley, 2001. Good introduction to ad hoc network protocols
- C-K Toh, “Ad Hoc Mobile Wireless Networks: Protocols and Systems”, Prentice Hall, 2002. Protocols and applications.
- P. Mohapatra and S. Krishnamurthy, “Ad hoc Networks: Technologies and Protocols”, Springer, 2004. Collision avoidance protocols, routing, multicasting, smart antennas, quality of service, security.
- E. Callaway, “Wireless Sensor Networks: Architecture and Protocols”, Auerbach, 2003. Sensor network design and applications, power management, antennas, implementation issues.
- F. Zhao and L. Guibas, “Wireless Sensor Networks: an Information Processing Approach”, Morgan Kaufmann, 2004. Sensor network design, sensor information organization, information processing tasks, querying, routing.

Ultra-wide Band

- M. Di Benedetto and G. Giancola, “Understanding Ultra Wide Band Radio Fundamentals”. Prentice Hall, 2004. UWB signals, radio channel, receiver, applications and MAC layer.

- K. Siwiak and D. McKeown, “Ultra-wideband Radio Technology”, Wiley, 2004. History, regulations, standards, signal generation, propagation, detection, systems.
- I. Oppermann, M. Hamalainen, J. Linatti, “UWB Theory and Applications”, Wiley, 2004. UWB channel model, modulation, receivers, antennas, media access control, positioning.

Software Radios

- S. Glisic, “Advanced Wireless Communications: 4G Technologies”, Wiley, 2004. Software radios, adaptive modulation, space-time coding, OFDM, UWB.
- H. Harada, R. Prasad, “Simulation and Software Radio for Mobile Communications”, Artech House, 2002. Simulation tools, OFDM, CDMA, Multiple access protocols, software radio communication systems.

Optical Networks

- Rajiv Ramaswami and Kumar N. Sivarajan, “Optical Networks: A Practical Perspective”, 2nd edition, Morgan Kaufmann, 2002. Good source on optical technology, systems and applications.
- Thomas E. Stern and Krishna Bala, “Multiwavelength Optical Networks: A Layered Approach”, Addison Wesley, 2000. A good guide to wavelength-based networking.
- B. Chomycz, “Fiber Optic Installations: A Practical Guide”, McGraw Hill, 1996. Nuts and bolts of optical technology.
- S. Karatalopoulos, “DWDM: Networks, Devices and Technology”, Wiley Interscience, 2003. Devices, components, systems, emerging technologies.
- S. Hranilovic, “Wireless Optical Communication Systems”, Springer, 2004. Free-space optical channel, intensity signaling, channel capacity, coding.

Other advanced topics

- H. Hrasnica, A. Haidine, R. Lehnert, “Broadband Powerline Communications: Network Design”, Wiley, 2004. Powerline carrier network design, access systems, MAC layer, performance evaluation.