

Texas A&M University
ENGR 111 - Intro to Electrical and Computer Engineering

Lab 1

User Guide

Team Number: NONE FOR LAB 1

Team Member Names:

DO WORK INDIVIDUALLY FOR LAB 1

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ENGR 111 Lab 1 – Word/Excel

Purpose

This lab is designed to familiarize yourself with the lab computing environment (Microsoft Windows), and teach you the basics of Microsoft Word and Excel. Lab reports will be written in Word and graphs will be generated in Excel.

Lab Overview

Perform Internet research and write a Word document.
Graph projectile motion in Excel.

Procedure

This lab is to be performed as *individuals* and turned in independently. All other labs will be done as a team, when your teammate is assigned to you.

Part 1:

Big Picture :

Writing is an important and essential part of any engineering job. Your job may involve writing instruction manuals, project reports, research papers etc. It is necessary for you to learn to write well. Even though, this course doesn't teach you writing per se, this exercise is meant to reinforce the importance of writing.

Second, the web makes it easy to research material on any subject. We encourage you to use the resources on the web for your classes. Finding, studying and using material from the web does not mean that you can plagiarize the material without attributing the source of the material. Whenever you locate some useful information and use it in your reports and projects, you **must** cite or acknowledge the source of the material.

Generally, you should write reports in your own words. You can paraphrase the material from the web or textbooks as long as you cite your sources. You should avoid using material verbatim from any source. But, if you think it is necessary to use the material verbatim, you must put them in quotes, identifying that the material in quotes is borrowed from the source identified in your citations.

Most of you learn to use word processors for writing documents in school. Word is being used here, merely, as an example of word processor software, and not for enhancing Microsoft's profits.

Word Assignment

Create a Word document including:

1. A JPEG or GIF image from the Web about a well-known electrical or computer engineer. The image can be color or black-and-white. Provide the appropriate citation for the image source.
2. A 50-word paragraph about that engineer. Use quotations and citations as appropriate. Write in your own words. Copying with attribution is not acceptable. Copying without attribution is plagiarism. The paragraph can be slightly more than 50 words, but not less than 50 words.
3. A table of 3 rows and 4 columns (see example below). It should contain:
 - a. Headings centered in the top row
 - b. Data centered in the other rows
 - c. Lines above and below the top row and a line below the bottom row
 - d. Choose whatever data interests you.
 - e. The table should be centered on the page.
4. An equation created with the Microsoft Equation editor. Example: $a^2 + b^2 = c^2$

Name	Age (years)	Weight (lb)	Height (ft-in)
Hank Walker	47	260	6-0
Bob Smith	38	150	5-8

Part 2:

Big Picture

A lot of engineer's work is quantitative, i.e., it involves measurement, calibration, charting etc. We use tables, figures, plots, and charts to represent measured or observed data and in order to see trends. This exercise is meant to get you to understand the basics of representing quantitative data.

It is important to clearly identify the data that is being measured. In an x-y plot, you need to identify what is represented on both the axes. The independent variable normally goes on the x-axis and the dependent variable is normally plotted on the y-axis. For example, $F = C * 9/5 + 32$, represents the equation for converting temperature in Celsius to Fahrenheit. In this equation, C is the independent variable, F is the dependent variable. Each axis should clearly identify the units used to measure that variable. In the figure below, both the axes use meters as a measure.

Second, every table, plot, and figure should have a caption to identify what is being depicted. In our example above, we could title it "Temperature Conversion from Celsius to Fahrenheit" so that the plot is self-explanatory.

If there are multiple curves in a single figure, you should use different symbols, colors to identify each curve and an accompanying legend should explain what each curve is representing.

Excel is used as representative software to generate plots, figures etc.

Excel Assignment

You are to solve the following problem. A ball is thrown from a 100 meter height in the horizontal direction. We have to find the trajectory of the ball until it hits the ground. The initial horizontal velocity is 10 m/s. Use the following equations to find the horizontal and vertical distance:

- Vertical Distance = $0.5gt^2$
- Horizontal Distance = $v_h t = 10t$

where g is the Earth's gravitational acceleration in $m \cdot s^{-2}$, t is time in s, and v_h is the initial horizontal velocity of 10 m/s. Note that we use standard SI (metric) notation for units.

The equations ignore air resistance.

Using Excel, plot the trajectory of the ball on an X-Y (scatter) plot, with the horizontal distance on the X-axis, and the height on the Y-axis. Adjust your data and plot so that the ball does not go into the ground. Properly label your graph with a title, and label the axes with dimension (what the quantity is) and the units (i.e. meters). An example of an X-Y plot is given below.

