Microsoft Word 2013 for Electrical Engineers

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Why Use Word?

Microsoft Word is one of the most finely developed word processing programs in the market, leading to it being the most popular word processing program in the world. Most common computers make use of this program, particularly the immensely popular IBM Personal Computer that most electrical engineers encounter in professional workspaces.

Why Use Word for Electrical Engineering?

Word has an incredible number of features that make your job as an electrical engineer so much easier when you're trying to communicate clearly and concisely. For instance, Word helps you…

- Insert watermarks on every page to protect your intellectual property (Module 1.2)
- Insert clean and clear equations (Module 2.3)
- Insert complex charts using the data you've provided (Module 3.4)

Why Use This Manual?

Though the creators of Word try to make the program more user-friendly with each update, sometimes there are so many intricate features that even the most technologically-adept user might get confused.

The purpose of this manual is to help you, the reader, complete the average tasks that one encounters as an electrical engineer when creating a document in the case that the solution to your problem is not immediately obvious.

Microsoft Word 2013, which this manual focuses on, is one of the most common programs already installed in workplace computers. Though newer versions of Word have been released, the greatest changes that would be reflected in this manual regard the general design of the program, rather than different operations.

BASIC PROFESSIONAL FORMATTING

Chapter 1

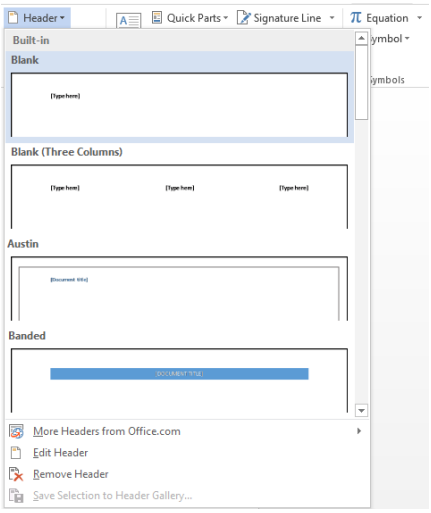
Every engineer must grasp the basic concepts of using and formatting documents in a clear, professional format to avoid any chance of confusion. When you create clear and consistent formatting from document to document, you help yourself and your readers understand the material and stay organized.

1.1 Insert Headers

Headers are an easy way to label the documents you are working with at any given time and make sure that you are given or your company is given appropriate credit. Once you insert headers, the information placed there appears on every page you work on automatically.

1. Click the **Insert** tab on the ribbon.
2. Click the **Header** option in the **Header & Footer** section.

   Several options appear, such as those in the figure below.



3. If you see the style you want for your headers on the menu, select that option. If not, select the first option, entitled **Blank**.

   Word opens the Header section of the page and inserts the phrase "[Type here]."

4. Type the information necessary into the heading (such as the type of document or your company's name).

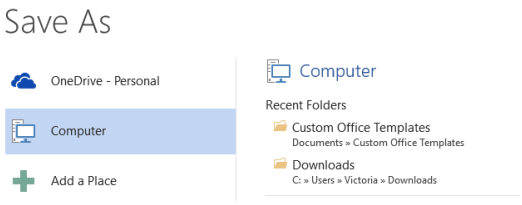
➢ **NOTE:** When you click away from the Header and continue working on the main text of the document, the Header will appear faded—in other words, when the header is black, it will look gray when you are not working on it. However, when you print the document, the header will print in the color you selected for it—whether that be black, purple, gray, etc.—not the color it appeared to be when you were working on the text of the document outside of the header.

1.2 Create and Use Your Own Template

Creating templates is an easy way to set up your documents with all of your basic professional formatting. Once you create a template, all the details that you want to include on your document, such as headings, watermarks, font selection, and so on will automatically appear with one simple click.

1. Add the content you want to be in your template.

   Click **File** on the top left corner of the window and select **Save As**.



1. Double-click **Computer**.
2. Type the title of your template into the **File name** box.
3. Click on the **Save as type** menu and select **Word Template**.

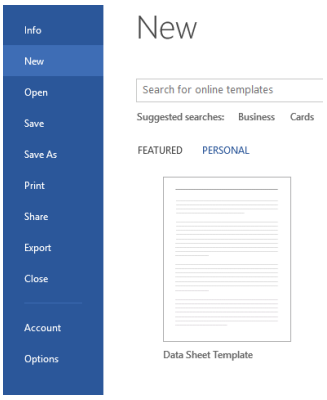
   Clicking this option automatically moves your document to the **Custom Office Templates** folder under **Documents**.

4. Click **Save**.

Once you've created this template, how do you access it?

