

Cape Girardeau Career and Technology Center

Course Syllabus

Course Title: Computer Technology I

School Year: 2008-2009 **Room Number:** 207/209

Class Meets: 8:25am to 10:50am, Monday thru Friday

Instructor: Bill Link

Phone: 573/334-0826 **Email:** linkb@cape.k12.mo.us

Office Hours: 7:35am to 8:20am and 2:45pm to 3:15pm

I. RATIONALE/PHILOSOPHY AND GRADUATE GOALS:

This is the first year of a two-year program designed to prepare students for a technical career in a society and world driven by rapidly changing technology. Students will develop keen and adaptable technical skills and acquire broad background knowledge which will provide the foundation for a sustained career experience as a computer technician and/or computer network administrator.

Students will also be guided to develop workplace skills and values that will make them effective employees, team members, and leaders. Using a combination of challenging written curriculum and hands-on experiences, students will work both independently and in teams to enhance the development of both academic and practical skills as well as the ability to work both independently and in collaboration with others.

II. COURSE DESCRIPTION:

Through participation in the Cisco Networking Academy and in combination with other curricular opportunities and experiences, first-year students in this program will learn basic computer technician/networking fundamentals and skills. Students will experience the first two semesters of the CISCO “*CCNA Discovery*” curriculum which will provide a solid foundation in *Networking for Home and Small Businesses* during semester one and *Working at a Small-to-Medium Business or ISP* during semester two. Additionally, the CISCO Curriculum “*IT Essentials: PC Hardware and Software v4*” will be studied. Students will use supplementary materials and receive additional assignments throughout the year to develop skills necessary to maintain, upgrade, and repair workstation and server computer hardware and software and solve common problems. Intermediate to in-depth experience with both legacy and latest versions of business applications such as Microsoft Office, and computer operating systems, from MS-DOS through Windows Vista and beyond, will also be gained.

III. PREREQUISITE:

Successful completion of coursework in Keyboarding and Computer Applications and Algebra I is strongly recommended. *Students lacking this prerequisite will need instructor approval before enrolling in the course.*

IV. OBJECTIVES:

Upon successful completion of CISCO Curriculum: *Networking for Home and Small Businesses* during semester one, students will demonstrate the following skills:

- Install and verify PC peripherals
- Select and Install a Windows OS with updates and patches
- Use hierarchical network management to develop IP and naming schemes
- Understand how classless IP numbers are developed and used.
- Use Packet Tracer 4.1 to design and test network topologies
- Design and install a Home and a Small office wired and wireless network
- Select the correct ISP for the networks that they design and connect to them
- Use the Cisco ISR and Linksys GUIs to configure DHCP, DNS, NAT, and other network services
- Use common PC Tools, ping, netstat, ipconfig, tracert, nslookup, telnet, and arp -a to troubleshoot network errors
- Harden network PCs to network attacks caused by viruses, worms, Trojan horses, and spyware.
- Analyze NAT bindings inside the ISR to troubleshoot networking connections.
- Use good soft skills to solve customer problems in a helpdesk situation and document the solutions.

Upon successful completion of CISCO Curriculum: *Working at a Small-to-Medium Business or ISP* during semester two students will demonstrate the following skills:

- Creating Help Desk Documentation
- Installing a Cisco ISR device
- Use of the SDM router and security configuration
- Planning for Networking Upgrades
- Configuration of NAT/PAT
- Configuration of DHCP
- Configuration of SSH
- Configuration of EIGRP and BGP
- Understand AAA security
- Switch configuration
- Contrast IDS and IPS systems
- Disaster Recovery Planning including running backups

Upon successful completion of CISCO Curriculum “*IT Essentials: PC Hardware and Software v4*”. The students’ acquired competencies will include:

- To describe the internal components of a computer
- To assemble a computer system
- To install an operating system
- To troubleshoot using system tools and diagnostic software
- To respond to customer inquiries and to assist with resolution of technical issues
- To remove and replace selected components of a laptop
- To upgrade laptop components based on customer needs
- To perform preventive maintenance and advanced troubleshooting
- To remove and replace selected components of a printer/scanner
- To perform preventive maintenance and troubleshooting on components of a printer/scanner
- To install a network; upgrade components based on customer needs and perform preventive maintenance and advanced troubleshooting

V. TEACHING AND LEARNING STRATEGIES:

1. Reading and analysis of written materials.
2. Class discussion and lectures.
3. Written assignments.
4. Hands-on labs and projects.
5. Group and individual projects and class presentations.
6. Maintaining a class notebook.

