Introduction to Computer Networking for Non-Techies

Instructor: Alton Hardin

Course Curriculum

Section 1: Course Introduction

1. Course Introduction and Overview
2. What This Course Is & What It Isn't
3. Instructor Introduction
4. Udemy Mobile App for iOS & Android - Download & Take Course Videos On the Go!
5. Student Exercise: Introduce Yourself

Section 2: Overview and Benefits of Computer Networks

6. What Is a Computer Network?
7. Some Basic Computer Networking Rules
8. Types of Networks
9. Why Build a Computer Network?
10. Student Exercise: Benefits of Computer Networks
11. Follow-Along Network Design - Part 1

Section 3: How Computer Networks Work

12. Section Introduction
13. Introduction to Computer Networking Protocols
14. Introduction to the OSI Model
15. Introduction to the TCP/IP Model
16. Introduction to MAC Addresses
17. Introduction to IPv4 Addresses
18. IP versus MAC Addresses
19. Duplex Communication
20. Introduction to Ethernet
21. Follow-Along Network Design - Part 2

✓ **How Computers Work Quiz**

Section 4: Network Topologies

22. Introduction to Physical Network Topologies
23. Common Physical Network Topologies
24. Follow-Along Network Design - Part 3

✓ **Network Topologies Quiz**

Section 5: Networking Devices

25. Section Introduction
26. Network Interface Cards (NICs)
27. Hubs
28. Switches
29. Hubs versus Switches
30. Wireless Access Points
31. Routers
32. Firewalls
33. DHCP Servers
34. All-in-One SOHO Devices
35. Modems (Added 2019)
36. Follow-Along Network Design - Part 4
- ✓ **Network Devices Quiz**

Section 6: Network Cabling

37. Section Introduction
38. Types of Network Cabling
39. Ethernet
40. Twisted Pair Copper Network Cabling
41. Wiring Standards: 568A & 568B and Cable Types
42. Plenum-Rated Cabling
43. Fiber Optic Network Cabling
44. Networking Cable Selection Criteria
45. Follow-Along Network Design - Part 5
- ✓ **Network Cabling Quiz**
46. Course Review Request

Section 7: The OSI Model

47. Section Introduction
48. OSI Layer 7 - The Application Layer
49. OSI Layer 6 - The Presentation Layer
50. OSI Layer 5 - The Session Layer
51. OSI Layer 4 - The Transport Layer
52. OSI Layer 3 - The Network Layer
53. OSI Layer 2 - The Data Link Layer
54. OSI Layer 1 - The Physical Layer
55. OSI Model Data Encapsulation and Decapsulation
- ✓ **OSI Model Quiz**

Section 8: Planning a Network

56. Section Intro
57. Why We Plan
58. The Overall Process
59. Understanding the Business
60. Establishing a Business Need
61. Defining Specific Areas of Improvement
62. Buy-in and Resources
63. Hidden Costs
64. Other Considerations
65. Planning Questions
66. The Next Steps
67. Student Exercise

Section 9: Introduction to TCP/IP

68. Section Intro
69. What is TCP/IP?
70. TCP/IP Protocols
71. Types of Communication
72. Access Methods: CSMA/CD, CSMA/CA, Token Passing

✓ **Section Quiz**

Section 10: TCP/IP Network Layer Protocols

73. Address Resolution Protocol (ARP)
74. Internet Protocol Version 4 (IPv4)
75. Internet Protocol Version 6 (IPv6)
76. Internet Control Message Protocol (ICMP)

✓ **TCP/IP Network Layer Protocols Quiz**

Section 11: TCP/IP Transport Layer Protocols

77. Transmission Control Protocol (TCP)
78. User Datagram Protocol (UDP)
79. Understanding Ports

✓ **TCP/IP Transport Layer Protocols Quiz**

Section 12: Common TCP/IP Application Layer Protocols

80. Management Protocols
81. Remote Communication Protocols
82. File Transfer Application Protocols
83. Mail Application Protocols
84. Browser Application Protocols
85. Follow-Along Network Design - Part 6 (Added 2019)

✓ **TCP/IP Application Layer Protocols Quiz**

Section 13: Understanding IPv4 Addresses & Binary Math

86. Section Introduction
87. Understanding IPv4 Addresses & Binary Math
88. Binary Math Basics
89. Revisiting DHCP
90. Binary Math Student Exercise Worksheet

