COURSE SYLLABUS
CCNA-1v7.0 – Introduction to Networks
ITN – Fall – 2020
Business Apprenticeship Professional Institute - Network Academy

Instructor: **Clayton McKinnie (BSEE, MBA, Instruct CCNA)**
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Textbooks: Introduction to Networks, Companion Guide (Optional)
ISBN Book: 9781587133169, eBook: 9780133475449
Introduction to Networks, Labs and Study Guide (Optional)
ISBN 9781587133121

Online Multimedia: www.netacad.com (Curriculum and Testing)
Login Name / Password: _____/_____

Resource Matls: Packet Tracer v7.1.0 (supplied or available for download)

Module Outline

Module 1: Networking Today
- 1.1 Networks Affect Our Lives
- 1.2 Network Components
- 1.3 Network Representations and Topologies
- 1.4 Common Types of Networks
- 1.5 Internet Connections
- 1.6 Reliable Networks
- 1.7 Network Trends
- 1.8 Network Security
- 1.9 The IT Professional

Module 2: Basic Switch and End Device Configuration
- 2.1 Cisco IOS Access
- 2.2 IOS Navigation
- 2.3 The Command Structure
- 2.4 Basic Device Configuration
- 2.5 Save Configurations
- 2.6 Ports and Addresses
- 2.7 Configure IP Addressing
- 2.8 Verify Connectivity

Module 3: Protocols and Models
- 3.1 The Rules
- 3.2 Protocols
- 3.3 Protocol Suites
- 3.4 Standards Organizations
- 3.5 Reference Models
- 3.6 Data Encapsulation
- 3.7 Data Access

Module 4: Physical Layer
- 4.1 Purpose of the Physical Layer
- 4.2 Physical Layer Characteristics
- 4.3 Copper Cabling
- 4.4 UTP Cabling
- 4.5 Fiber-Optic Cabling
- 4.6 Wireless Media

Module 5: Number Systems
- 5.1 Binary Number System
- 5.2 Hexadecimal Number System

Module 6: Data Link Layer
- 6.1 Purpose of the Data Link Layer
- 6.2 Topologies
- 6.3 Data Link Frame

Module 7: Ethernet Switching
- 7.1 Ethernet Frames
- 7.2 Ethernet MAC Address
- 7.3 The MAC Address Table
- 7.4 Switch Speeds and Forwarding Methods

Module 8: Network Layer
- 8.1 Network Layer Characteristics
- 8.2 IPv4 Packet
- 8.3 IPv6 Packets
- 8.4 How a Host Routes
- 8.5 Introduction to Routing

Module 9: Address Resolution
- 9.1 MAC and IP
- 9.2 ARP

9.3 IPv6 Neighbor Discovery

Module 10: Basic Router Configuration
10.1 Configure Initial Router Settings
10.2 Configure Interfaces
10.3 Configure the Default Gateway

Module 11: IPv4 Addressing
11.1 IPv4 Address Structure
11.2 IPv4 Unicast, Broadcast, and Multicast
11.3 Basic Types of IPv4 Addresses
11.4 Network Segmentation
11.5 Subnet an IPv4 Network
11.6 Subnet a Slash 16 and a Slash 8 Prefix
11.7 Subnet to Meet Requirements
11.8 VLSM
11.9 Structured Design

Module 12: IPv6 Addressing
12.1 IPv4 Issues
12.2 IPv6 Address Representation
12.3 IPv6 Address Types
12.4 GUA and LLA Static Configuration
12.5 Dynamic Addressing for IPv6 GUAs
12.6 Dynamic Addressing for IPv6 LLAs
12.7 IPv6 Multicast Addresses
12.8 Subnet an IPv6 Network

Module 13: ICMP
13.1 ICMP Messages
13.2 Ping and Traceroute Tests

Module 14: Transport Layer
14.1 Transportation of Data
14.2 TCP Overview
14.3 UDP Overview
14.4 Port Numbers
14.5 TCP Communication Process
14.6 Reliability and Flow Control
14.7 UDP Communication

Module 15: Application Layer
15.1 Application, Presentation, and Session
15.2 Peer-to-Peer
15.3 Web and Email Protocols
15.4 IP Addressing Services
15.5 File Sharing Services

Module 16: Network Security Fundamentals
16.1 Security Threats and Vulnerabilities
16.2 Network Attacks
16.3 Network Attack Mitigations
16.4 Device Security

Module 17: Build a Small Network
17.1 Devices in a Small Network
17.2 Small Network Applications and Protocols
17.3 Scale to Larger Networks
17.4 Verify Connectivity
17.5 Host and IOS Commands
17.6 Troubleshooting Methodologies
17.7 Troubleshooting Scenarios

GRADING:

A large percentage of this course is computer-based training and therefore attendance and completion of all modules is key to obtaining a good grade. There will be labs/activities, assessment exams and a Final exam. Final grades will be submitted no later than ten working days from completion of the last class. Student performance will be evaluated as follows:

Grading Percentages	
Participation (example: Attendance)	5
Labs	5
Assessments (11 total)	30
PT Skills Challenges	10
Skills Based Final	25
Final Exam (online)	25
Total	100

Q&A Class Schedule - Subject to change based on class progress.

