Ridge View High School
Columbia, South Carolina

Electricity 2 Syllabus*

Instructor: Mr. Michael S. Houck E-Mail:mhouck@rvh.richland2.org 803.699.2999x368

COURSE TITLE: Electricity 2

Course Description:

This course is designed to prepare the student for the C-Tech certification. Course content will include topologies, cable construction and troubleshooting, and networking equipment and use.

PREREQUISITE:

- Completion of Electricity 1

CREDIT: 1 Carnegie unit

COURSE COMPETENCIES:

See attached course outline for objectives.

Note* The instructor reserves the right to change or alter this document as needed.

INSTRUCTIONAL MATERIALS, SUPPLIES, AND EQUIPMENT:

All books and equipment are provided by the instructor. Students are required to provide paper, pencil, pen, and 3-Ring Binder.

REQUIRED TEXTBOOKS / INSTRUCTIONAL MATERIAL:

C-Tech. Introduction to Telecommunications, 1.2.1
C-Tech Associate, Sparta New Jersey 2001

C-Tech. Introduction to Network Cabling; Copper-Based Systems, Version 3.3
C-Tech Associate, Sparta New Jersey 2001

EVALUATION SYSTEM: Students will be given five (5) minutes to calculate and record his/her class average and attendance each Friday and will be graded using the following criteria each grading period:

"Students will be held to the Academic Integrity policy of Richland District II."

Daily Grade = **15%** to include:

a. Attendance
b. Participation
    1. Includes bringing required supplies to class each day.
c. Safety
d. Leadership
e. Self-control

Homework = **10%** (includes Students' Notebook and Review Questions.)

Quizzes = 20%

Tests = **25%**

Hands-On Projects = **30%**. Each hands-on activity is graded on the following criteria:

a. Safety
b. Preparation
c. Logical Sequence
d. Workmanship

Semester Examination = 20% of Semester Grade

ALL WRITTEN TESTS MUST BE PASSED WITH 70% ACCURACY.

Students who score below 70% will be allowed one re-test after a 24 hour waiting period. All re-tests will be taken on the student's time.

GRADING CRITERIA:

A = 100 – 93
B = 92 – 85
C = 84 – 77
D = 76 – 70
F = 69 or below

CLASSROOM RULES:

1. Enter the classroom quietly before the tardy bell rings.
2. Begin working on class assignments.
3. Do not sit on top of tables, desks, or AC Units.
4. Bring all required class materials (i.e., paper, pencil) to class everyday.
5. Only one student may leave the classroom at any time during class.
6. **No Food or Drinks are allowed.**

7. No horse-playing is allowed.

8. Do not energize any equipment without permission.

9. You are responsible for cleaning up after yourself.

10. Listen to the teacher and follow his instructions.

PENALTIES FOR VIOLATING CLASS RULES :

Rule 1

- First Offense: Oral Warning
- Second Offense: Tardy Issued
- Third Offense: Tardy Issued / Conference with Parents

Rules 2, 3, 4, & 9

- First Offense: Oral Warning
- Second Offense: Conference with Parents
- Third Offense: Discipline Referral

Rule 5

Students may only leave the classroom in case of an emergency. If the student leaves the classroom without permission or goes anywhere except to the destination where permission was granted, the student will be referred to an Administrator.

Rules 6, 7, & 8

- First Offense: Conference with Parents and Administration Notified
- Second Offense: Discipline Referral
- Third Offense: Discipline Referral

Rule 10 - Covers all rules not previously listed.

- First Offense: Conference with student
- Second Offense: Conference with Parents and Administration
- Third Offense: Discipline Referral