VI. COURSE MATERIALS:

1. CISCO Systems Networking Academy On-Line Curriculum, “*CCNA Discovery: Networking for Home and Small Businesses*”
2. CISCO Systems Networking Academy On-Line Curriculum, “*CCNA Discovery: Working at a Small-to-Medium Business or ISP*”
3. CISCO Systems Networking Academy On-Line Curriculum, “*IT Essentials: PC Hardware and Software v4*”
4. Other materials as deemed appropriate by instructor may also be introduced and used.

VII. EVALUATION OF STUDENT PROGRESS AND ACHIEVEMENT:

(High School Students who earn a passing grade will receive one and one-half units of Practical Arts credit per semester toward High School Graduation. Additionally, College Credit may be granted to both Adult students and Secondary School Students who satisfy requirements through Articulation with Mineral Area College. Interested students should inquire about this program in the Career Center Guidance Office.)

1. **Examinations:** There will be an on-line examination at the end of each module of the on-line Cisco Networking Academy curriculum and an on-line final examination at the end of each semester of the academy curriculum. Students should achieve an average mastery level of 70% on the module exams and 70% on the final exam in order to proceed to the next semester of the curriculum. There may be additional required skills-based assessments for successful completion of some units of the curriculum. *(Exams will count as 30% of the final grade).*
2. **Written Assignments:** There will be numerous worksheets, study guides, and short research papers assigned throughout the course. *(Written Assignments will count as 30% of the final grade).*
3. **Labs:** Participation in required router and computer configuration labs and hands-on computer technician experiences are part of the overall curriculum and students will receive points for their performance. *(Labs will count as 20% of the final grade).*
4. **Group and Individual Projects and Presentations:** The instructor will periodically assign team and individual projects, some of which will be presented to the class using MS PowerPoint or other common applications. *(Projects will count as 20% of the final grade).*
5. **Class Notebook:** The student will maintain a three-ring binder of all materials worked on in the class which will reflect their progress throughout the class. The notebook may be used as a review for final examinations and for vendor certification tests. *(The notebook will be evaluated several times per semester and will be part of the student's Project Grade).*
6. **Participation:** Students will receive points toward their final grade based on the instructor's observation of their attitude and overall willingness to participate in the required activities of the course. As a member of the class "team", part of their participation points will reflect their ability and willingness to contribute to the overall achievement and progress of all members of the class. *(Participation points will count as part of the student's Project Grade).*

VIII. CAPE GIRARDEAU PUBLIC SCHOOLS GRADING SCALE:

A	96 to 100%
A-	92 to 95%
B+	89 to 91%
B	85 to 88%
B-	82 to 84%
C+	78 to 81%
C	74 to 77%
C-	70 to 73%
D+	67 to 69%
D	63 to 66%
D-	60 to 62%
F	0 to 59% (No credit granted)

IX. LATE WORK POLICY:

Assignments which are not submitted to the teacher on the stated due date will receive a point deduction of 10% of the total points of the assignment for each day the assignment is late to a maximum of three days late. On the fourth day after the assignment is due, any work that has not been turned in will receive zero credit.

Allowances of extra time to make up work in cases of legitimate illnesses and emergencies will be made at the teacher's discretion, but it is the responsibility of the student, not the teacher, to make arrangements for making up work under any and all circumstances.

X. STUDENT CONDUCT AND CLASSROOM RULES:

All students, regardless of their sending school, are expected to adhere to the expectations and policies stated in the Cape Central High School Student Handbook and Student Code of Conduct. This publication covers all aspects of student behavioral expectations including discipline, rules, behavior in and out of the classroom, academic honesty, and attendance.

The publication may be accessed and viewed on the web at www.cape.k12.mo.us/chs/office/Handbook/0809CHSSStudentHandbook.pdf

Printed copies of the publication are available in the Central High School office. The office can be contacted at 573/335-8228.

The only exception to the policies stated in the aforementioned publication will be with regard to the granting of credit based on attendance. Students from sending schools will be granted credit under the terms of their home school attendance policy, which may vary.

Additionally, all students are expected to follow all rules and requests which pertain to the class including the “Equipment Usage Policies” contract (see attached) which is to be signed by both student and parent and returned to the teacher during the first week of class. A student who violates any of the rules of this contract (or any other rule or request made by the teacher at any time) will be subject to disciplinary action.

