Waldo County Technical Center
Waldo, Maine

WALDO COUNTY TECHNICAL CENTER

Computer Careers

Course Number:	CC2N	**Course Title:**	Computer Careers Networking
Credit Hours:	3	**Clock Hours:**	Mon-Fri 11:45-1:45
Instructor:	Jeremiah Johnson	**Room:**	Computer Careers
Office Hours:	N/A	**Voice Mail:**	207-342-1314
E-mail Address:	jjohnson@waldotech.org		

Text:	**Testout NetworkPro Online Curriculum - (9th grade reading level)**
	Testout ServerPro Online Curriculum - (9th grade reading level)
	Testout SecurityPro Online Curriculum - (9th grade reading level)
	EngradePro Online Gradebook
	Network+ Guide to Networks - 6th Edition (10th grade reading level)
	Guide to Networking Essentials - 7th Edition (10th grade reading level)
	Principals of Information Security - 5th Edition (10-11th grade reading level)
	Security+ Guide to Network Security - 5th Edition (10-11th grade reading level)
Suggested Supplies:	Access to the Internet,
Pre/Corequisite:	Computer Careers (1), A+/PCPro Certification or equilalent, Keyboarding, Ability to read, comprehend, & write at a high school level, Intermediate computer proficiency (including file management). Lexile Reading at 1000 or higher is reccommended due to the technical nature of the Material and Textbooks (10th grade reading level).Highly motivated students who are able to work independently and focus on education/training.

Course Description:

The Computer Careers Networking provides an advanced Topic for Students wanting to enter the Computer Networking field. Computer Networking Professional are becoming a required assett to any business. We will spend the first half of the year studying and preparing for the NetworkPro Certification. The second half of the year will be divided into self study for the Network+ certification and further study into Server Setup and Maintenance. This will lead into ServerPro certification as well as possibly working towards a certification in SecurityPro or Security+.

Course Objectives

This course is designed to:

- Introduce students to Networking, Security, and Server skills needed to work in networking technology careers
- Encourage students to explore networking/ Server technology career options, education, and certifications
- Develop skills for obtaining employment through portfolio, interview, and demonstration activities
- Provide students with the necessary skills to sit for the CompTIA Network+, Security+, ServerPro and NetworkPro Industry Certification

Course Activities

This course will include:
1. Lectures and lab projects to be conducted during meeting times
2. Quizzes covering the concepts and information derived from current sections of course material
3. Homework assignments consisting of research or text book questions
4. Lab design projects involving teams or individuals using client & server operating systems to perform common network design configurations
5. Participation in a live work scenario to support the School IT needs.

Unit Topical Outline

1. NETWORKING BASICS
   1.1 Networking Overview, 1.2 Network Topologies, 1.3 The OSI Model, 1.4 Network Signaling, 1.5 Network Protocols, 1.6 Numbering Systems
2. CABLES AND CONNECTORS
   2.1 Twisted Pair, 2.2 Coaxial, 2.3 Fiber Optic, 2.4 Wiring Implementation, 2.5 Troubleshooting Network Media
3. NETWORKING DEVICES
   3.1 Network Adapters, 3.2 Network Devices, 3.3 Internetwork Devices
4. ETHERNET
   4.1 Ethernet, 4.2 Ethernet Specifications, 4.3 Connecting Network Devices, 4.4 Troubleshooting Physical Connectivity
5. IP CONFIGURATION
   5.1 IP Addressing, 5.2 Alternate IP Addressing, 5.3 DHCP Server Configuration, 5.4 DHCP Relay, 5.5 DNS Name Resolution, 5.6 IP version 6, 5.7 Multicast, 5.8 Troubleshooting IP Configuration Issues, 5.9 Troubleshooting IP Communications, 5.10 Troubleshooting Name Resolution
6. SWITCH MANAGEMENT
   6.1 Switch Access, 6.2 Switch IP Configuration, 6.3 Switch Interface Configuration, 6.4 Virtual LANs, 6.5 Trunking, 6.6 Spanning Tree Protocol, 6.7 Switch Troubleshooting
7. ROUTING
   7.1 Routing Basics, 7.2 Routing Protocols, 7.3 Network Address Translation, 7.4 Routing Optimization, 7.5 Routing Troubleshooting
8. FIREWALLS
   8.1 Firewalls, 8.2 Security Appliances, 8.3 Firewall Design and Implementation
9. NETWORK CUSTOMIZATION
   9.1 NetworkBased Storage, 9.2 Voice over IP (VoIP), 9.3 Virtualization, 9.4 Virtual Networking, 9.5 Cloud Computing, 9.6 SCADA Systems
10. WIRELESS NETWORKING
    10.1 Wireless Concepts, 10.2 Wireless Standards, 10.3 Wireless Configuration, 10.4 Wireless Network Design, 10.5 Wireless Network Implementation, 10.6 Wireless Security, 10.7 Wireless Troubleshooting
11. WIDE AREA NETWORKS (WANS)
    11.1 WAN Concepts, 11.2 WAN Connections, 11.3 Internet Connectivity, 11.4 Remote Access, 11.5 WAN Troubleshooting
12. NETWORK POLICIES AND PROCEDURES
    12.1 Network Design, Documentation, and Policies, 12.2 Safety, 12.3 Risk Management, 12.4 Security Policies and Assessments
13. NETWORK SECURITY
    13.1 Physical Security, 13.2 Social Engineering, 13.3 Network Vulnerabilities and Threats 1, 13.4 Network Vulnerabilities and Threats 2, 13.5 Authentication, 13.6 Secure Protocols, 13.7 Remote Access Security, 13.8 Troubleshooting Network Security Issues
14. NETWORK HARDENING
    14.1 Detection and Prevention, 14.2 Penetration Testing, 14.3 Network Hardening, 14.4 Incident Response and Basic Forensics
15. NETWORK MANAGEMENT
    15.1 Update Management, 15.2 Data Protection, 15.3 Remote Management, 15.4 Mobile Device Management, 15.5 Data Center Management, 15.6 Monitoring, 15.7 Log File Management, 15.8 Network Management with SNMP
16. NETWORK OPTIMIZATION
    16.1 Optimization, 16.2 Troubleshooting Methodology
17. LINUX
    Use of Linux and Network Tools available
18. SAFETY
    OSHA 10 Hour Construction (optional)
19. ROBOTICS
    Lego EV3 Platform, Arduino, Roomba, USB Control
20. PROGRAMMING
    Cisco iOS, ACL, Firewall Scripting, EV3 Programming