RIDGE VIEW HIGH SCHOOL
COLUMBIA, SOUTH CAROLINA

Electricity 2
OUTLINE

Student:_____

Class Period:_____

Mr. Houck, Teacher

mhouck@rvh.richland2.org

School Year: 2008 - 2009

http://www.rvhs-aplus.com

COURSE OUTLINE	*Instructor's Initials*	*Check off or Grade*
Introduction to Telecommunications		
Module 1 – The Interactive Physical Layer **In this module, students are introduced to the basic telecommunication systems and the physical layer components that are present in the field of telecommunications. These concepts are introduced through the use of the interactive Telecommunication Board (ITB). This module also provides the initial information on the DAVE-3 test set and students are familiarized with it and its use. This module also defines how the ITB can be used to simulate signal generation and testing. In addition, students will use the DAVE-3 tester to trace the systems on the ITB.** Upon completion of this module students will be able to: 1. Identify the Physical layer components of the various telecommunication systems represented on the ITB. 2. Trace the signal flow of the telecommunication systems represented on the ITB 3. Demonstrate knowledge of the basic functions of the DAVE-3 test set and use it to determine the continuity of test cables and the different telecommunications systems represented on the ITB 4. Identify how the Student Personal Optical Tester (SPOT) is used to check continuity of the Fiber Optic System on the ITB		
Read pages 1 – 48.		
Complete Activities 1.1 through 1.4		
Complete Module 1 Quiz		
Complete Technology Learning Activity on Page 48		
Module 2 – Telecommunications: From the Beginning. **In this module, students are introduced to the history and function of various telecommunications systems, including telegraph, telephone, radio, television, networked computers, facsimile machines and cellular technology. Students will develop an understanding of how the telecommunications industry distributes information to the workplace and to homes.** Upon completion of this module students will be able to: 1. Define the communication process		

2. Define the telecommunication process 3. Identify key developments in the history of telecommunications as it pertains to the following devices: Telegraph Telephone Radio Television Computer Networks Facsimile Machine Cellular Telephone 4. Identify the Physical layer cabling systems used for the distribution of data, voice, and video in the systems defined above. 5. Identify simple block diagrams showing the telecommunication process in the above communication devices.		
Read pages 1 – 32		
Complete Activities 2.1 through 2.3		
Complete Module 2 Quiz		
Module 3 – Transmission Media and Physical Layer Components **In this module, students are introduced to the characteristics of the cabling systems and terminations that constitute the Physical Layer of the telecommunications field. These systems and terminations were introduced in Module 1 and this module further defines the concepts of transmission media and the construction characteristics, industry standard configurations, signal transmission capability and application of each cabling system.** Upon completion of this module students will be able to: 1. Define the level or category associated with the different types of twisted pair cabling 2. Define the reasoning for the twisted pair system that includes noise reduction and cross talk elimination techniques 3. Identify 2-pair system cabling characteristics that include pair tip and ring identification. 4. Identify 4-pair system cabling characteristics that include pair tip and ring identification. 5. Define the characteristics of the twisted pair modular connecting system to include the RJ-11 and RJ-45 systems as well as associated plugs, jacks,		

patch cords, and adapters 6. Demonstrate and identify pair to pin configurations using the EIA/TIA 570 standard 7. Define the characteristics of coaxial cable systems to include BNC and F-Type Connectors. 8. Define the characteristics of the Fiber Optic cable systems and the ST connector. **Read pages 1 - 27**		
Complete Activities 3.1 through 3.4		
Module 4 – Safety **At the completion of this module, students will have a familiarity with the general safety precautions to protect themselves on the job site, in addition to knowledge of electrical hazards, hazardous equipment safety and fire safety.** Upon completion of this module students will be able to: 1. Identify safety precautions that insure personal protection. 2. Define key points concerning Safety on the Job Site. 3. Define safety dealing with electrical equipment. 4. Identify and explain common safety procedures when working with hazardous materials. 5. Identify and explain the safety procedures and precautions that should be followed for fire prevention and safety.		
Read pages 1 - 11		
Complete Module 4 Quiz		
Module 5 – Tools, Construction Techniques, and Test Equipment utilized in Network Cabling **In this module, students will cover the basic tools and techniques that are used by line technicians to construct cabling systems. In addition, we will construct both a 2-pair patch cable terminated with 6P4C connectors and we will construct a coaxial patch cable terminated with F-Type connectors. After the two cabling systems are constructed we will perform continuity testing on them using the DAVE-3 test set.** Upon completion of this module students will be able to:		

