

## AUX04 Course

---

### Understanding the Internet

- The Internet does not involve a single computer or a single network of machines. The Internet is composed of hundreds of thousands of computers that are able to either respond to a client request for information or are able to pass traffic along the along to the nodes in the Internet. Terminology for computers that do this are called Servers, Routers, etc. Wide Area Networks or WAN's are a collection of computers over the Internet that belong to a single service provider or corporation. America Online, AOL, is an example of a Internet Service Provider that has a collection of computers on the Internet that can be referred to as a WAN.
- What makes the Internet and WWW possible is that the communication between the client, the one requesting information, and the server, the machine providing the information, is that the once the server completes its communication with a specific client, the connection is terminated. Former networks such as a Bulletin Board Service, BBS, or a mainframe, the connection was always active and demanded the constant attention of the two computers connected to each other. The Internet protocol TCP and IP enabled a means of addressing each computer on the Internet so that it had a unique address and enabling computers to conclude their business with each other after the request by one computer was completed by the other. This freed up the serving computer to answer others requests. Modern servers today can deliver terra-bytes of information every minute.
- The Internet has been around nearly 35 years.
- The Internet came to prominence in the middle of the 1990's when a break through program, Mozilla (Netscape), enabled the Internet to use a graphical user interface and could display formatted text and graphics inside the browser window. Previously, files were downloaded or displayed inside text browsers and graphics could not be viewed with the content. This new interface and graphics capability became known as the World Wide Web.
- The Internet is not limited to connections between networks but can function within a building and would then be called an Intranet. Advances in Technology has allowed an Intranet to be extended among different buildings spread across multiple states or continents through a Virtual or Private Network framework that keeps company or corporate data private and yet allows that information to be passed over the existing Internet backbone. Local Area Network or LAN is another term for Intranet, but it might be more broadly or narrowly defined based upon the application.
- The Internet travels over copper "phone lines" and fiber optic networks. Bridges enable the information carried over one technology to span another technology. Routers act as the traffic police, sending traffic to the next node for delivery to the appropriate computer on the Internet.
- The IP or Internet Protocol specifies that each computer on the Internet has a unique computer address. The IP Address is unique to every computer on the Internet. If the id is permanently assigned to a particular computer than the IP

## AUX04 Course

---

Address is said to be a static IP, one that does not change. The alternative is a dynamic IP that is assigned when the computer logs onto the Internet. In this case the ISP (Internet Service Provider) provides you computer with the IP when you logon. The next time that you logon the number will change. This saves the ISP from having to have an IP for every client in their database and need to only have enough IP's to cover the number of customers currently online or that we be online during peak loads. The technology of dynamically addresses IP numbers means that the predicted depletion of all the possible IP numbers will be put off for a few years. Eventually, the current system of IP addressing will need to be replace to accommodate the predicted growth of the Internet.

- IP numbers are similar to phone numbers in that they have a structure that enables the traffic to be routed quickly and efficiently. The standard IP address is a series of numbers in sequence; 3 then 2 then 3 then 2. The 3 series of numbers are limited from 0 to 255. The 2 series numbers can run from 0 to 99. So the following IP is a valid address: 255.99.101.00. Unfortunately, IP numbers are nearly impossible for most people to remember. So a DNS or Domain Name System was established through which a domain name such as Auxiliary.org is resolved into an IP address of numbers. This makes the Internet addressing scheme user friendly for those of us that can't remember the IP address. Also, when a web site is moved from one server to another the IP address will change. With the DNS server the IP address can be changed but the name of the web site will remain constant allowing for a seamless and uninterrupted re-direction from the old server of the information to the new server of the information.

### Web Site Design

- Web Page Purpose and Focus
  - o Identifies the objectives of the unit web site
  - o Outlines the content areas to be incorporated on the unit web site
  - o Defines a list of skills and specialties necessary to complete the unit web site
  - o Identifies a list of software necessary to complete work related to the unit web site
  - o Identifies a list of software providers where the software, if not already obtained, can be obtained
  - o Establishes a time line for creation or revision of unit web site
  - o Defines a schedule for updating the unit web site
- HTML Objectives
  - o Be able to create a simple web page through a simple hand coding methodology.
  - o Describe the salient differences between coding elements and attributes
  - o Demonstrate the ability to hand code the four different types of hypertext links
    - Link to another web site

