

Basic Computer Skills: An Overview

Proficiency in the use of computers and common software packages is essential to completing technical tasks and in communicating results. The basic skills required include:

- basic familiarity with hardware and operating systems,
- proficiency with file and information management,
- the ability to use word processing software,
- the ability to use spreadsheets,
- the ability to use presentation software,
- understanding of the internet (www and e-mail), and
- the ability to search for information on the web and at the library.

Note: The text in boxes describes things you should try or work through, and the open squares used for some lists are checkboxes that should be marked when you know how to use that particular software function. It is best to read this document while on/at a computer, so you may explore the topics discussed.

Hardware and Operating Systems

Most of the hardware and operating systems will be configured for you, particularly in public computer labs. There are a few key things that everyone should know:

- **mouse right clicks:** when you click the right mouse button, a context-specific menu pops up. The context comes from *where* the cursor was when the right button was clicked. Each software application presents different options. When you can't find a menu item, right click on the thing you want to work with and see what happens!

Right click on the Windows Title Bar (top of window). What are your options?

Right click on the task bar at the bottom of the Windows desktop and select Task Manager. What applications are running on your computer?

- **printers:** Ink and paper is expensive, so it's wise to set up print jobs right the first time. If the printer(s) is attached and configured, printing options are generally controlled from within each application with 'Page Setup.'

Locate and list the printers available from the computer you are working on. How was this information found?

Information about the operating system and computer resources is critical to troubleshooting problems with hardware, software, and peripherals. The following questions will help you learn where to find this information. Note: for your reference, write down how you found the information!

What operating system is running on your computer? How did you find this information?

How much memory does your computer have, both total and available?

What drives (hard disks, zip drives, etc.) are attached to your computer?

How much free hard disk space is on your computer? Note: make sure you know the difference between memory and disk space!

Create a directory (folder) named CE115 within the c:\temp directory on your computer. If the c:\temp directory does not exist, create it.

Put a shortcut to c:\temp\CE115 on the desktop.

Describe how you would terminate a program that is no longer responding.

File and Information Management

Digital information is in some ways easier to manage than printed media, and in some ways more difficult. While working towards your degree, you will be provided with a lot of information, much of it will be useful to you in your career... *if* you save it and can easily find it later. So, it will be useful for you to develop a plan now to organize and save the educational resources you encounter in your studies. This plan should

include: an organizational (folder) structure suitable to finding information at a later date, the media you will store the digital files on, a schedule for saving the information, a back-up plan. For example, you may decide to burn 2 CDs (one + backup) at the end of every semester to contain all that semester's work. On each CD will be several folders, one corresponding to each of the courses you took that semester. Within each of the course folders will be several sub-folders for various aspects of the course (e.g., assignments, project, notes, etc.). Or you could organize according to topic, resource type, file type, etc.

Outline a plan to archive the digital resources you obtain while at UI.

Word Processing

Note: You can use the Help menu in Word (or any program) to learn more.

The following basic skills are necessary to prepare most documents:

- typing, selecting, copying, cutting, and pasting text
- formatting documents for readability with margins, fonts, bold/italics, tabs
- find (search) and replace text
- insert headers and footers
- using page and section breaks
- numbering pages
- inserting dates/times
- creating various types of numbered and bulleted lists
- using tables
- inserting figures (graphs, pictures, etc.)
- inserting equations
- tracking document changes
- inserting, reading, and deleting comments

Open a blank document and figure out how to do each of the above tasks – use Help as necessary. E-mail a document back and forth to a friend, each making a few changes with the track changes option.

Spreadsheets

Spreadsheets are essential to many engineering computations; you *will* use them extensively. These are the *fundamental* skills you will need:

- working with (selecting, formatting, resizing, cut/copy/paste) cells (and cell addresses), rows, and columns
- working with multiple worksheets
- importing and exporting data
- using pre-defined functions like `exp()` and `average()`
- using formulas, particularly *relative and absolute cell referencing*, cut/copy/paste operations
- sorting data
- creating, editing, and formatting various types of charts
- using comments

Open a blank spreadsheet and perform the following tasks:

1. in cell B2 enter the number: 0.1
 2. in cell B3 enter the formula: `=B2+0.1`
 3. copy this formula down to create a column of numbers from 0.1 to 3.
 4. using the AVERAGE function, compute the average value of this column of numbers at the bottom of the column
 5. in cell A2 enter the number: 1
 6. in cell C2, enter the formula: `=exp(-B2*A2)`
 7. create an X-Y plot of the data in columns B (abscissa) and C (ordinate) (title the graph, and label the X and Y axes)
 8. change the value of cell A2 to 2: what happens?
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9. What is the difference between using `A2`, `$A2`, `A$2`, and `A2` as a cell address in step 6?

Presentations

Developing a fancy presentation with PowerPoint to accompany a talk is easy – almost too easy, because folks often have the urge to use wild backgrounds, excessive animation, and funny sounds. Most of the fancy stuff is just distracting. The key to good presentation graphics is simplicity (which is not the same as boring). Use plain or simple backgrounds with large, contrasting text for text slides (I like light text on a dark background, but others prefer black on white); use pictures and graphs as appropriate in text slides or independently; and avoid distracting side effects.