1. Identify and use coaxial cable stripping tools. 2. Identify and use the RJ-11 stripping and crimping tool. 3. Safely and correctly strip and terminate a 2-pair telephone cable with RJ-11 connectors. 4. Safely and correctly strip and terminate a coaxial cable with Screw-on F-Type connectors. 5. Perform continuity checks on newly constructed cables using the DAVE-3 test set.		
Read pages 1 - 11		
Complete Activities 5.1 and 5.2		
Complete Technology Learning Activity on Page 11		
Module 6 – Testing and troubleshooting the Physical Layer ***In this module, students will be introduced to physical layer testing and troubleshooting using the ITB. Students will use the DAVE-3 to test, identify and record faulty system indications. You will become familiar with basic signal troubleshooting techniques.*** *Upon completion of this module students will be able to:* *1. Define the terms – Testing, troubleshooting, and Preventative Maintenance.* *2. Perform Operational checks on the DAVE-3 to insure its ability to test the systems of the ITB.* *3. Perform end-to-end signal testing using the DAVE-3 to test the cabling systems on the ITB.* *4. Perform selective testing of individual cabling subsystems on the ITB.* *5. Perform signal testing of the Fiber Optic system using the SPOT* *6. Identify the basic characteristics of the following basic Troubleshooting Techniques:* *The Split Half Method* *Fault Isolation Techniques* *Hard Fault Troubleshooting* *Intermittent Faults* *7. Demonstrate the use of patch cords, adapters, and bridging clips to simulate or to correct Physical Layer malfunctions on the ITB.*		

Read pages 1 - 14		
Complete Activities 6.1 and 6.2		
Complete Technology Learning Activity on Page 14		
Module 7 – Telecommunications: A Glimpse into the Future. **In this module, students will be introduced to some of the new technologies being developed in the Telecommunications Industry. Students are given an opportunity to speculate about future trends and assess the positive and negative impacts of some of the possible future technological developments.** Upon completion of this module students will be able to: 1. Define Smart House and identify its component parts that include Wiring Infrastructure, Personal Computers, and Smart Devices. 2. Identify possible future developments in Wireless Systems. 3. Identify possible future developments in Consumer Electronics.		
Read pages 1 - 8		
Complete Module 7 Quiz		
Introduction to Network Cabling – Copper Based Systems		
Goal 1: The ACT with DAVE Training Aid **After completion of this module, students will be able to identify all of the components located in the ACT with DAVE. They will be able to set up the ACT unit and be able to identify the functions of the DAVE-3 testers. Students are also familiarized with the tools in the ACT unit as well as their function in the cabling field.** Objectives: 1.1 Identify all components of the ACT Panel 1.2 Identify all aspects of the Banner Board 1.3 Identify elements in the cable supply 1.4 Identify the different functions of the DAVE-3 transmitter and receiver 1.5 Identify all of the cables and test adapters in the ACT with DAVE Training Aid 1.6 Identify the types of tools located in the training aid and their function to include: Punchdown Tool, Cable Strippers, Coaxial Cable Crimper, RJ45 Crimper, Cable Cutter		

1.7 Identify the contents of the Student Consumable kit 1.8 Identify the contents of the optional tool kit		
Read Pages 1.1 – 1.25		
Complete Activities 1.1 – 1.3		
Complete Module 1 Test		
Goal 2: Twisted Pair Cabling Systems **After completion of this module, students will be able to identify and describe the characteristics, application, and configuration of various cable types and terminations** Objectives: 2.1 Identify the characteristics of twisted pair cables to include: 2.1.1 Twist length 2.1.2 Gauge 2.1.3 Solid and stranded cabling systems 2.1.4 Tip and Ring 2.2 Define Plenum and Riser with regard to copper cabling 2.3 Given a cabling substitution chart, recommend a correct cable substitution 2.4 Define bandwidth and bits per second as it pertains to twisted pair cabling systems 2.5 Identify the color code for four pair cabling 2.6 Identify the following modular plug and jack pair to pin configurations: 2.6.1 568A 2.6.2 568B 2.6.3 USOC 2.7 Identify cable configurations and uses in regards to: 2.7.1 Straight through cable 2.7.2 Roll over cable 2.7.3 Cross over cable 2.8 Complete a wire map of a four pair UTP cable terminated in different configurations 2.9 Define IDC as insulation displacement connection 2.10 Identify four types of IDC termination devices 2.11 Identify IDC termination procedures using a 66 block 2.12 Identify IDC termination procedures using a 110 block 2.13 Identify IDC termination procedures using a Krone (LSA) block 2.14 Identify IDC termination procedures using a BIX block 2.15 Identify modular patch panel configurations 2.16 Define MAC as Moves Adds and Changes 2.17 Identify Screened four pair (ScTP) cable 2.18 Identify Modular Jacks and Plugs 2.19 Define termination procedures of ScTP cable on a 66 Connecting Block		