Evaluation Basis:

    a. **Assignments**   **60%**
    b. **Attendance**   **20%**
    c. **Service Calls**   **20%**

Policies on Course Grading:

- Exams will be delivered over the Internet using a course management utility.
- Each online exam will have a generous yet strictly adhered to closing date.
- **Failure to complete the exam by the closing date will result in a ZERO for that exam.**
- The final exam will be delivered in a proctrored environment and the ability to use notes or books will not be allowed.

Lab Grading and Policy:

- All lab projects will be done individually or with a maximum of two per team.
- Lab projects will be collected on due date and graded for accuracy and content based upon the following:

√++ = 100 points	Responses are clear and well written / data is accurate / work is complete = Skilled in task.
√+ = 90 points	Responses are clear / minor errors in data collection / work is complete = Proficient in task.
√ = 80 points	Responses are vague or missing / errors in data collection / work is complete = Partly skilled in the task.
√- = 70 points	Responses are vague or missing / errors in data collection / work is incomplete = Unskilled in task.
√-- = 60 points	Work is submitted, but meets only minimal standards for submission = Unskilled in task.
0 points	Lab procedure is incomplete / lab not submitted / lab is not accepted beyond due date.

WCTC Grading Scale:

Letter	Grade Point	Scale
A+		98-100
A		95 – 97.9
A-		93 – 94.9
B+		90 – 92.9
B		87 – 89.9
B-		85 – 86.9
C+		82 – 84.9
C		79 – 81.9
C-		77 – 78.9
D+		75 – 76.9
D		72 – 74.9
D-		70 – 71.9
F		Below 70

Attendance Policy:

WCTC believes that regular and prompt attendance at each class session is extremely important. It is also the School's belief that excessive absenteeism and/or lateness reflect negatively upon student reliability and the School's ability to provide quality references to potential employers.

If the total number of legitimate absences is extensive, it may be impossible for the student to meet the objectives of the course. In such instances the instructor may assign a grade of Incomplete (I).

Lab Behavior:
Computer Careers is a course that requires the attention of students without distractions from others. You will not use personal electronic devices in the classroom in a manner that disrupts the instructor or other students! Examples include cell phones, radios, computer entertainment, or media devices. You will be asked to stop using these devices if in the judgment of the instructor your use of these devices is inappropriate.

Academic Honesty:
WCTC students are expected to be honest and forthright in their academic endeavors. Cheating is an act of deception by which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered. Items submitted for evaluation must represent your own work.

It is expected that you will make use of any resources available to you as become proficient in the course objectives. However, it is academically dishonest to represent the work of others as your own. Computer Careers requires program code development projects where it is permissible to use code developed by others, but the source of the code must be attributed. Additionally, you are expected to modify the code to meet the customized requirements of course projects. Any departure from academic honesty will be dealt with according to procedures outlined in the WCTC student handbook.