Section 14: A Deeper Dive into IPv4 Addresses and Subnet Masks

91. IP Address Classification and Subnet Masks
92. The Power of 2's
93. Public versus Private IP Addresses
94. Public versus Private IP Addresses Visualized
95. The Loopback IP Address
96. APIPA

✓ **IPv4 Addresses and Subnet Masks Quiz**

Section 15: Introduction IPv4 to Subnetting

97. Introduction to Subnetting
98. Subnetting Reference Tables
99. Subnetting a Class C Network #1
100. Visualizing Subnetting a Class C Network #1
101. Subnetting a Class C Network #2
102. Visualizing Subnetting a Class C Network #2
103. Follow-Along Network Design - Part 7

✓ **Subnetting Quiz**

Section 16: IP Addressing Version 6 (IPv6) Fundamentals

104. Section Introduction
105. Disadvantages of IPv4 and IPv6 Solutions
106. IPv6 Addressing
107. Types of Ipv6 Addresses
108. IPv4 to IPv6 Translation & Compatibility

✓ **IPv6 Fundamentals Section Quiz**

Section 17: Understanding Switches

109. Section Introduction
110. Refresher on Hubs vs. Switches
111. Collision Domains & CSMA/CD
112. Switch Form Factor
113. Managed versus Unmanaged Switches
114. How a Switch Learns MAC Addresses
115. VLANs
116. Layer 3 Switches
117. Follow-Along Network Design - Part 8
- ✓ **Understanding Switches Section Quiz**

Section 18: Understanding Routers

118. Section Introduction
119. Refresher on Routers
120. Routing Tables
121. EGPs & IGPs
122. Static versus Dynamic Routing
123. The Next Hop
124. Interior Gateway Protocols (IPGs): RIP, RIPv2 & OSPF
125. Exterior Gateway Protocols (EGPs) - BGP
126. Default Routes
127. Directly Connected Routes
128. Network Address Translation (NAT)
129. Cisco Packet Tracer Demonstration
130. Follow-Along Network Design - Part 9
- ✓ **Understanding Routers Section Quiz**

Section 19: Wireless Networking

131. Section Introduction
132. Wireless Networking Fundamentals
133. Wireless Networking 802.11 Standards
134. Signal Degradation
135. Wireless Network Vulnerabilities & Security
136. Wireless Networking Security Standards
137. WEP
138. WPA
139. WPA2
140. WPA3
141. WPA Enterprise vs. Personal Mode
142. Follow-Along Network Design - Part 10 (Added 2019)
- ✓ **Wireless Networking Section Quiz**

Section 20: Wide Area Networking

143. Section Introduction
144. WAN Technologies Overview
145. Circuit Switching vs. Packet Switching
146. POTS/PSTN Dial-Up
147. ISDN
148. T-Carrier & E-Carrier Digital Signal Lines
149. DSL
150. Broadband Cable
151. X.25, Frame Relay and ATM
152. FDDI and SONET
- ✓ **Wide Area Networking Section Quiz**

Section 21: Network Security

153. Section Introduction
154. Intranet, Extranet and the Internet
155. Perimeter Networks: DMZ
156. Firewalls
157. Proxy Servers
158. Network Intrusion & Prevention
159. Follow-Along Network Design - Part 11
- ✓ **Network Security Section Quiz**

Section 22: TCP/IP Command Line Tools

160. Section Introduction
161. Accessing & Using Command Prompt
162. IPConfig
163. Ping
164. Tracert
165. PathPing
166. NetStat
- ✓ **TCP/IP Command Line Tools Section Quiz**

Section 23: Designing a Network

167. Designing a Network
168. Step 1: Identify the Uses of the Network
169. Step 2: List Which Tasks Execute on Which Computers
170. Step 3: Select the Type of Network: Centralized or Not?
171. Step 4: Select the Proper Equipment
172. Step 5: Draw the Network
173. Step 6 & 7: Write the Specifications & Build It!

Section 24: Follow-Along Case Study Network Design Scenarios

174. Section Introduction
175. Case Study Analysis Instructions
176. Case Study #1: H&M Law Firm Walk-Through
177. Case Study #1: H&M Law Firm Network Design Proposal Analysis
178. Case Study #2: San Bernardo Dentistry Walk-Through
179. Case Study #2: San Bernardo Dentistry Analysis

Section 25: Conclusion

180. Congratulations!
181. Bonus Lecture: Get My Other IT Course for Up to 90% OFF