2.20 Define termination procedures of a 25 pair cable on a 66 Connecting Block 2.21 Define termination procedures of a 25 pair cable on a 110 Connecting Block		
Read Pages 2.1 – 2.50		
Complete Activities 2.1 – 2.6		
Complete Module 2 Test		
Goal 3: Safety **At the completion of this module, students will be able to identify and explain the safety precautions in terms of personal protection, workplace safety, and other hazards found on the job site. Students will also be familiarized with Fire Stopping and Grounding and Bonding processes and practices.** Objectives: 3.1 Define safety as it applies to the Network Cabling Specialist 3.2 Define OSHA and its role in the workplace safety 3.3 Identify and explain the safety procedures to be followed for personal protection to protect: 3.3.1 Head and Scalp 3.3.2 Eyes and Ears 3.3.3 Hands and Feet 3.3.4 Respiratory 3.3.5 Skin 3.3.6 Back 3.4 Identify and explain the safety procedures to be followed at the work site to include: 3.4.1 Special Instructions 3.4.2 Special Training 3.4.3 Restrictions 3.4.3 Permits 3.4.5 Work Permits 3.4.6 Lock-out Procedures 3.4.7 Access Routes		

3.4.8 Locations of Safety Equipment 3.5 Identify and explain the safety procedures to be followed to prevent electrical hazards to include: 3.5.1 Function and use of GFCI 3.5.2 Extension Cords 3.5.3 Proximity and Hot Work 3.5.4 Insulated Tools 3.6 Define the importance of Bonding and Grounding electrical circuits and telecommunications devices 3.7 Define the purpose of MSDS when working with hazardous materials 3.8 Identify and explain the safety procedures to be followed when working with tools to include: 3.8.1 Hand Tools 3.8.2 Power Tools 3.9 Define workspace safety with regard to: 3.9.1 Stability Control 3.9.2 Fall Prevention and Protection 3.9.3 Ladder safety 3.9.4 Scaffolding 3.9.5 Scissor Lifts 3.9.6 Barricades 3.9.7 Crawl Spaces 3.10 Identify and explain the safety procedures and precautions that should be followed for fire prevention and safety to include: 3.10.1 Location and Access to Fire Alarms 3.10.2 Emergency Exits 3.10.3 Classes of Fire Extinguishers and Types of Fires		
Read Pages 3.1 – 3.38		
Complete Activities 3.1 – 3.4		

Complete Module 3 Test		
Goal 4: Constructing / Testing 4-Pair Cabling Systems **At the completion of this module, students will be able to construct, test, and troubleshoot 4 pair twisted pair cabling systems. Students use the ACT with DAVE unit to test cabling systems for shorts, opens, transposals, split pairs, dual lighting LEDs and reversals and map pair to pin configurations.** Objectives: 4.1 Identify the ACT with DAVE units: 4.1.1 Identify and define the pair layout and pin assignment illustrated on the ACT with DAVE Banner Board 4.1.1.1 Define Foreign Voltage and how it applies to cabling systems 4.1.2 Define and correctly interpret DAVE-3 Receiver responses and pair to pin configurations for the following conditions: 4.1.2.1 A normal configured cable 4.1.2.2 A cable with reversals 4.1.2.3 A cable with opens 4.1.2.4 A cable with a short 4.1.2.5 A cable with a Split Pair 4.1.2.6 A cable that causes Dual Lighting of a DAVE-3 LED 4.1.2.7 A cable with transposals 4.2 Test a ScTP cable using the DAVE-3 Test Set 4.3 Diagram a wire map for a termination UTP cabling system 4.4 Define set up an use procedures for the 3 blade cable stripper and cable jacket stripper 4.5 Define how to use the 8P8C crimper 4.6 Given UTP cable, plugs and tools, correctly terminate and test a UTP cabling system 4.7 Given ScTP cable, shielded plugs and tools, correctly terminate and test a ScTP		