## AUX04 Course

---

- Link to another web page on the same server
  - Create an email link
  - Create an in-the-page link to another place in the same web page
- Create a web page with a background color other than white
- Properly code a web page to XHTML standards
- Properly code a web page to ADA standards
- Code for an image to be displayed on a web page
- Places a forward slash, “/” at the end of any element tag that does not have an end tag.
- Inserts relevant Meta Tags into the header of the web page
- Creates a numbered and bulleted list on a web page
- Uses paragraph tags to organize paragraphs of text on a web page
- Places web master and date relevant information somewhere on the web page
- Adjusts the size of text on a web page using the font tag
- Organizes headings and subheadings of information on the web page in a logical manner
- Identifies Style Sheets tags to format content on a web page
- Describes the difference between the content of a web page and the links to information embedded in the displayed web page, i.e. the nature of the image not technically being part of the page, but being linked to its current location.
- Defines the nature of the client-server relationship
- Web Page Design Basics
  - Identifies alternative methods of page layout for web pages other than using the table tag
  - Identifies the issues and problems with using frames
  - Creates a Cascading Style Sheet that is implemented on other web pages
  - Designs a web page layout that clearly defines a navigation menu
  - Describes the issues and problems inherent in background images
- Transferring Files to a Server
  - Identifies programs that can perform File Transfer Protocols
  - Enters the appropriate information necessary to establish a successful connection to another computer using a FTP Program
  - Successfully transfers files from one computer to another using an FTP Program
  - Describes the difference between binary and ASCII files
  - Describes the security issues and problems with FTP Programs
  - Identifies methods of secure methods of FTP
  - Describes other methods of file transfer over the Internet
- Web Page Editors
  - Identifies a few popular web page editors
  - Describes the advantages of web page editors over hand coding
  - Describes the need for familiarity with HTML coding

## AUX04 Course

---

- Identifies issues and problems associated with the coding practices of some popular web page editors.
- Engages a web page editor for the purpose of creating a web page
- Examines the HTML code of a web page using a web page editor
- Using a web page editor (also referred to as HTML Editor) organizes information on a web page using the table tag
- Uses the features of a web page editor to organize information on a web page other than with the table tag.
- 

### Unit Web Site Approval or re-approval

-

### Basic Computer Knowledge

- Mouse Use
  - Use the left mouse button to highlight text on the screen
  - Use the right mouse button to copy the highlighted text
- File Formats
  - Describe the “dot extension” for a file and a software program that will open a particular file
- Screen Capture
  - Grab an image of the screen by using the print button
  - Using the “Paint” program crop and save a portion of the screen as an image

### Software Instruction

- Microsoft Word
  - Open a document from the A: Drive (floppy drive)
  - Save a document to the A: Drive (floppy drive)
  - Save a document in the TXT format
  - Enter text into a MS Word document
  - Align a paragraph of text to the left, right, center, and justified
  - Select text and objects in a document
  - Change the font size, font style, and font family of text in a document
  - Change the format of a text by bolding, italicizing, and underlining selected text
  - Demonstrate the ability to spell check, grammar check, and turn on and off automatic text editing features in MS Word
  - Add headings and subheadings to a document
  - Add a page header and a page footer to a document
  - Insert a photograph into a MS Word document
  - Insert clip art into a MS Word document
  - Insert a graphic into a MS Word document using the draw tools in MS Word
  - Alter text wrapping options for pictures and graphics in a document

## AUX04 Course

---

- Create a border around paragraphs of text in a document
- Insert a text box into a document
- Use the features copy, paste, and cut from the right mouse click, the keyboard short cut, and the edit menu.
- Insert a table and format it in a document
- Save the MS Word document in different formats
- Use the Page Setup Menu to alter the margins and other page formatting features of the document
- Print the MS Word document
- Microsoft PowerPoint
  - Open an existing PowerPoint file into the software program using the open command in the file menu
  - Save the PowerPoint file in different file types.
  - Create a new PowerPoint file using the New Command in the File Menu
  - Create a title slide
  - Add a bulleted list slide
  - Create a title for a content slide
  - Add content to a bulleted list slide
  - Add a photograph, a graphic, and clip art to a slide
  - Using the draw tool add graphics to a slide
  - Switch from Normal View to Slide Master View
  - Change the background of all slides in the Slide Master View
  - Change the background of a single slide in Normal View
  - Move the pane between outline and slide windows
  - Move the pane between slide and notes windows
  - Create a slide show using a template
  - Change the design template of an existing slide show.
  - Change the color scheme for a slide show
  - Add custom animations to the content on a slide
  - Add slide transitions between slides in a presentation
  - Establish a standalone presentation with narration
  - Turn off slide transitions and animations for an existing presentation
  - Print handouts for a slide show
  - Export a PowerPoint Slide Show as a web page
- Microsoft Excel
  - Create an Excel Worksheet
  - Format a column of cells
  - Format a row of cells
  - Center information in a cell
  - Format the text in a cell
  - Change column widths
  - Change row heights
  - Enter a formula that will add the value of a row of cells
  - Enter a formula that will add the value in a column of cells
  - Create different types of charts from the data in a worksheet

