Course Outline

1. Introduction to Local Area Networks
   Chapter 1:
   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 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 Phy December 26, 2016
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