cable system 4.8 Using the ACT panel and the DAVE-3 test set observe a foreign voltage indication 4.9 Using the ACT panel configure the jumpers and anticipate and record the DAVE-3 responses for the following conditions: 4.9.1 Open 4.9.2 Short 4.9.3 Reversal 4.9.4 Transposal 4.9.5 Transposal and Reversal 4.9.6 Split Pairs, Dual Lighting LEDs		
Read Pages 4.1 – 4.64		
Complete Activities 4.1 – 4.12		
Complete Module 4 Test		
Goal 5: Troubleshooting / Punching Down of 4-Pair Cabling Systems **At the completion of this module, students will be able to terminate, punch down, and test on 66 and 110 connecting blocks, and complete the construction of jacks. Students use the ACT with DAVE unit to test and troubleshoot cabling systems and map pair to pin configurations. Students also perform a Tone and Trace of a UTP cabling System.** Objectives: 5.1 Interpret and wire map the DAVE-3 responses for multiple UTP cabling faults. 5.2 Using the ACT panel, a 66 Block Adapter and bridging clips, test a 4-pair cable between a modular jack and a 66 Block 5.3 Using the ACT panel, test a 4-pair UTP cable between a modular jack and a 110 Block. 5.4 Using the ACT patch panel, test a 4-pair UTP cable between a modular jack and a patch panel. 5.5 Using the ACT panel, terminate and test a 4-pair UTP cable on a 66 Connecting Block.		

5.6 Using the ACT panel, terminate and test a 4-pair UTP cable on a 110 Connecting Block. 5.7 Terminate and test a 4-pair UTP cable on a modular jack. 5.8 Using the ACT panel and the DAVE-3 test set, tone and trace a 4-pair UTP cable.		
Read Pages 5.1 – 5.52		
Complete Activities 5.1 – 5.9		
Complete Module 5 Test		
Goal 6: COAXIAL CABLE **At the completion of this module, students will be able to identify, terminate and test coaxial cabling systems that are used in networking and telecommunication, and understand their application.** Objectives: 6.1 Define common coaxial cabling applications in regards to: 6.1.1 Cable Television Systems 6.1.2 Cable Modems 6.1.3 Digital Satellite Systems 6.1.4 Local Area Networks 6.2 Identify the component parts of a typical coaxial cable 6.3 Identify the three most common types of coaxial cable connectors as: 6.3.1 BNC 6.3.2 F-Type 6.3.3 N-Type 6.4 Identify the tools used for installing connectors on coaxial cable 6.5 Demonstrate the ability to set the 3 blade stripper to terminate a coaxial cable 6.6 Identify the crimp procedure used to terminate coaxial cable 6.7 Identify the compression procedure used to terminate coaxial cable		

6.8 Identify what the crimper eccentric adjustment is used for 6.9 Identify the steps is coaxial cabling termination process 6.10 Terminate and test RG-59 coaxial cable system using F-Type connectors 6.11 Test and troubleshoot constructed coaxial cables using the DAVE-3 test set 6.12 Terminate an RG-59 coaxial cable system using BNC connectors 6.13 Identify the steps to terminate quad shield coaxial cable with F-Type connectors 6.14 Identify the component parts of a quad shielded coaxial cable		
Read Pages 6.1 – 6.30		
Complete Activities 6.1 – 6.4		
Complete Module 6 Test		
Goal 7: Commercial Cabling Topologies and Standards **At the completion of this module, students will be able to explain the role of codes and standards and commercial cabling topologies. Students will be able to identify commercial cabling subsystems. Students will also be familiarized with cable labeling and equipment color code practices and distinguish between mandatory and advisory language in codes and standards.** Objectives: 7.1 Define the roles of codes and standards in dealing with Copper Cabling Systems 7.2 Identify the standards that pertain to copper cabling in the commercial environment 7.3 Identify the topologies used in commercial copper cable installations 7.4 Identify the six subsystems of a commercial cabling system as: Entrance Facility, Backbone Cabling, Horizontal Cabling, Telecommunications Room, Equipment Room, and Work Area. 7.5 Identify the functions of a Telecommunications Room 7.6 Define maximum cable lengths for the various telecommunication links 7.7 Identify the types of cable recommended for commercial applications 7.8 Identify the main environmental hazards of copper cabling as Mechanical, Ingress, Climate, and Electromagnetic (MICE) 7.9 Given a diagram of a commercial cabling system, identify the backbone cable, main cross connect, intermediate, cross connect, horizontal cross connect, first and second level backbone cable and the work area 7.10 Define the role of the National Electrical Code (NEC) as it pertains to copper cabling systems 7.11 Identify mandatory and advisory terms in regards to codes and standards		

