Internet Basic: Open up your world!

Overview: Create! Learn! Explore! Learn to browse the Internet using a common browser. Find out about Web Sites and links; use search engines to find information you want to know!

Student Skill Level: Basic

Requirements: Basic mouse skills (Ability to move the mouse around the computer screen with some assistance. Ability to “click” and “double click” the mouse as instructed during class)

Length: 3 hours (including 10 minute break)

Objectives:
- The student will be able to understand Internet concepts
  - Connect to an Internet Access Point
- The student will be able to use a browser to view the Internet:
  - Locate and open the program on computers
  - Define:
    - Web Site
    - Web Page
    - Home Page
    - Hyperlink
  - Use the three most commonly used buttons on a browser
  - Use the Omnibx/Web Address bar to go to a precise web page
  - Use the Omnibx/Web Address bar to search for information
  - Use a specific search engine to find information and navigate to a chosen Web page

Image from: http://michigantelephone.files.wordpress.com/2009/05/iax_and_sip_ag188n_connect.jpg
Internet Concepts – What is the Internet (or World Wide Web)?

The Internet (World Wide Web) is a worldwide collection of computer networks that cooperate with each other to exchange data using a common software standard. Computer engineers link devices together using wires (like telephone lines), satellite links (using satellite dishes mounted on a building) or wireless connections (like cell phone towers). The Internet allows users to connect easily through personal computers and mobile devices (cell phones); exchange e-mail; post and access information on Web sites all around the world; and view multimedia information. The Internet started on phone lines and is on its way to taking over all types of communication (TV and phone, for example).

The Internet lacks a central authority—in other words there is no editorial board that controls the content on the Internet. It is bound by few rules and answers to no single organization. It’s up to you, the Internet user, to decide if something you see or read is correct, or even real, or not.

The Internet: It’s not just for computers anymore…..

The Internet of Things is becoming a reality. Sensors are being embedded in appliances, thermostats, automobiles, and more. They really are more than sensors, though. “In what’s called the Internet of Things, sensors and actuators embedded in physical objects—from roadways to pacemakers—are linked through wired and wireless networks, often using the same Internet Protocol (IP) that connects the Internet” (Chui, 2010). Two broad categories emerge: Information and Analysis, and Automation and Control.

<table>
<thead>
<tr>
<th>Information and Analysis:</th>
<th>Automation and Control:</th>
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<tbody>
<tr>
<td>Tracking behavior: “When products are</td>
<td>Process optimization: Sensors and actuators</td>
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<td>embedded with sensors, companies (or</td>
<td>can also be used to change the position of a</td>
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<td>individuals) can track the movements of these</td>
<td>physical object as it moves down an assembly</td>
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<td>products and even monitor interactions with</td>
<td>line, ensuring that it arrives at machine</td>
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<td>them. Some insurance companies, for example,</td>
<td>tools in an optimum position. This improved</td>
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<td>are offering to install location sensors in</td>
<td>instrumentation, multiplied hundreds of times</td>
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<td>customers’ cars. That allows these companies</td>
<td>during an entire process, allows for major</td>
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<td>to base the price of policies on how a car</td>
<td>reductions in waste, energy costs, and human</td>
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<td>is driven as well as where it travels. Pricing</td>
<td>intervention.</td>
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<td>can be customized to the actual risks of</td>
<td>Optimized resource consumption: Networked</td>
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<td>operating a vehicle” (Chui, 2010).</td>
<td>sensors and automated feedback mechanisms can</td>
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<td>Enhanced situational awareness: “Data from</td>
<td>change usage patterns for scarce resources,</td>
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<td>large numbers of sensors, deployed in</td>
<td>including energy and water, often by enabling</td>
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<td>infrastructure (such as roads and buildings)</td>
<td>more dynamic pricing. Utilities such as</td>
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<td>or to report on environmental conditions</td>
<td>Pacific Gas and Electric (PG&amp;E) in the United</td>
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<td>(including soil moisture, ocean currents, or</td>
<td>States, for example, are deploying “smart”</td>
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<td>weather), can give decision makers a</td>
<td>meters that provide residential and industrial</td>
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<td>heightened awareness of real-time events,</td>
<td>customers with visual displays showing energy</td>
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<td>particularly when the sensors are used with</td>
<td>usage and the real-time costs of providing it.</td>
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<td>advanced display or visualization technologies”</td>
<td>(Chui, 2010).</td>
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<tr>
<td>Sensor-driven decision analytics: In health</td>
<td>Complex autonomous systems: The most demanding</td>
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<td>care, sensors and data links offer possibilities</td>
<td>use of the Internet of Things involves the</td>
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<td>for monitoring a patient’s behavior and</td>
<td>rapid, real-time sensing of unpredictable</td>
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<td>symptoms in real time and at relatively low</td>
<td>conditions and instantaneous responses</td>
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<td>cost, allowing physicians to better diagnose</td>
<td>guided by automated systems. It mimics</td>
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<td>disease and prescribe tailored treatment</td>
<td>human reactions, though at vastly enhanced</td>
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<td>regimens. Patients with chronic illnesses,</td>
<td>performance levels. The automobile industry,</td>
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<td>for example, have been outfitted with sensors</td>
<td>for instance, is stepping up the development</td>
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<td>in a small number of health care trials</td>
<td>of systems that can detect imminent collisions</td>
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<td>currently under way, so that their conditions</td>
<td>and take evasive action. Certain basic</td>
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<td>can be monitored continuously as they go about their daily activities. (Chui, 2010)</td>
<td>applications, such as automatic braking systems, are available in high-end autos. The potential accident reduction savings flowing from wider deployment could surpass $100 billion annually. Some companies and research organizations are experimenting with a form of automotive autopilot for networked vehicles driven in coordinated patterns at highway speeds. This technology would reduce the number of “phantom jams” caused by small disturbances that cascade into traffic bottlenecks.</td>
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Internet Concepts – What is a Computer Network?

