Information Technology Career Cluster
Networking Fundamentals
Course Number: 11.46100

Course Description:

How do computers communicate? How are you connected? Start with a building block of knowledge of networks, local area networks, IP Addresses, subnetting, and data routes from a LAN to a WAN. This course is designed to provide students with the background necessary to understand the local area networking information on workstations and networking. Students will learn the processes involved in designing, implementing, upgrading, managing, and otherwise working with networks and network technologies.

Various forms of technologies will be used to expose students to resources, software, and applications of networking. Professional communication skills and practices, problem-solving, ethical and legal issues, and the impact of effective presentation skills are enhanced in this course to prepare students to be college and career ready. Employability skills are integrated into activities, tasks, and projects throughout the course standards to demonstrate the skills required by business and industry. Competencies in the co-curricular student organizations are integral components of both the employability skills standards and content standards for this course.

Networking Fundamentals is the second course in the Networking pathway in the Information Technology cluster. Students enrolled in this course should have successfully completed Introduction to Hardware Technology.

Course Standard 1

IT-NF-1

The following standard is included in all CTAE courses adopted for the Career Cluster/Pathways. Teachers should incorporate the elements of this standard into lesson plans during the course. The topics listed for each element of the standard may be addressed in differentiated instruction matching the content of each course. These elements may also be addressed with specific lessons from a variety of resources. This content is not to be treated as a unit or separate body of knowledge but rather integrated into class activities as applications of the concept.

Standard: Demonstrate employability skills required by business and industry.
The following elements should be integrated throughout the content of this course.
1.1   Communicate effectively through writing, speaking, listening, reading, and interpersonal abilities.

Person-to-Person Etiquette	Telephone and Email Etiquette	Cell Phone and Internet Etiquette	Communicating At Work	Listening
Interacting with Your Boss	Telephone Conversations	Using Blogs	Improving Communication Skills	Reasons, Benefits, and Barriers
Interacting with Subordinates	Barriers to Phone conversations	Using Social Media	Effective Oral Communication	Listening Strategies
Interacting with Co-workers	Making and Returning Calls		Effective Written Communication	Ways We Filter What We Hear
Interacting with Suppliers	Making Cold Calls		Effective Nonverbal Skills	Developing a Listening Attitude
	Handling Conference Calls		Effective Word Use	Show You Are Listening
	Handling Unsolicited Calls		Giving and Receiving Feedback	Asking Questions
				Obtaining Feedback

| International Etiquette | | | Demonstrating Leadership |

Cross-

5.2   Identify what can interfere with twisted-pair cabling and how to avoid it.
5.3   Identify some of the basics about fiber optic cabling and some of the standards associated with fiber optic cabling.
5.4   Identify wireless devices, wireless settings and configurations, wireless standards, and encryption protocols**.**

Course Standard 6

IT-NF-6
Explore Internet Protocol IPv4 and IPv6 and emerging protocols in industry.
6.1   Demonstrate how to categorize IPv4 addresses using classifications such as Class A, B, and C.
6.2   Identify the default gateway and DNS server and how to configure them within a network adapter's TCP/IP properties dialog box.
6.3   Demonstrate how to define advanced TCP/IP concepts, such as NAT and sub-netting, and how to create a sub-netted network.
6.4   Demonstrate how to define CIDR.
6.5   Demonstrate the basics of IPv6 and how to configure IPv6 in the command line.
6.6   Define IPv6 dual stack and tunneling technologies.

Course Standard 7

IT-NF-7

9.2 Describe how to install and configure RRAS to function as a network router and how to install the Routing Information Protocol.

9.3 Explain the basics about various wide area networking technologies.

9.4 Explain the basics of software-defined networking.

9.5 Explain different personal and small business Internet connectivity types.

Course Standard 10

IT-NF-10

Explore network infrastructures and network security.

10.1 Differentiate between the Internet, intranets, and extranets.

10.2 Demonstrate how to set up a virtual private network.

10.3 Explain