

*Network+*  
Course Outline  
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Primary Text: All In One CompTIA Network+ Exam Guide Fifth Edition

Other Instructional Resources: MCSE TCP/IP Training Guide

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<b>Timeline</b>	<b>Units of Instruction</b>	<b>Topics/Class Activities</b>
Week 1	Building a Network with the OSI Model	Historical/Conceptual Working with Models Biography of a Model The Seven Layers in Action Let's Get Physical—Network Hardware and Layers 1–2 The NIC The Two Aspects of NICs  <i>Key Terms/Fillin Blank/Multiple Choice Worksheet</i> <i>Lab Project (File Sharing)</i>
Week 2	Building a Network with the OSI Model	Beyond the Single Wire—Network Software and Layers 3–7 IP—Playing on Layer 3, the Network Layer There's Frames in Them Thar Frames! Assembly and Disassembly—Layer 4, the Transport Layer Talking on a Network—Layer 5, the Session Layer Standardized Formats, or Why Layer 6, Presentation, Has No Friends Network Applications—Layer 7, the Application Layer How Tiffany Gets Her Document  <i>Lab Project (Interview Network Technician)</i> <i>Lab Project 3.2 (OSI Model)</i>
Week 3	Topology	Topology

		Bus and Ring Star Hybrids Mesh and Point-to-Multipoint Point-to-Point Parameters of a Topology  <i>Key Terms/Fillin Blank/Multiple Choice Worksheet</i>
Week 4	Cabling	Cabling Coaxial Cable Twisted Pair Fiber-Optic Other Cables Fire Ratings Networking Industry Standards—IEEE  <i>Lab Project(Create a Table Listing the Advantages and Disadvantages to Each Topology)</i>
Week 5	Ethernet Basics	Historical/Conceptual Ethernet Topology Organizing the Data: Ethernet Frames CSMA/CD Defining Ethernet  <i>Key Terms/Fillin Blank/Multiple Choice Worksheet</i>
Week 6	Ethernet Basics	Early Ethernet Networks 10BaseT 10BaseFL Extending and Enhancing Ethernet Networks Connecting Ethernet Segments Switched Ethernet  <i>Lab Project (Research Freeware that will scan the computers on your network)</i>
Week 7	Modern Ethernet	100-Megabit Ethernet 100BaseT 100BaseFX Full-Duplex Ethernet

		<p>Gigabit Ethernet  1000BaseCX  1000BaseSX  1000BaseLX</p> <p><i>Key Terms/Fillin Blank/Multiple Choice Worksheet</i></p>
Week 8	Modern Ethernet	<p>New Fiber Connectors  Mix and Match  10-Gigabit Ethernet  Fiber-based 10 GbE  The Other 10-Gigabit Ethernet  Fiber Standards  Copper 10 GbE  10-GbE Physical Connections  Backbones</p> <p><i>Lab Project (Research the cost of different type of cables)</i></p>
Week 9	Installing a Physical Network	<p>Historical/Conceptual  Understanding Structured Cabling  Cable Basics—A Star Is Born  Structured Cable Network  Components  Structured Cable—Beyond the Star  Installing Structured Cabling  Getting a Floor Plan  Mapping the Runs  Determining the Location of the Telecommunications Room  Pulling Cable  Making Connections  Testing the Cable Runs</p> <p><i>Key Terms/Fillin Blank/Multiple Choice Worksheet</i></p>
Week 10	Installing a Physical Network	<p>NICs  Buying NICs  Link Lights  Diagnostics and Repair of Physical Cabling  Diagnosing Physical Problems  Check Your Lights  Check the NIC  Cable Testing</p>

		<p>Problems in the Telecommunications Room Toners</p> <p><i>Lab Project(Visit IT and have them explain how the network is laid out)</i></p> <p><i>Lab Project(Create patch cable, crossover cable)</i></p>
Week 11	TCP/IP Basics	<p>IP in Depth IP Addresses IP Addresses in Action Class IDs</p> <p><i>Key Terms/Fillin Blank/Multiple Choice Worksheet</i></p>
Week 12	TCP/IP Basics	<p>CIDR and Subnetting Subnetting CIDR: Subnetting in the Real World Using IP Addresses Static IP Addressing Dynamic IP Addressing Special IP Addresses</p> <p><i>Lab Project(Set Static IP on a box with class A, B, C subnets)</i></p>
Week 13	The Wonderful World of Routing	<p>Historical/Conceptual How Routers Work Test Specific Routing Tables Freedom from Layer 2 Network Address Translation</p> <p><i>Key Terms/Fillin Blank/Multiple Choice Worksheet</i></p>
Week 14	The Wonderful World of Routing	<p>Dynamic Routing Distance Vector Link State EIGRP—the Lone Hybrid Dynamic Routing Makes the Internet Working with Routers Connecting to Routers Basic Router Configuration</p>

		Router Problems <i>Lab Project(Set up a switch)</i>
Week 15	TCP/IP Applications	Historical/Conceptual Transport Layer Protocols How People Communicate Test Specific TCP UDP ICMP IGMP  <i>Key Terms/Fillin Blank/Multiple Choice Worksheet</i>
Week 16	TCP/IP Applications	The Power of Port Numbers Registered Ports Connection Status Rules for Determining Good vsBad Communications Common TCP/IP Applications The World Wide Web Telnet E-mail FTP Internet Applications  <i>Lab Project (Network traffic with Wireshark)</i>
Week 17	Network Naming	Historical/Conceptual DNS How DNS Works DNS Servers Troubleshooting DNS  <i>Key Terms/Fillin Blank/Multiple Choice Worksheet</i>
Week 18	Network Naming	WINS Configuring WINS Clients Troubleshooting WINS Diagnosing TCP/IP Networks  <i>Lab Project(Command line NetStat)</i>
Week 19	Securing TCP/IP	Making TCP/IP Secure Encryption Nonrepudiation

