

CISC 7332: Local Area Networks
Text: Data and Computer Communications, 10th ed.
Reference Text: Local Area and Metropolitan Area Networks 6th ed.
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Course Outline

1. Introduction to Local Area Networks

Chapter 1:

Chapter 9: Review Questions: 9.1-9.7; HW Problems: 9.7,9.8

Chapter 11: (Section 11.1) Review Questions: 11.1,11.2; HW Problems: 11.3-11.5

Chapter 4: (section 4.1)

Chapter 5: (section 5.1) Review Questions: 5.1-5.5; HW Problem: 5.7

- Station Interconnection
- Wide Area Networks (WANs)
- Switched Communications Networks
- Circuit Switching vs. Packet Switching Networks
- Packet Switching Alternatives
- Frame Relay and ATM Networks
- Broadcast Networks: Satellite Networks, Radio Networks, LANs
- LAN Topologies
- Shared Media vs. Switched LAN Architectures
- LAN Transmission Media
- Digital Data Transmission and Signaling
- The Internet
- Intranets and Extranets

2. Protocols

Chapter 2: (Sections 2.1-2.6) Review Questions: 2.1-2.11; HW Problems: 2.2-2.7

Chapter 11: (Section 11.2) Review Questions: 11.3,11.4

Appendix E: The OSI Model

Appendix O: TCP/IP Example

- Protocol Concepts & Functions
- A Simple Protocol Architecture
- Protocol Functions and Services
- The OSI Reference Model
- The TCP/IP Protocol Architecture
- TCP/IP Operation
- LAN Protocol Architecture
- IEEE 802 Standards
- Internetworking

3. IEEE 802.2 - Logical Link Control (LLC)

Chapter 11: (Section 11.2) Review Questions: 11.5,11.6

Chapter 7: (Sections 7.1,7.2) Review Questions: 7.1-7.11

- LLC Services
- LLC Protocol

4. IEEE 802.3 - Traditional Ethernet

Chapter 11: (Section 11.2) Review Questions: 11.7

Chapter 12: (Section 12.1) Review Questions: 12.1-12.4; HW Problems: 12.3-12.5

- Medium Access Control (MAC)
- MAC Frame Format
- IEEE 802.3 10Mbps Specification (Ethernet)

5. High Speed Ethernet

- Chapter 12: (Section 12.2) Review Questions: 12.5-12.7; HW Problems: 12.6-12.9
- Appendix 12A: Digital Signal Encoding for LANs
- IEEE 802.3 100Mbps Specifications (Fast Ethernet)
- Gigabit Ethernet
- 10Gbps Ethernet
- 100Gbps Ethernet

Midterm Examination

6. LAN Bridges

- Chapter 11: (Section 11.3) Review Questions: 11.8,11.9; HW Problems: 11.6-11.9
- Appendix J: Spanning Tree Algorithm
- Functions of a Bridge
- Bridge Protocol Architecture
- Fixed Routing
- The Spanning Tree Approach

7. Hubs and Switches

- Chapter 11: (Section 11.4) Review Questions: 11.10,11.11
- Hubs
- Layer 2 Switches

8. Virtual LANs (VLANs)

- Chapter 11: (Section 11.5)
- Chapter 12: (Section 12.3)
- Defining VLANs
- Communicating VLAN Membership
- IEEE 802.1Q VLAN Standard

9. Wireless LANs

- Chapter 13: Review Questions: 13.1-13.6; HW Problems: 13.1
- Chapter 17: Review Questions: 17.1-17.7
- Chapter 27: (Section 27.3)
- Wireless LAN Technology
- Spread Spectrum Technology
- IEEE 802.11 Architecture and Services
- IEEE 802.11 MAC Layer
- IEEE 802.11 Physical Layer
- Gigabit Wi-Fi
- IEEE 802.11 Security Considerations

10. WiMax

- Chapter 18: (Sections 18.1,18.2) Review Questions: 18.1-18.3; HW Problems: 18.1
- Fixed Broadband Wireless Access
- WiMax/IEEE 802.16
- IEEE 802.16 Protocol Architecture
- IEEE 802.16 MAC Layer
- IEEE 802.16 Physical Layer

11. Bluetooth

Chapter 18: (Sections 18.3-18.6) Review Questions: 18.4-18.7; HW Problems: 18.2

- Bluetooth Overview
- Bluetooth Protocol Architecture
- Piconets and Scatternets
- Bluetooth Baseband Specification
- Packet Formats
- Logical Channels
- L2CAP (LLC and Adaptation Protocol)

Final Examination