Week	Date	Topic	Requirement	Mandatory Labs/Activities
Week 1	Sep28-Oct 3	Orientation	Practice Exam	
Week 2	Oct 4-oct 10	Module 1: Networking Today Module 2: Basic Switch and End Device Configuration	Study online Md. 1 & 2 Know the Objectives Do Practice Quiz/Activities	1Activities: 1.1.2, 1.2.6, 1.3.3, 1.4.5, 1.5.6, 1.6.6, 1.7.5, 1.7.10, 1.8.3 PT 1.5.7, Lab 1.9.3 2 Activities: 2.1.6, 2.2.3, 2.2.5, 2.2.8, 2.3.4, 2.3.6, 2.4.6, 2.4.8, 2.5.3, 2.6.3, 2.18.1, 2.8.2 PT 2.3.7, PT 2.2.2, PT 2.7.6, PT 2.9.1 Lab 2.3.8, Lab 2.9.2
Week 3	Oct 11-oct 17	Module 3: Protocols and Models Module 4: Physical Layer	Study online Md. 3 & 4 Know the Objectives Do Practice Quiz/Activities	3Activities: 3.1.1, 3.1.12, 3.2.4, 3.3.6, 3.4.5, 3.6.6, 3.7.11 PT3.5.5, Lab 3.4.4, Lab 3.7.9, Lab 3.7.10 4 Activities: 4.1.3, 4.2.7, 4.3.6, 4.4.4, 4.5.7, 4.6.4, PT 4.6.5, PT 4.7.1 Lab 4.6.6 Assessment Md. 1-3 10/21/20
Week4	Oct 18-oct 24	Module 5: Number Systems Module 6: Data Link Layer	Study online Md. 5 & 6 Know the Objectives Do Practice Quiz/Activities	5Activities: 5.1.2, 5.1.4, 5.1.6, 5.1.9, 5.1.10, 5.2.2, 5.2.5 6 Activities: 6.1.5, 6.2.5, 6.3.5 Assessment Md. 4-6 10/28/20
Week 5	Oct 25-oct 31	Module 7: Ethernet Switching Module 8: Network Layer	Study online Md. 7 & 8 Know the Objectives Do Practice Quiz/Activities	7Activities: 7.1.5, 7.3.4, 7.3.5, 7.3.6, 7.4.6 Lab 7.1.6, 7.2.7, 7.3.7 8 Activities: 8.1.7, 8.2.3, 8.2.4, 8.3.5, 8.3.6, 8.4.5, 8.5.5, 8.5.7 Assessment Md. 4-7 11/4/20
Week 6	Nov 1-Nov 7	Module 9: Address Resolution Module 10: Basic Router Configuration	Study online Md. 9 & 10 Know the Objectives Do Practice Quiz/Activities	9 Activities: 9.1.4, 9.2.3, 9.2.4, 9.2.5, 9.2.10, 9.3.1, 9.3.5 PT 9.1.3, PT 9.2.9, PT 9.3.4 10 Activities:10.4.1 part 1&2 PT 10.1.4, PT 10.3.4, PT 10.3.5, PT10.4.3 Lab 10.4.4

				Assessment MD. 8-10 11/11/20
Week 7	Nov 8-Nov 14	Module 11: IPv4 Addressing	Study online Md. 11 Know the Objectives Do Practice Quiz/Activities	11 Activities: 11.1.5, 11.1.7, 11.1.8, 11.2.4, 11.3.3, 11.3.7,11.3.8, 11.4.4, 11.5.3, 11.5.4, 11.6.4, 11.7.4, 11.8.1, 11.8.2, 11.8.6, PT 11.5.5, PT 11.7.5, 11.9.3, Lab 11.6.6, 11.10.2
Week8	Nov 15-Nov 21	Module 12: IPv6 Addressing	Study online Md. 12 Know the Objectives Do Practice Quiz/Activities	12 Activities: 12.1.3, 12.2.4, 12.3.8, 12.5.8, 12.8.5, PT 12.6.6, 12.9.1, Lab 12.7.4, 12.9.2
Week 9	Nov 22-Nov 28	Module 13: ICMP Module 14: Transport Layer	Study online Md. 13 & 14 Know the Objectives Do Practice Quiz/Activities	13 Activity 13.1.6, 13.3.4, PT 13.2.6, 13.2.7, 13.3.1, Lab 13.3.2 14 Activities: 14.1.7, 14.2.5, 14.3.5, 14.4.5, 14.5.5, 14.5.6, 14.6.2, 14.6.4, 14.6.8, 14.7.5, PT 14.8.1 Assessment MD. 11-13 12/2/20
Week10	Nov 29-Dec 5	Module 15: Application Layer Module 16: Network Security Fundamentals	Study online Md. 15 & 16 Know the Objectives Do Practice Quiz/Activities	15 Activities: 15.1.4, 15.2.5, 15.3.5, 15.4.9, 15.5.3, Lab 15.4.8 16 Activities: 16.1.4, 16.2.5, 16.3.8, PT 16.4.6, PT 16.5.1, Lab 16.2.6, 16.4.7, 16.5.2 Assessment MD. 14-15 12/9/20
Week11	Dec 6-Dec 12	Module 17: Build a Small Network	Study online Md. 17 Know the Objectives Do Practice Quiz/Activities	17 Activities: 17.1.6, 17.2.4, 17.3.4, 17.5.8, 17.6.5, PT 17.5.9, PT 17.7.7, PT 17.8.2 PT 17.8.3, Lab 17.4.6, Lab 17.7.6, Lab 17.8.1 Assessment MD. 16-17 12/16/20
Week12	Dec 13-Dec 19	Review	MAKE UP Practice Exam	MAKE UP Practice Exam
Week13	Dec 21 Dec 23	**Skills Exam** **Final Exam**	**Skills Exam** **Final Exam**	**Skills Exam** **Final Exam**