## AUX04 Course

---

- Add a title to your chart
- Change the labels on a chart
- Use Print Preview and Page Setup to define the pages your worksheet prints upon.
- Import CSV files into an Excel Spreadsheet
- Export CSV files from an Excel Spreadsheet
- Microsoft Internet Explorer
  - Open an HTML into the browser window using the File – Open Command
  - View the source code of a web page present in the browser
  - Favorites
    - Bookmark a website and locate that book mark into a folder
    - Using the “Organize Favorites” option under the Favorites Menu move links into folders
    - Sort the list of links in the Favorites menu by name
    - Determine the URL of a bookmark in the Favorites Menu
  - Demonstrate how to add a Google, Yahoo, or other toolbar to the toolbars in the browser
  - Demonstrate how to turn off the toolbar or disable its influence on the Internet Explorer Browser
  - Reveal and hide a toolbar
  - Customize a toolbar
  - Toggle the Status Bar on and off
  - Turn on and off various Explorer bars (left navigation or support menus) such as media or favorites
  - Collapse a toolbar onto another one
  - Find a specific word or phrase on a page in the browser window using the Edit – Find command
  - Internet Options
    - View cookies placed on your computer
    - Alter the homepage address
    - Delete cookies from you system
    - Locate the temporary web files directory on your system
    - Delete files from your system held in the temp folder
    - Clear the History cache on your computer system
    - Examine the General, Security, Privacy, Content, Connections, Programs, and Advanced Tabs under the Tools – Internet Options Menu
  - Identify the version of the browser being used with the Help – About Internet Explorer Menu
  - Identify essential Windows Updates using the Tools – Windows Update Menu
  - Create a Shortcut to a web page on your desktop using the File – Send to – Shortcut to Desktop Command
  - Send a web page address to a friend by email using the File – Send to – Link By Email command

## AUX04 Course

---

- Adobe Acrobat
  - o Create a form using Adobe Acrobat
  - o Save a form with existing data inserted into the fields
  - o Print from other software into Acrobat Distiller
  - o Download a web page into an Adobe Acrobat document
  - o Open a PDF file into Adobe Acrobat

### Online Learning

### Teleconferencing

- Identify the CENTRA web site for Auxiliary use
- Describe the tools needed to use CENTRA
- Describe the bandwidth options for connecting to CENTRA

## AUX04 Course

---

### Glossary

#### Asynchronous

- Asynchronous is a method of communication where the two parties involved in the communication are not present in the same space and time. For example, email is a means by which a person can send a note to a recipient without the recipient having to be online. An example of a synchronous mode of communication is the telephone in which in order for the two parties to communicate the recipient of the call must pick up the telephone. The answering machine and voice mail, asynchronous communications technologies, did for the phone what email did for the letter.

-

#### Bandwidth

- Bandwidth refers to the amount of information that the delivery medium can carry. This is as much affected by the technology placed at each end of the medium, or pipe as it may be called. The analogy is that a hose can carry a certain amount of liquid based upon the pressure and the cross-sectional area of the hose. Increase the pressure or the cross-section and you increase the amount of liquid that can be passed by the hose. With respect to technology and information, the standard telephone line is limited to the amount of information that the line can carry because of the equipment that is placed on either end. The 56 kbps modem cannot communicate more than 56 kilobytes of information per second because of the modem on your computer and the modem on the Internet Service Provider's equipment. That same telephone line can carry information at 1.5 megabytes per second when using a Direct (or Digital) Subscriber Line connection or DSL. The user must have DSL turned on for their phone line and the telephone company servicing their line must enable their system with DSL equipment. Those using a DSL connection are able to use their phone while the computer remains connected to the Internet because the DSL equipment uses a different frequency from voice communications and therefore multiple "channels" are available for use on the same telephone line. The ultimate bandwidth giant is fiber optic cable.

#### Browser

- A browser is a specific piece of software that communicates through specific protocols to other computers on the Internet. The two most popular browsers are Netscape Communicator, the first WWW browser, and Microsoft's Internet Explorer, which currently has the largest market share. There are other browsers that are not as popular such as Opera and . The main difference among the browsers is their compliance with the standards of the Internet. Both Netscape and I.E. comply with some of the standards but each in not strictly 100% compliant. Browsers such as Opera and \_\_\_ are more standards compliant and may one day be the browsers of choice.