A computer network is a collection of devices that communicate with one another using wired and wireless technology. Here is an illustration of how your network at home or in the local library might work (see definitions)

Definitions:

LAN: Local Area Network. Computers and peripheral devices connected together “for the purpose of facilitating the exchange and sharing of information and resources normally within a floor or building” (Infigro, 2007).

WAN: Wide Area Network. One or more LANs connected together. The Internet is a world-wide WAN.

Router/Modem (in the home, these are most often converged in a single device – Hybrid Modem): A device that forwards data packets along networks. A router is connected to at least two networks, commonly two LANs (QuinStreet, Inc, 2010). A modem (modulator/demodulator) is a device that enables a computer to transmit data over any network along telephone or cable lines or wirelessly (QuinStreet, 2010).

Client: a computer that connects to a server and relies on it for some functionality (for example, displaying Web pages). Client devices are usually used by end-users of the Internet – us!

Internet Service Provider: A company that charges a monthly fee for WAN access. They connect client computers to servers around the world. This is how the Internet works.

Peripheral Devices: anything external to the computer itself (a mouse, speakers, keyboard, flash drive, etc). Cameras, printers, PDAs (personal digital assistants), microphones and smart phones are peripheral devices, too. VoIP: Voice over Internet Protocol: use an Internet connection to make phone calls.
Connect to an Internet Access Point

What do you need to connect to the Internet? Something called “a network interface controller (NIC). [It] is a computer hardware component that connects a computer to a computer network. The low cost and ubiquity of the Ethernet standard means that most newer computers have a network interface built into the motherboard” (Wikipedia, 2013).

Computer devices (including computers, smartphones, tablets, and laptops) have a wireless adapter that creates radio signals that are picked up by wireless routers (How WiFi Works, 2013).

This is what we need to activate in order to connect to the Internet.

This is the Wireless Connection Center icon, located in the lower right corner of your screen, in the system tray. Mouse over it and **click once**.

The Center will open. Click on the connection with the **strongest signal**, as seen by the green bars on the right.

Click connect and wait for your computer to connect to the Internet.

Once you are connected, there will be five white bars in your system tray.
What Devices are connected to the Internet?

Utilities, consumer electronics (mobiles, TVs, appliances, etc), Point of Sale devices, vending machines, ATMs, cars, homes, buildings, wearables (like watches), healthcare, and even more things. Even cities will be connected by cameras, roads, and more.

The connected vehicle automotive segment is at the intersection of the Internet of Everything (IoE), the Internet of Things (IoT), and the Internet of Humans (IoH), concepts that are defined and explained in the previous ABI Research Whitepaper "Internet of Things vs. Internet of Everything – What's the Difference?"

Web Browsers and Web Sites

“Browsers are software programs that allow you to search for and view various kinds of information on the Web, such as Web sites, video, audio, etc.” (Boswell, 2008).

Internet Explorer is one type of Web browser. There are many different kinds of browsers, but they function similarly. Examples include Firefox, Chrome, Opera, and Safari (Mac).