1. Click on **File** and select **New**.
2. On the window that appears, select **Personal**. Your new template is the first listed.

   A new document opens with your template in place.

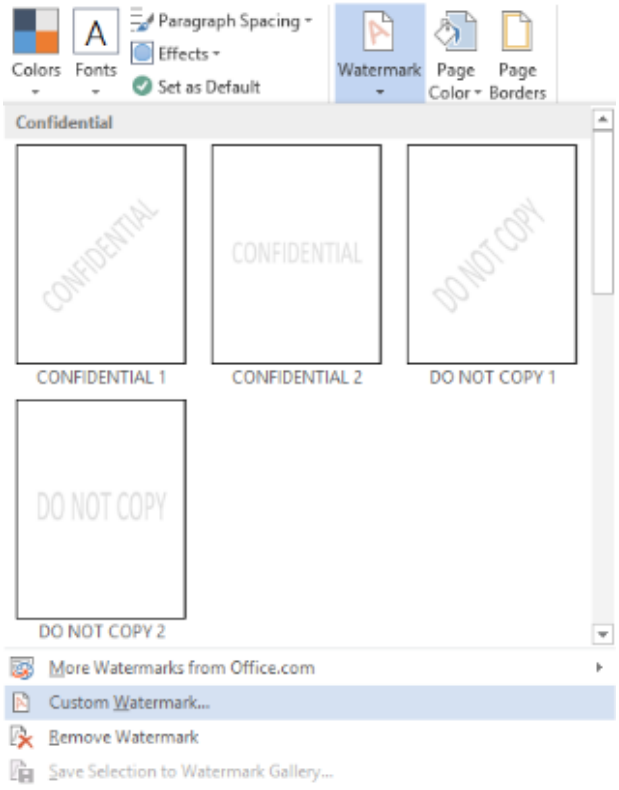


1.3 Insert Watermarks

Watermarks are an easy way to make certain that important information, such as copyright or other warnings, is seen on every page of your work.

3. Click the **Design** tab on the ribbon.
4. Select **Watermark** on the far right of the ribbon.

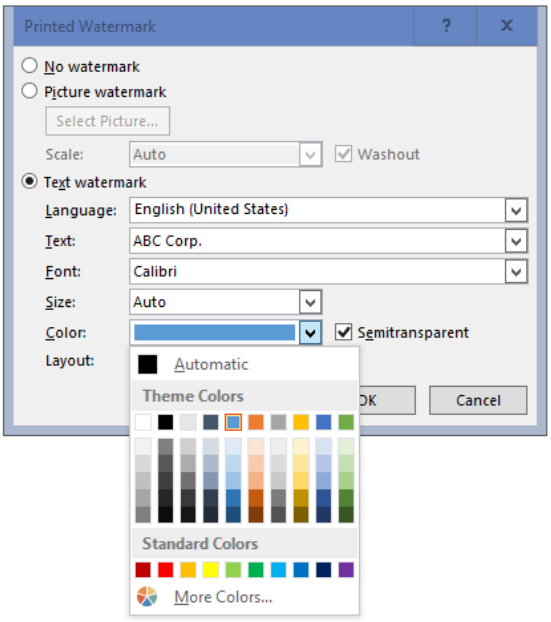
   Several basic options appear, as seen in the figure below.



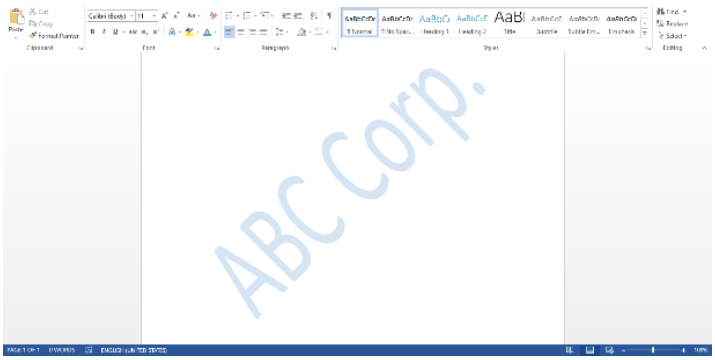
5. Scroll to the bottom of the menu and select **Custom Watermark**. A menu appears.
6. Select **Text watermark**.
7. Enter the text you want as your watermark under the **Text** box which currently says "ASAP."

   The drop down menu offers several standard options for text, such as "CONFIDENTIAL" or "DO NOT COPY."

8. Adjust the design of the watermark as desired using the **Font, Size, Color,** and **Layout** menus below **Text**.



Your watermark appears on your page like in the figure below.