Experiential Education
Our Educational Philosophy

The age old question that is always debated is what is the most important; knowledge acquired from documents or experienced acquired from doing? Many companies today would rather hire two young inexperienced employees with degrees and advanced knowledge as replacements for a senior employee with years of experience in the same industry. Why? Usually for pure economic reasons.

Although this debate will continue, Dynasty wants everyone to know which side of the fence we stand on. In the world system in which we find ourselves, we believe that no documented knowledge (no matter how it stimulates the imagination) can replace the knowledge gained through experience. Computers can be programmed to act on documented knowledge, but to implement artificial intelligence the computer must experience an event or situation to know how to adjust its programs. In other words, it must adapt from doing.

Don't get us wrong. We are huge advocates of reading books. We also believe that reading is fundamental. However, if you have never felt heat, there is no sense of reference from which the book can stimulate your imagination. If you have no relative understanding of the smell of lilacs, the book cannot give it to you. This is the fundamental reason we believe experiential education is so vital to true education and there are many, many systems in history that will bear us out.

The first of these systems or institutions was called the Guild. The Guild is an association of craftsmen in a particular trade. These organizations originated back as early as the 3rd century in Greece called

Kainon and have existed in one form or another for centuries. They existed in just about every major country or continent of the world including Egypt, Rome, Germany, China India and Iran.
At the end of the 18th century, guilds greatly lost their influence and began massive declines because they were believed to oppose free trade and hinder technological innovations.
Another very powerful system that grew out of the system of guilds was the apprenticeship system for which Britain has a long history that stretches back to 1563. By the mid 1900s, there were approximately 240,000 apprentices which declined to 53,000 by 1990. This was due primarily to higher education trending more towards intellectual and professional careers rather than skills or crafts.
Today, the Apprenticeship System and to some extent, the Guild System have been revitalized through The National Apprenticeship Service (NAS) and are represented in most every state in the country.
Some examples of modern day guilds are The Screen Actors Guild, Writers' Guild of America, The Newspaper Guild, real Estate Brokerage (National Association of Realtors) and even The American Medical Association and the American Dental Association.
This is where Dynasty comes in. We believe that this type of "Hands on, Earn while you learn" education should also be extended to most, if not all of the professional skills and careers and we should start it all with a foundational business education.
Even the Bible says in James 2:17-18, that "Faith without works is dead", which simply means that if you are not applying your faith and exercising your faith in what you do daily, then you only have intellectual faith which has no profit.
So, there you have it! Experiential education for doers. And if we enhance our existing intellectual system of education with this system, we will not only maintain our incredible thirst for knowledge, we will amplify our ability to make it happen.

How Does It Work

How does it work in the actual class room?
We believe that you must first jump in to learn on your own rather than being lectured to.
So in a safe environment(we wouldn't throw you into an airplane hoping that you would eventually learn to fly it) we allow you to go through the online teaching on your own, learning as much as you can. You then participate in the practice activities and practice test to see if you are on the right track. You also will have some testing activities called assessments, labs and skills integration that will determine your grade for each course. After completing the practice activities the areas that you still don't understand you formulate questions and send them to your instructor. Your instructor sorts the questions and prepares a Q & A session to teach mostly what was asked in your batch of questions. If your particular question does not get answered the instructor will either schedule a personal or small group session for you or he/she will schedule you with another student who is willing to help you answer the question.
The Q & A session will be conducted via a webinar once a week and will usually last between 1 and a half to two hours depending on the number of questions. To be included in the batch your questions must be submitted at least three days before the scheduled webinar. This method of education requires you to have a much higher interest what you are learning than merely passing a test. And like learning to ride bicycle your instructors/mentors are only there to assist you along the way.

Terms and Conditions

I agree to the mandated learning arrangement described in the above "How does it work" section of the Experiential Education philosophy.
I can receive a complete refund of my tuition on or before my orientation session
I must make a 70% grading standard to pass the course for credit purposes

Name _____ Signature _____ Date _____