XI. MAJOR ASSIGNMENTS (Subject to Change as needed):

A. CISCO Systems Networking Academy On-Line Curriculum, “CCNA Discovery: Networking for Home and Small Businesses”:

Chapter One - Personal Computer Hardware

- Section 1 Personal Computers and Applications
- Section 2 Types of Computers
- Section 3 Binary Representation of Data
- Section 4 Computer Components and Peripherals
- Section 5 Computer System Components

Chapter Two - Operating Systems

- Section 1 Choosing the Operating Systems
- Section 2 Installing the Operating System
- Section 3 Maintaining the Operating System

Chapter Three - Connecting to the Network

- Section 1 Introduction to Networking
- Section 2 Principals of Communication
- Section 3 Communicating on a Local Wired Network
- Section 4 Building the Access Layer of an Ethernet Network
- Section 5 Building the Distribution Layer of Network
- Section 6 Plan and Connect a Local Network

Chapter Four - Connecting to the Internet Through an ISP

- Section 1 The Internet and How We Connect To It
- Section 2 Sending Information Across the Internet
- Section 3 Networking Devices in a NOC
- Section 4 Cables and Connectors
- Section 5 Working with Twisted Pair Cabling

Chapter Five - Network Addressing

- Section 1 IP Addresses and Subnet Masks
- Section 2 Types of IP Addresses
- Section 3 How IP Addresses are Obtained
- Section 4 Address Management

Chapter Six - Network Services

- Section 1 Clients/Servers and Their Interactions
- Section 2 Application Protocols and Services
- Section 3 Layered Model and Protocols

Chapter Seven - Wireless Technologies

- Section 1 Wireless Technology
- Section 2 Wireless LANs
- Section 3 Security Considerations on a Wireless LAN
- Section 4 Configuring an Integrated AP and Wireless Client

Chapter Eight - Basic Security

- Section 1 Networking Threats
- Section 2 Methods of attack
- Section 3 Security Policy
- Section 4 Using Firewalls

Chapter Nine - Troubleshooting Your Network

- Section 1 Troubleshooting Process
- Section 2 Troubleshooting Issues
- Section 3 Common Issues
- Section 4 Troubleshooting and the Helpdesk

B. CISCO Systems Networking Academy On-Line Curriculum, “CCNA Discovery: Working at a Small-to-Medium Business or ISP”:

Chapter One - The Internet and Its Uses

- Section 1 What is the Internet?
- Section 2 Internet Service Providers
- Section 3 ISP Connectivity

Chapter Two - ISP Help Desk

- Section 1 Help Desk Technicians
- Section 2 OSI Model
- Section 3 ISP Troubleshooting

Chapter Three - Planning a Network Upgrade

- Section 1 Common Issues
- Section 2 Planning the Network Upgrade
- Section 3 Purchasing and Maintaining Equipment

Chapter Four - Planning the Addressing Structure

- Section 1 IP Addressing in the LAN
- Section 2 NAT and PAT

Chapter Five - Configuring Network Devices

- Section 1 Initial ISR Router Configuration
- Section 2 Configuring an ISR with SDM
- Section 3 Configuring a Router Using IOS CLI
- Section 4 Initial Cisco 2960 Switch Configuration
- Section 5 Connecting the CPE to the ISP

Chapter Six - Routing

- Section 1 Enabling Routing Protocols
- Section 2 Exterior Routing Protocols

Chapter Seven - ISP Services

- Section 1 Introducing ISP Services
- Section 2 Protocols that Support ISP Services
- Section 3 Domain Name Service
- Section 4 Services and Protocols

Chapter Eight - ISP Responsibility

- Section 1 ISP Security Considerations
- Section 2 Security Tools
- Section 3 Monitoring and Managing the ISP
- Section 4 Backups and Disaster Recovery

C. CISCO Systems Networking Academy On-Line Curriculum “*IT Essentials: PC Hardware and Software v4*”:

- Chapter One - Introduction to the Personal Computer
- Chapter Two - Safe Lab Procedure and Tool Use
- Chapter Three - Computer Assembly, Step by Step
- Chapter Four - Basics of Preventive Maintenance and Troubleshooting
- Chapter Five - Fundamental Operating Systems
- Chapter Six - Fundamental Laptops and Portable Devices
- Chapter Seven - Fundamental Printers and Scanners
- Chapter Eight - Fundamental Networks
- Chapter Nine - Fundamental Security
- Chapter Ten - Communication Skills
- Chapter Eleven - Advanced Personal Computers
- Chapter Twelve - Advanced Operating Systems
- Chapter Thirteen - Advanced Laptops and Portable Devices
- Chapter Fourteen - Advanced Printers and Scanners
- Chapter Fifteen - Advanced Networks
- Chapter Sixteen - Advanced Security