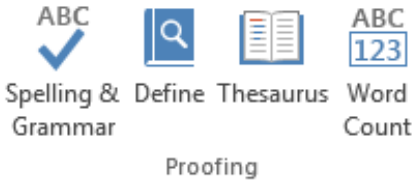


➢ **NOTE:** You can also add more complicated watermarks by selecting **Picture watermark** and uploading an image from your files.

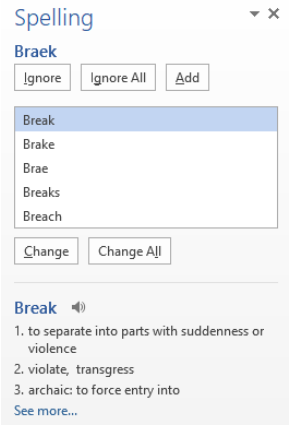
1.4 Check Spelling and Grammar

Having correct spelling and grammar is a vital part of professional documents. Word will automatically be scanning your document for correct spelling and grammar, but it is good practice to check your work again when you have finished adding content to your document using the following steps.

1. Select the **Review** tab on the ribbon.



2. Select **Spelling & Grammar**. Word now takes you through every error the program caught.



3. Choose one of the following:
    - Select the correction that is most accurate.
    - If you believe your spelling or grammar to be correct and you wish remove the underline, select **Ignore** to remove the underline in this one case or **Ignore All** to remove the underlines on all examples of this case in this document.
    - If you wish to permanently remove the red underline from some term, such as a proper name, that Word does not recognize, click **Add** to add this term to the dictionary.

➢ **NOTE:** Spelling corrections will be underlined in red, while grammar corrections will be underlined in blue (like so).

TIP: If you're working in a language other than English, Word offers several other options under **Review** tab on the ribbon. Select **Language** and **Set Proofing Language** on the drop-down menu. You then see several options for checking spelling and grammar available for download.

CREATING READABLE CONTENT

Chapter 2

When creating documents that others are going to read, it's important to keep your audience in mind and format your document to be clean and straightforward. Particularly in complex engineering reports, it is critical that all information is as clear as possible.

2.1 Choose Your Font and Text Size

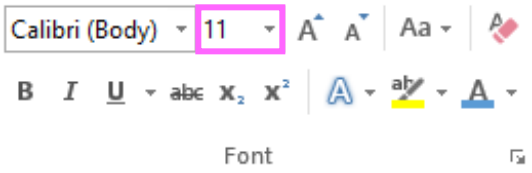
Choosing a font and text size that are both clear and appealing is vital for any document, but particularly in documents that outline very precise information, such as data sheets. Particularly when dealing with large chunks of text, it's important to choose a font that is for your co-workers to read.

1. Click the drop-down menu (highlighted in the figure below) in the **Font** section of the **Home** tab.

2. Select the font that best suits your needs.

   This is the now font for the rest of the document following your cursor.

3. Select the size of your words using the drop-down menu with numbers (highlighted in the figure below) in the **Font** section.



- **NOTE:** If you want to change the font for only one word or paragraph, select the desired text and click on the drop-down menu to select the font.

TIP: You can change the font can emphasize key terms in your documents and fonts like `Courier New` can mimic important styles that will be seen in the software you are working with.

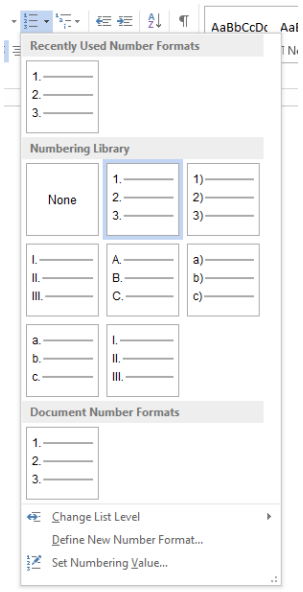
2.2 Create a Numbered List

Numbered lists are useful for creating clear, concise steps in a variety of documents an engineer creates, from design documents to test procedures. Using Word's automatic **Numbering** system, as opposed to typing the numbers yourself, allows you to go back and add a step without forcing you to renumber your entire list manually.

1. Select the **Home** tab on the ribbon.
2. Click the drop-down menu entitled **Numbering** in the **Paragraph** section.

   Several automated options appear.
3. Select the option which most suits your needs.

   The first number or letter of the list appears. When you press enter, the next number or letter of the list appears.



➢ **NOTE:** If you press tab after enter, you create a sub-list as demonstrated below.

1. Software Requirements/Specification
   a. Purpose
   b. Signal Map
   c. Hardware Interfaces

You can edit the numbering or lettering of the sub-list by selecting a number or letter in that list and clicking the same drop-down menu as before.