Using a browser allows you to access Web pages which are stored on a server. Web page(s) make up Web sites. A single Web site may consist of one page to thousands of pages, just like books.

Open the Browser

There are two ways to open the Internet:

Double click on the icon on the desktop or

Single click on the taskbar

Web Sites – Home Page

The anchor page of ANY Web site is called the Home page. It is the starting point of the site, much like the cover of a book. A good Home page will have an easy-to-remember web address (like www.btopexpress.org), introduce you to the company or person who owns the site, and will clearly point the way to additional pages in the site – like the table of contents in a book.

If you know the Home Page address of a Web site, it’s very easy to find the site!

Here’s a portion of the BTOP Express’ Home Page:
We see the NIOGA logo, alongside the BTOP logo, and these introduce us to the owner, and multiple **hyperlinks**. Those are elements in a Web page that allow users to see new items or Web pages. Your mouse indicator will change its shape to a hand when you move it over the link.

**Links** may be **words, images, or animation**.

A **link bar** is an element on a page that is usually **across the top** (like the trucks we see here) or along the **left** side. **Link bars** are a common way to navigate in a web site, so be sure to look along the top or left side of a page to find important information.

Clicking on links and following them from page to page and site to site is called **Web surfing**. This is how anyone may access available information from the Internet (and spend hours in front of a computer screen)!

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**The Toolbar – Buttons Make Life Easier!**

Any **toolbar** presents some of the most common functions of the program as **buttons** (visual aids that allow you to move from one place to another quickly).

We will discuss the **most frequently used** buttons.

Use your **mouse** to click the buttons.

**Back**
- Goes backward to the **first** page viewed.
- May be used after viewing at least two Web pages.

**Forward**
- Goes forward to the **last** page viewed.
- Can only be used **after** using the Back button.
- These buttons work in conjunction with one another – like flipping pages in a book.

**Refresh**
- Re-requests the same web page from the server.
- Automatically **updates** any information on the page (stock quotes, weather, sports scores, school closings).
- Functions like “redial” on your telephone.

**Button Placement Overview:**

![Button Placement Overview](https://www.google.com)
URLs and the Web Address Bar

A **URL** (Uniform Resource Locator) is a string of characters (letters, punctuation, or numbers) typed into the **Web address bar** WITHOUT spaces. (The address bar is the only place you type without using your space bar – you should use proper word spacing everywhere else on the Internet.)

URLs can be **hundreds** of characters long. In any Web browser, the **address bar** will display the URL of the web page you are currently viewing.

Every single Web page has a **unique** web address that the **browser** uses to “call” a web page. “[T]he number of individual web pages out there is **growing by several billion pages per day**” (Alpert, 2008). The search engine Google has an index of over 1 trillion **unique** URLs (see Alpert, 2008).

“Eric Schmidt, the CEO of Google, the world’s largest index of the Internet, estimated the size at roughly 5 million terabytes of data. Schmidt further noted that in its years of operations, Google has indexed roughly 200 terabytes of that, or .004% of the total size” (McGuigan, 2011).

If you know the **exact address** of a web site, type it directly into the address bar. For example, let’s look at Yahoo.

Click once in the bar, right on top of the “www.” This will turn the lettering white and blue.

Type right over the blue: **www.yahoo.com** and press **Enter** on your keyboard.

See how the Yahoo home page loads?
A Word about Tabs and Ads

Advertisements appear frequently on web pages. Without ads, the Internet would not be freely available to us.

Regardless of where on a page the ad appears, it will be marked as such, with the word sponsored or ad above it.

This ad is for Progressive Car Insurance.

When you click on an ad, it usually opens up in a new tab. Tabs are at the top of your screen.

Tabs are important, because once you are in a new one, the back and forward buttons will no longer move you anywhere. A new tab is like a brand-new window.

This is important to note, because new Internet users can sometimes click on an advertisement accidentally, and get “lost.” They can’t “get back” to the page they were viewing.

To get back to where you were, just close the new tab by clicking the small grey “X” on that tab.

Now we’re back to one tab!
Address bar (Omnibox) (Google Support, 2014)

Located at the top of the Window, above the menu bar, it's used to navigate to a particular Web page:

1. Type in the exact Web Address (Each page has a unique address!)
2. Search the Web: Simply type your search term in the address bar and press Enter to see results from your default search engine. (Could be Google, Yahoo, or Bing as a default).