In order to create presentations, you will need to be able to do the following:

- open presentations with various layouts
- use slide backgrounds, designs, and layouts
- choose an appropriate font size and color
- insert pictures, graphs, tables, etc. from other software
- use the various views that are available
- re-order slides
- run the presentation

Internet

The internet consists of hosts (servers), routers, clients, and connections. It works using a rigorous protocol of transferring “packets” of information, using what is known as TCP/IP (among other protocols). The technological details are better left to computer scientists. Civil Engineers are more interested in using the internet as a tool to complete work. There are two primary aspects that everyone must be familiar with in order to work in the modern world: using “the web” and e-mail.

WWW

Essential use of the World Wide Web requires knowledge of browsing, searching, downloading, and referencing copyrighted material. Almost everyone is familiar with web browsing, most likely using MS Internet Explorer (an excellent alternative choice is Mozilla Firefox). Web sites/pages are described by URLs (Uniform Resource Locator) – it is essentially an electronic address. These addresses can be saved as a “favorite” (or as a bookmark in Firefox). They are also embedded in web pages as “links” to other pages; links are typically highlighted using a different color font and/or underlined in text, or embedded in various images. By clicking on a link you are taken to another page. URLs contain valuable information about a particular web site. URLs for web pages usually begin with “http://” which tells the browser what communication protocol is used: Hyper Text Transfer Protocol. You may also see “ftp://” leading the address: File Transfer Protocol. The “www” that often follows this indicates that the location is on the WWW. Next is site-specific information, separated by periods, that increases in generality. For example, in <http://www.uidaho.edu> “uidaho” is the name of the school, and “edu” indicates that it is an educational site. Understanding the anatomy of a URL helps in finding information on the web.

Information on a particular subject, when the URL is unknown, is discovered (i.e., the URL is found) most commonly by using a search engine. Google (<http://www.google.com>) is currently the most widely used search engine. *The key to effectively using search engines lies in choosing the search phrase.* Search phrases are composed of keywords, author names, or other words related to the topic you are researching. It often helps to be specific as possible given the search goals, as unless you tell the search engine otherwise, it will return all documents that contain the words you enter. As an obvious example, one would search on “1984 Chevrolet Scottsdale steering column linkage diagram” when trying to find information on putting something back together that you really shouldn’t have taken apart in the first place, rather than “truck repair.” If possible, use words in the order the order you think they are used at the site; an exact phrase or sentence, if known, enclosed in quotations will often lead directly to the reference you are looking for. More information on searching is found here: <http://www.google.com/help/>. For academic research, also try <http://scholar.google.com/>.

Many times you will want to save a file you find to your computer. Files of all types can be referenced by a URL. Some are displayed by your browser automatically, and sometimes you are asked what to do with the file, depending on your browser’s and the site’s settings. By right-clicking on the link, it is possible to control the action taken. For example, with Internet Explorer, the option “Save target as” is presented after right clicking on a link; choosing this will result in the referenced file being downloaded. You can also save images in this manner (unless they are protected by code at the web site in question). Portions of web sites can be downloaded by highlighting the text and right-clicking on the formatted region. This leads to how downloaded information can be used...

Unless a web site *explicitly states* it, or any part of it, *can* be reproduced without limitation, it is copyrighted. Information obtained from web sites that do not contain copyright information can not be used without proper referencing; they are inherently copyrighted (as a result of the Berne Convention). In order to avoid *plagiarism*, information taken from web sites must be properly referenced, including the date which the web site was accessed. **Plagiarism occurs when you use but do not cite someone else's work, even if it is re-worded; or by not indicating that a passage (paragraph, sentence or sometimes part of a sentence) is directly quoted even if the reference is cited.** The amount of re-wording necessary is debatable, with the most stringent view being that three (or more) words used identically to the reference constitutes plagiarism. This extends to paragraphs: completely re-wording every sentence in a paragraph but retaining the paragraph structure is arguably plagiarism (not to mention lazy). Remember: just like it is easy to cut-and-paste information from web sites, it is easy to use search engines to find plagiarized passages. Unfortunately, I know this from experience.

E-mail

Everyone is likely to have at least some experience with e-mail. At UI, students are required to use VandalMail for university communications. Use of VandalMail is described here: <http://www.its2.uidaho.edu/vandalmail/>. It can be accessed with a web browser, and/or your preferred e-mail program (e.g., Outlook, Pegasus, etc.) can be configured to work with the system. One of the key considerations in how you use VandalMail is deciding where you want your messages to be stored: on the VandalMail system, or on your own computer. By leaving your mail on the VandalMail system, you will have access to your messages from any other computer, but may eventually run out of space. If you use VandalMail from a browser only, or use the IMAP protocol with your own mail program, you will be leaving messages on the UI servers. You can configure an e-mail program to download your messages to your computer by using the POP protocol. Configurations are described here: <http://www.support.uidaho.edu/default.aspx?pid=45492>. I personally use a combination of techniques: when on my own computer, I use Pegasus mail and download (and delete) messages from the UI servers, and when checking my mail from other locations I use a web browser to read the mail, and leave the messages I want on the server (new mail folder) to be downloaded later.

An essential aspect of using e-mail is how to send and receive attachments. The above links will help if you do not know how to use attachments with VandalMail. The help utility of your preferred e-mail program will have program-specific instructions.

UI Library

Don't forget that there are many sources of information other than the world wide web!! The UI library has tools available to search for books, journals, and government documents, all vital sources of engineering references. And, if our library doesn't have it, they can almost always get it through Interlibrary Loan. Library information is found here: <http://www.lib.uidaho.edu/>.