7.12 Given blueprint symbols, identify common copper components in a commercial building 7.13 Define how cables should be labeled		
Read Pages 7.1 – 7.23		
Complete Activities 7.1 – 7.2		
Complete Module 7 Test		
Goal 8: Residential Cabling Topologies & Standards **In this module, students are familiarized with the standards that apply to residential copper network cabling in accordance with the EIA/TIA 570 standard for both single residences and multi-tenant residences. Students will be familiarized with residential system components and topologies. Students will identify the different grades of residential cabling as set forth in residential standards, as well as structured cabling systems. Students will also calculate the cost of parts for a residential installation.** Objectives: 8.1 Identify that the ANSI/EIA/TIA 570 is the standard that applies to residential cabling 8.2 Identify the copper cabling types used in residential applications 8.3 Define structured cable 8.4 Identify Smart Home Technology Systems 8.5 Identify the elements of a single residential cabling system to include: 8.5.1 Gateway 8.5.2 Auxiliary Disconnect Outlet 8.5.3 Outlet Cabling 8.5.4 Outlets 8.6 Identify the recommended cabling topology used in a residence per EIA/TIA standards 8.7 Define maximum cabling distances recommended for residential applications per EIA/TIA standards 8.8 Given a cabling diagram of a single family residence, correctly label the copper cabling components		

8.9 Identify the elements of a Multi-dwelling residence to include: 8.9.1 Entrance Facility 8.9.2 Main Terminal Space 8.9.3 Backbone Cabling 8.9.4 Floor Serving Terminal 8.9.5 Distribution Devices 8.9.6 Auxiliary Disconnect Outlets 8.9.7 Outlet Cabling 8.9.8 Outlets 8.10 Given a diagram of a multi-tenant residence correctly label the copper cabling systems components 8.11 Given a cabling and connector price list and a diagram of a home, calculate the cost of materials to complete a cabling job		
Read Pages 8.1 – 8.23		
Complete Activities 8.1 – 8.4		
Complete Module 8 Test		
Goal 9: Placement of Copper Cable Systems – Residential & Commercial **At the completion of this module, students will be able to identify cable placement methods and procedures. Students will identify the steps needed for a successful cable pull as well as the tools and devices required.** Objectives: 9.1 Identify the cable process as Planning, Preparation, Pulling, Terminating, and Testing 9.2 Define how to use a pull string to begin a cable pull 9.3 Identify distance considerations between network cables and power sources when dealing with: 9.3.1 Transformers 9.3.2 Electrical Service Entrance		

9.3.3 High Voltage Wiring and Fixtures 9.3.4 110 volt Wiring 9.3.5 Conduits 9.4 Describe how to label cabling systems 9.5 Identify types of cable support systems 9.6 Identify the tools used in the placement of copper cable to include: fish-tapes, rods, and De-Reelers 9.7 Define minimum bend radius for cable placement 9.8 Define how to pull cable from spools and reels 9.9 Describe the process of pulling four or five UTP or ScTP cables at once 9.10 Define how to pull cable from cartons 9.11 Identify the safety precautions relative to cable pulling 9.12 Describe the process of attaching a pulling cable to a copper cable 9.13 Describe the process of pulling 25 pair cable 9.14 Describe the process used to complete an installation through a vertical pull 9.15 Describe the process used to complete an installation through a horizontal pull 9.16 Describe the steps to pull a copper cable into a pathway 9.17 Describe how to pull a cable through a conduit 9.18 Describe the usage of raceways 9.19 Describe the limitations for cabling in a conduit 9.20 Describe how to dress an outlet panel or closure 9.21 Describe the importance of Fire Stopping 9.22 Identify the technician's responsibility concerning fire-stopping materials 9.23 Identify the minimum amount of cable needed to be in place after the cable		