-

## AUX04 Course

---

### Client

- A client is typically another computer connected to the network that makes a request of a server for information. Technically the browsing software is the client and is capable of communicating on the network using the specific protocols that make up the backbone of the network. Often referred to as the client-server relationship, the client is any machine (browsing software) that makes requests of the server for content. The content requested from the server is then sent to the client and the files (\*.html, \*.gif, \*.jpg, etc.) are placed in a temporary folder for the browser to reference for display. Once the files are sent, the server closes the connection to the client and turns its attention to other requests.

### DNS Server

- The Domain Name Server resolves the name of the web site typed into the location field of the browser with the IP address of the server that will send the requested information from that web site. The DNS server is typically local in most major network environments and must be periodically updated to include new domain names and re-identify names and IP's that have changed. The DNS server makes it possible for a web site to be moved from one server at a specific IP address to another IP address without having to rename the web site. For example, CNN.com, a large web site visited by hundreds of thousands of users each hour, can have an entry IP address that all the DNS servers know but then can load balance traffic across multiple servers in one office and across multiple offices in different locations, without the user ever having to learn anything more than CNN.com for an address.

-

### DSL

- Digital Subscriber Line turns the average telephone line into a high-speed Internet connection. Typically the computer modem limits data speeds over the voice channel of a phone line to 56 kbps. The DSL modem can achieve speeds of 1.5 Mbps or approximately 30 times faster throughput of the data. The phone company servicing your phone line must first install equipment at the local phone bridge that will enable the phone line to carry data and voice on separate frequencies or "channels." Once this is completed, the subscriber uses a modem supplied by the DSL provider to connect to their equipment over the data channel on the phone line. Unlike cable modems that are now standardized across the nation allowing cable modem users to access the Internet over their cable television, the DSL modem is unique to each DSL Provider. Cable modems have standardized because there is no competition over a cable "line" and to access the Internet over cable means there is only your cable television provider to go to. Competition for DSL providers exists and a standardized DSL modem might mean that individual providers might not be able to identify their customer from others. Work is underway to

## AUX04 Course

---

standardize the DSL modem and provide for competitors to identify a user as theirs.

### Electric Power Lines

- If you're an investor, look seriously into the efforts of Power Companies becoming the next big Internet Service Provider, or at least a competitor to cable and phone companies. Research and experimentation have proven that data can be carried over power lines from the ISP office to the consumer. Imagine not having to bother with installing a wired or wireless network in your home because every power outlet in your home would instantly become an Internet connection. The implication of this becomes huge when you consider that appliances around the home could become Internet devices enabling you to access and manage their use. The only thing they would need would be a device in their circuitry that is placed in line with the power cable of the appliance and intercepts and sends data over the electrical power in your home. You could one day ask your refrigerator with your PDA how much milk you have while standing in the super market. Fantasy? No, they have already done it.

-

### Fiber Optic

- Fiber optic cable or wire is a collection of thin strands of glass or optical quality plastic that carry light pulses instead of electrical current as in copper wire. Copper wire examples include cable, telephone, and electrical power lines. Fiber optic lines can transmit mega- and terra-bytes of information per second because light travels at speeds faster than electricity in wire can. Also light can be divided into different frequencies of visible and non-visible light (infrared and ultraviolet) leading to multiplexing. Multiplexing increases the amount of traffic that can be carried over the same single strand of fiber for greater bandwidth. Currently, because the technology continues to evolve to exploit the transmission capability of fiber, the upper limit of bandwidth is not yet known. It is believed that the entire contents of the library on congress might one day be carried over a fiber optic cable in a matter of a few seconds.

### HTML

- Hyper-Text Markup Language is a programming language understood by the browsing software and is interpreted. HTML is specifically a tagging language and a subset of SXML that codes for text formatting and positioning on a web page.

### Interactivity

- Interactivity is an over-used term that basically means that the client or user is engaged to interact with the content or information. The Internet is interactive in that it requires that the user click on some hypertext to request additional information. The information itself is not interactive unless it does something in response to what the user does. An example of this is an annoying bit of

## AUX04 Course

---

JavaScript code that causes sprites (text or graphics) to follow your mouse pointer as you move it around the screen within the browser window. It's extremely cool the first time you see it, definitely interactive, but tremendously annoying. Flash animations can provide another example of interactivity if they provide for user engagement with content.