3. Search and browse the web faster by trying the Instant feature for the address bar. With Instant enabled, search results and webpages appear as you type in the address bar, even before you press Enter. If you don't see the results you want, just keep typing and the results dynamically update.
4. Search for bookmarks, browsing history, and related items: When you type in the address bar, it automatically shows you matches from your bookmarks and browsing history:
   - ★ appears next to bookmarked sites
   - 🔍 appears next to searches, including related searches if you have the prediction service turned on.
   - 🗄️ appears next to matches from your browsing history, or related sites when you have the prediction service turned on.

Create bookmarks

Click ★ at the right end of the address bar to create a bookmark.

Search Engines – Your key to finding URLs

So knowing a Home Page address is all well and good, but what do you do if you know what you're looking for but don't know the exact Web address? Use a search engine!

A search engine is an information retrieval system that is designed to assist people in finding data (Web sites, images, audio, etc.) stored on a computer system.

Search engines function similarly to the yellow pages – they allow you to look up information without knowing the exact business name (“carpenters,” “plumbers,” “auto repair,” etc).

![Diagram of search engine process]

A query is the text you type into the search box

Interface (what you see)

End User (you)
Examples of commonly used search engines (there are thousands of different ones in existence):

www.google.com
www.ask.com
www.yahoo.com
www.dogpile.com
www.about.com
www.mamma.com
www.bing.com
www.eHow.com
www.mamma.com
www.duckduckgo.com

…..Practice……..

Click once in the Address bar (lettering turns blue)

TYPE YOUR SEARCH HERE.

Omnibox Search


You will also be given a suggestion list (Google Suggest) below the search box.

If you are conducting a search and see your choice, you may click on it with your mouse) If you don’t see your particular search, type in what you want and press the Enter key on the keyboard

Click on any blue link on the results page to view the information on that web page
Notice:

**The Link (Blue):** The first line of any search result is the title of the webpage.

**The URL (Green):** The webpage's address.

**The snippet (Black):** A description of or an excerpt from the webpage.

**Similar links (Light Blue):** A link to a page within the site that is similar to your search. Click here if the page you wanted isn't available.

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**The URL is important** because it gives you important domain information:

### Domains:

- **.com** – for standard sites and commercial sites, usually designed to sell things
- **.biz** – also for selling items, stands for business
- **.edu** – education, for schools, colleges, and universities (big difference from [www.buffalo.com](http://www.buffalo.com) and [www.buffalo.edu](http://www.buffalo.edu))
- **.org** – for nonprofit organizations (like public libraries)
- **.net** – for a specific network (like Verizon)
- **.gov** – usually stands for United States government bodies
- **.mil** – for the United States military departments
- **State Codes** – for US State departments (Motor Vehicles, Department of Labor, etc.)
- **Country Codes** – specific to the country, for example .ca (Canada), .uk (United Kingdom), .au (Australia)
- **.xxx** (yes, really, I won’t explain here).

Domains give quick and easy information as to what kind of site you will visit and, sometimes, how trustworthy the data will be. I wouldn’t necessarily trust medical information from a .com site, I’d probably be more inclined to trust a .gov site.

The link is the most important feature on the results page because it allows you to actually view a chosen web page. **Use your mouse to click the link to the official White House web site.**

I know this is the White House web site because it says so here (URL).
Several important things to note:

There is a fancy link bar across the top. Mouse over it to find more navigation options.

There is a scroll bar on the right side of the page. This means that the Web page is longer than your screen. Use your mouse to scroll down the page to see the whole thing.

Every word on the left side of the screen is a link to another page with more information. Clicking on links is how you navigate the Internet.

You can follow links anywhere on the Net; you will know something is a link because it is generally BLUE, might be underlined, or your mouse indicator will turn into a hand. A button or picture can be a link too.

References


**Resources**

**These items are available in the NIOGA Library System!**
**Contact your local library for assistance!**

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<thead>
<tr>
<th>Call Number</th>
<th>Author</th>
<th>Title</th>
<th>Date</th>
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<tbody>
<tr>
<td>338.761 CLEL</td>
<td>Cleland, S</td>
<td>Search &amp; destroy : why you can't trust Google Inc.</td>
<td>2011</td>
</tr>
<tr>
<td>005.758 GOOG</td>
<td>Google</td>
<td>Google for Seniors</td>
<td>2010</td>
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<tr>
<td>004 OKEE</td>
<td>O'Keeffe, G</td>
<td>CyberSafe : protecting and empowering kids in the digital world of texting, gaming, and social media Cyber Safe.</td>
<td>2011</td>
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