has been placed in a closure or outlet 9.24 Define how to remove an abandoned cabling system		
Read Pages 9.1 – 9.36		
Complete Activities 9.1 – 9.2		
Complete Module 9 Test		
Goal 10: Testing & Troubleshooting Copper-Based Cabling Systems **At the completion of this module, students will be able to define cabling system performance parameters and have an understanding of copper based system testing. Students will be familiarized with copper cabling troubleshooting methods and they will identify solutions to copper cabling faults.** Objectives: 10.1 Define attenuation 10.2 Identify the signal characteristics of both analog and digital systems 10.3 Define insertion loss and return loss 10.4 Identify that noise in a cabling system can be either internally or externally generated 10.5 Define that twisted cable, differential amplifiers, and good installation practices minimize the effects of noise in a cabling system 10.6 Define that signal to noise ratio (S/N Ratio) is the ratio of the signal amplitude to the amplitude of the noise 10.7 Distinguish between Near End Crosstalk (NEXT) and Far End Crosstalk (FEXT) 10.8 Define Wire Map 10.9 Define Cable Length, Propagation Delay, and Delay Skew as system features to be tested 10.10 Identify system testing as a three step process that includes : Inspection, Testing, and Documentation 10.11 Define consolidation point and describe what it is used for 10.12 Describe how to test a cable channel and a permanent link 10.13 Given a diagram of an overall copper cabling channel, define the cabling segments and devices		

10.14 Describe the Split Half troubleshooting method 10.15 Define that Copper Cabling System performance is based on the following: 10.15.1 Cable Characteristics 10.15.2 Installation Techniques 10.15.3 Connections 10.15.4 Connecting Hardware 10.16 Define safety requirements in regards to testing a cabling system 10.17 Given a blueprint and price figures, cost out a typical installation		
Read Pages 10.1 – 10.33		
Complete Activities 10.1 – 10.3		
Complete Module 10 Test		
Goal 11: Local Area Network Overview **Upon completion of this module, students are familiarized with workings of Ethernets and token ring Local Area Networks (LANS) and review the OSI Model. Students also examine the role of media conversion in a network. The standards and practices of wireless networks are also covered.** Objectives: 11.1 Describe how to install a NIC card in a PC 11.2 Identify a Local Area Network (LAN), a Wide Area Network (WAN), and a Metropolitan Area Network (MAN) 11.3 Given an example of a network topology, determine if it is a Bus, Star, or a Token Ring 11.4 Define collision as it pertains to networking 11.5 Define Ethernet and Ethernet terms to include: 11.5.1 Medium 11.5.2 Node 11.5.3 Segment		

11.5.4 Frame 11.5.5 Protocol 11.6 Define Media Access Control (MAC) as it pertains to Ethernet Protocol 11.7 Identify the three different parts of a standard Ethernet naming convention 11.8 Define a hybrid network as one that uses both copper and fiber optic media 11.9 Identify the four main reasons that hybrid networks are used as Distance, Interference, Security, and Expense 11.10 Identify that the media used in a network is the first layer of the Open Systems Interconnect Model 11.11 Define Wireless Network 11.12 Identify that wireless LANs solve problems of mobility and installation 11.13 Given a wireless network setup, identify the purpose and function of Ad Hoc or Peer-to-Peer arrangements, and Access Points 11.14 Identify the 802.11 standard as the wireless networking standard 11.15 Define the term WiFi 11.16 Identify that Bluetooth is not part of the 802.11 Standard 11.17 Identify that most wireless LAN systems use Frequency Hopping or Direct Sequence Spread Spectrum technologies 11.18 Identify that security is a concern associated with wireless networks 11.19 Define three ways a technician can increase the security of a wireless network		
Read Pages 11.1 – 11.31		
Complete Activities 11.1 – 11.2		
Complete Module 11 Test		
Complete Final Exam and Hands On Projects		


BLAZERS