-

### Internet

- The Internet is a specific type of network or collection of computers connected through transmission channels and use specific protocols in order to communicate with each other. The Internet is the largest known network of computers using TCP and IP as a basis for common communication schemes. Each subset of the Internet exploits a protocol to work the particular type of traffic and ultimately routed via TCP/IP. An example is email which is not a WWW type of communication, but is a subset of communication like the WWW. Traffic across the Internet includes email, text, graphics, video, and other types of files.

### IP

- Internet Protocol defines address that identifies the location of everything on the Internet. An IP address is a series of numbers 0 to 255 defined in sets (255.99.255.99) that clearly identify each CPU on the network. In order for a server to send information on the Internet it must have an address or IP number in order to differentiate it from another computer on the Internet. The client, the one requesting information, must also have an IP address so that the information requested on the server can be sent to the client requesting the information. Without an addressing protocol on the Internet, information would never find its way from the source to the one requesting it.

-

### Kbps

- Kilobytes per second is the number of byte, 1000, that can be sent over a connection. Think of a byte as a single character typed from the keyboard and you can equate 1000 bytes as 1000 characters. The term is typically applied to phone modems which operate at a maximum of 56 kbps.

### Mbps

- Megabyte per second refers the 1000 kilobytes or 1,000,000 bytes transferred over a connection per second. Since a single character typed from the keyboard is equal to a byte, then Mbps means 1 million characters transmitted per second.

### Network

- A network

### PDA

## AUX04 Course

---

- Personal Digital (or Data) Assistant is a small or medium sized device that functions as a small personal computer. Keeping track of personal bits of information such as dates, times, contacts, numbers, and email the basic PDA can serve as a handy daily tool. The mergence of technology has PDA's growing to provide cell phone and Internet capabilities. Services and applications are the key to PDA use with well designed and beneficial programs leading to increased use.

### Plug-in

- Plug-in refers to a bit of code, software, that enables a browser to display a file that inherently it cannot display from its own software programming. Technically, the ability of the browser to embed images such as \*.gif and \*.jpg files was a plug-in that became part of the inherent code in the browser software. Once a plug-in is included into the browser software, the browser refers to the plug-in to deal with the specific file type associated with a file requested from the Internet. The 2 most popular plug-ins on the Internet are the Flash Plug-in that allows you to view \*.swf files in the browser and the Acrobat Plug-in that allows you to view \*.pdf files. If a file does not have a plug-in or support is not available inherently in the browser software, then the file must be downloaded to your computer. Also, if your browser doesn't have the necessary plug-in then you can download the file to view it with other software on your computer. The notable exception to this is streaming media.

### Server

- A server is computer connected to a network with software allowing it to "serve" information resident in its memory storage. Any CPU based machine can be a server but dedicated servers are usually optimized through configuration and construction to serve the most number of requests in the shortest period of time. The request for information is generated by a client on the Internet.

### Streaming Media

- Streaming media typically refers to video and/or audio that is played on your computer but not downloaded to it. The analogy here is that of a stream of what that is felt only once and then moves on. With respect to your computer a streamed video is one that is not residing on you computer after your browser receives and plays the video through the plug-in. Generally, all files are downloaded to a temporary folder on your computer in order for the file to be displayed in the browser. Streaming media is not stored and is not available to you without requesting it from the server again. Video on you computer that has been downloaded and not streamed can be played over-and-over again without requesting the same file from the server.

-

### Synchronous

- Any type of communication in which the parties communicating are "live" or present in the same space and time. A chat room where both parties must be at

## AUX04 Course

---

their computer, connected to the Internet, and using software to communicate in the chat room protocols is a synchronous method of communication. Email is an example of an asynchronous mode of communication where one party can send a note to another person and the recipient need not be online to receive the email.

### Upload

- Upload is what must be done to a web page or a file in order for it to be served on the Internet. Unless the computer you build web files upon is the one serving the content, then the files created for information exchange must be placed on a server connected to the Internet. The upload process involves using a File Transfer Protocol that enables a file to be exchanged from one machine to another.

-

### URL

- Uniform Resource Locator is the protocol by which information is located on the Internet. The URL is both the IP address and the domain name, although either can be used to find the server that will supply the information that the client seeks. The IP address is a series of numbers which for the average user is difficult to remember and equally difficult to type correctly. The domain name is the name of the web site which is resolved (or equated) to the IP address by the DNS server before the server can be found and requested to send information.

### WWW

- The World Wide Web is a specific subset of the Internet that allows text to be combined with images and other media through a hypertext transmission protocol (HTTP).