ME 402: Using Figures and Tables in Written Communication

Figures and tables, if used correctly, can help you communicate clearly. Although there are many acceptable styles for using images and tabular formats, this document attempts to layout consistent guidelines for written communication in this course.

Figures

Over the course of the semester you will be asked to produce many two-dimensional graphs and include them as figures in your written documents. For the purposes of this guide we’ll use the term ‘figure’ to describe the component of a written document that includes a graphic, such as graphs, drawings or photographs. The graphic inside the figure will often be a graph. For example, Figure 1 includes a graph and a caption.

To be used as part of your report, a graph must consist of the following components:

- axis labels including a description and engineering units;
- appropriate linestyles with a legend; and
- (optional) title.

The “linestyle” is the color and the type of line. Types of lines include solid, dashed, or individual points. When you have multiple objects (lines, curves, data points, etc.) in a single graph, it is important to carefully select the linestyles that clearly show each object.

Figure 1: This graph illustrates some of guidelines for presenting two-dimensional graphs. Notice the different linestyles, a legend, labels on both the horizontal and vertical axes and units within the labels.
The text in your graph should be approximately the same size as the text in the body of your document. The text in Figure 1 is a bit smaller than the written text.

Once you have a properly formatted graphic, you need to add it to the body of the text with a caption. The caption should include the word “Figure” followed by a sequential number, a colon and a brief description. The caption should be below the graphic. The description within your caption should stand alone so that a reader can understand the content of the figure even if they don’t read the text. It is best if these captions include one or two complete sentences.

Finally, your figure must be referenced within the text of your document. The reference should use the format “Figure X” where “X” is the number of the figure. The word “Figure” should not be abbreviated and should always be capitalized. If you need to refer to multiple figures at once you can do so in a similar way. For example, “Figure 1 and Figure 2 illustrate something important.” or “Figures 3 through 6 show something else important.”

An orphaned figure—one that is never referred to in the text—is a terrible thing. Figure 1 is certainly not an orphan. Most modern document preparation software allows for dynamically linking captions with the text. This is a convenient feature for large documents that allows you to avoid having to manually renumber all your references if you add a new figure.

(For more information on ways of inserting figures and using the cross-reference tools in MS-Word see the associated document on the course website.)

**Tables**

Tables are useful for summarizing or comparing results. Stylistically they are similar to figures in that they augment your written work. As an example, we might consider the comparison between a naïve model of a two-by-four piece of lumber with an experimental measurement.

| Table 1: Summary of model and experiment results for two-by-four dimensions |
|-----------------------------|---------------------|---------------------|---------------------|
|                             | Analytical (Nominal)| Experimental        | Percent Difference   |
| Width [in]                  | 2.0                 | 1.5                 | 25.0%               |
| Height [in]                 | 4.0                 | 3.5                 | 12.5%               |

The results are summarized in Table 1 including a comparison of the agreement between the analytical and experimental results based on the fractional difference between the two. Tables, like figures, must have a caption, but the caption is above the table. It is also centered with respect to the page. The description within a table caption is often more succinct than that of a figure, but it should also stand alone. Also, tables must be referenced within the body of the text using the format “Table X” where “X” is the sequential table number in Arabic numerals.