		<p>Authentication  Authorization  TCP/IP Security Standards  Authentication Standards  Encryption Standards  Combining Authentication and Encryption</p> <p><i>Key Terms/Fillin Blank/Multiple Choice Worksheet</i></p>
Week 20	Securing TCP/IP	<p>Secure TCP/IP Applications  HTTPS  SCP  SFTP  SNMP  NTP</p> <p><i>Lab Project(Security Holes)</i></p>
Week 21	Advanced Networking Devices	<p>Historical/Conceptual  Logical Network Topologies  Client/Server  Peer-to-Peer  Client/Server and Peer-to-Peer  Today  VPN  VLAN</p> <p><i>Key Terms/Fillin Blank/Multiple Choice Worksheet</i></p>
Week 22	Advanced Networking Devices	<p>VLAN in Depth  Trunking  Configuring a VLAN-capable Switch  InterVLAN Routing  Multilayer Switches  Load Balancing  QoS and Traffic Shaping  Network Protection</p> <p><i>Lab Project</i></p>
Week 23	IPv6	<p>IPv6 Basics  IPv6 Address Notation  Link-Local Address  IPv6 Subnet Masks  The End of Broadcast  Global Address</p>

		<p>Aggregation</p> <p><i>Key Terms/Fillin Blank/Multiple Choice Worksheet</i></p>
Week 24	IPv6	<p>Using IPv6  Enabling IPv6  NAT in IPv6  DHCP in IPv6  DNS in IPv6  Moving to IPv6  IPv4 and IPv6  Tunnels  IPv6 Is Here, Really!</p> <p><i>Lab Project</i></p>
Week 25	Remote Connectivity	<p>Telephony and Beyond  The Dawn of Long Distance  Digital Telephony  Copper Carriers: T1 and T3  Fiber Carriers: SONET/SDH and OC  Packet Switching  Real-World WAN  Alternative to Telephony WAN</p> <p><i>Key Terms/Fillin Blank/Multiple Choice Worksheet</i></p>
Week 26	Remote Connectivity	<p>The Last Mile  Telephone  DSL  Cable Modems  Satellite  Wireless  Fiber  Which Connection?  Using Remote Access  Dial-Up to the Internet  Private Dial-Up  VPNs  Dedicated Connection  Remote Terminal  VoIP</p> <p><i>Lab Project(use Dameware to remote control a computer to solve a problem)</i></p>

Week 27	Network Troubleshooting	<p>Troubleshooting Tools</p> <p>Hardware Tools</p> <p>Software Tools</p> <p>The Troubleshooting Process</p> <p>Gather Information—Identify Symptoms and Problems</p> <p>Identify the Affected Areas of the Network</p> <p>Establish if Anything Has Changed</p> <p>Identify the Most Probable Cause</p> <p>Determine if Escalation Is Necessary</p> <p>Create an Action Plan and Solution Identifying Potential Effects</p> <p>Implement and Test a Solution</p> <p>Identify the Results and Effects of the Solution</p> <p>Document the Solution and the Entire Process</p> <p><i>Key Terms/Fillin Blank/Multiple Choice Worksheet</i></p>
Week 28	Network Troubleshooting	<p>Troubleshooting Scenarios</p> <p>“I Can’t Log In!”</p> <p>“I Can’t Get to This Web Site!”</p> <p>“Our Web Server Is Sluggish!”</p> <p>“I Can’t See Anything on the Network!”</p> <p>“It’s Time to Escalate!”</p> <p>Troubleshooting Is Fun!</p> <p><i>Lab Project(Troubleshoot Issues)</i></p>
Week 29	Wireless Networking	<p>Wi-Fi Standards</p> <p>802.11</p> <p>802.11b</p> <p>802.11a</p> <p>802.11g</p> <p>802.11n</p> <p>Wireless Networking Security</p> <p>Power Over Ethernet</p> <p><i>Key Terms/Fillin Blank/Multiple Choice Worksheet</i></p>
Week 30	Wireless Networking	Implementing Wi-Fi

		<p>Site Survey  Installing the Client  Setting Up an Ad Hoc Network  Setting Up an Infrastructure Network  Extending the Network  Verify the Installation  Troubleshooting Wi-Fi  Hardware Troubleshooting  Software Troubleshooting  Connectivity Troubleshooting  Configuration Troubleshooting</p> <p><i>Lab Project (Site Survey of the school)</i>  <i>Lab Project (Point to Point FTP)</i></p>
Week 31	Protecting Your Network	<p>Common Threats  System Crash/Hardware Failure  Administrative Access Control  Malware  Social Engineering  Denial of Service  Physical Intrusion  Rogue Access Points  Securing User Accounts  Passwords  Controlling User Accounts</p> <p><i>Key Terms/Fillin Blank/Multiple Choice Worksheet</i></p>
Week 32	Protecting Your Network	<p>Firewalls  Hiding the IPs  Port Filtering  Packet Filtering  MAC Filtering  Personal Firewalls  Network Zones  Securing Remote Access</p> <p><i>Lab Project(Scan for port)</i></p>
Week 33	Network Management	<p>Network Configuration  Management  Configuration Management  Documentation  Change Management  Documentation</p>

		Monitoring Performance and Connectivity  <i>Key Terms/Fillin Blank/Multiple Choice Worksheet</i>
Week 34	Network Management	Network Performance Optimization Caching Controlling Data Throughput Keeping Resources Available  <i>Lab Project</i>
Week 35	Final Project	Create a final project demonstrating a Network+ skill
Week 36	Final Project	Create a final project demonstrating a Network+ skill, Present the project to the class