2.3 Use the Equation Editor

Word offers an extremely useful tool to allow engineers to insert mathematical equations quickly and clearly. With this option, you can create detailed equations in standard form, eliminating confusion about what modifies what and so on.

1. Click the **Insert** tab on the ribbon.
1. Select the down arrow on the **Equation** application on the far right side.

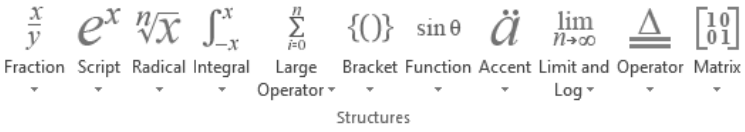
   A menu appears offering a selection of basic formulas.
2. If the desired equation formula is presented in the drop down menu provided, select that option.

   If the desired equation formula is *not* presented, select **Insert New Equation** at the bottom of the menu.

   A box containing the text "Type equation here" appears and a new **Design** tab opens at the end of the ribbon.

3. Use the selections in the **Symbols** section of the new **Design** tab to create your desired equation.

   You are now able to create a simple expression like this: $5x > 3y$
4. If you wish to create a more complicated expression, move to the **Structures** portion of the **Design** tab and select which operation you want to use.



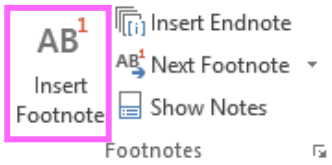
   These functions allow you to create much more complex expressions like this:

$$\lim_{n\to\infty}\left(1+\frac{1}{n}\right)^{n}$$

2.4 Insert and Edit Footnotes

Inserting footnotes is incredibly helpful when you want to cite something or add information that might not need to be right in the main text. Using Word's automatic **Footnote** system, as opposed to typing the numbers yourself, allows you to go back and add a previous footnote without forcing you to renumber all your footnotes manually.

1. Click the **References** tab on the ribbon.
2. With your cursor positioned following the text you wish to add a footnote to, select **Insert Footnote** in the **Footnotes** section, as highlighted in the figure below.



   Your cursor automatically moves to the bottom of the page where the footnote has been inserted.

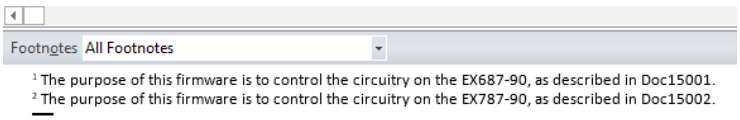
3. Type the information you want in the footnote next to the number provided.

Once you've created your footnotes, how can you edit them?

1. Click the **View** tab on the ribbon.
2. Click on **Draft** in the section **Views**, as seen in the figure below.

3. Click on the **References** tab on the ribbon.
4. Click on **Show Notes** in the Footnotes section.

   Your footnotes appear in a horizontal bar along the bottom of the screen.



5. Select all the footnotes that you want to format and edit accordingly.

Chapter 3

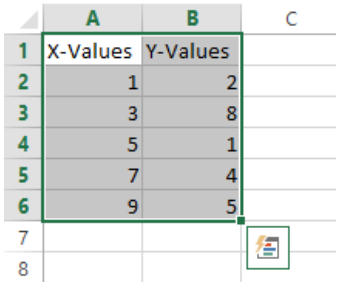
INSERTING FIGURES

Inserting figures is one of the most useful operations an electrical engineer can do in Word, allowing you to express concepts that would otherwise take too much space to explain.

3.1 Insert Data from Excel

Another program electrical engineers often use is Microsoft Excel, and, as such, many engineers often find themselves needing to insert data they've placed in Excel into their Word documents.

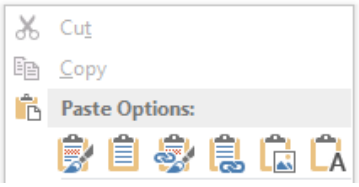
1. Copy the desired data within your Excel spreadsheet using the keys "Ctrl" + "c."



	A	B	C
1	X-Values	Y-Values	
2	1	2	
3	3	8	
4	5	1	
5	7	4	
6	9	5	
7			
8			

➢ **NOTE:** The above screenshot was taken from Microsoft Excel 2013.

2. Open the Word document in which you wish to insert the data.
3. Place your cursor where you want the data to appear.



4. Right-click the document.

   A menu appears.

5. Hover over the clipboards listed under **Paste Options** on the menu to see a preview of the different ways Word inserts the data.

X-Values	Y-Values
1	2
3	8
5	1
7	4
9	5

6. Select the option that works best for you.

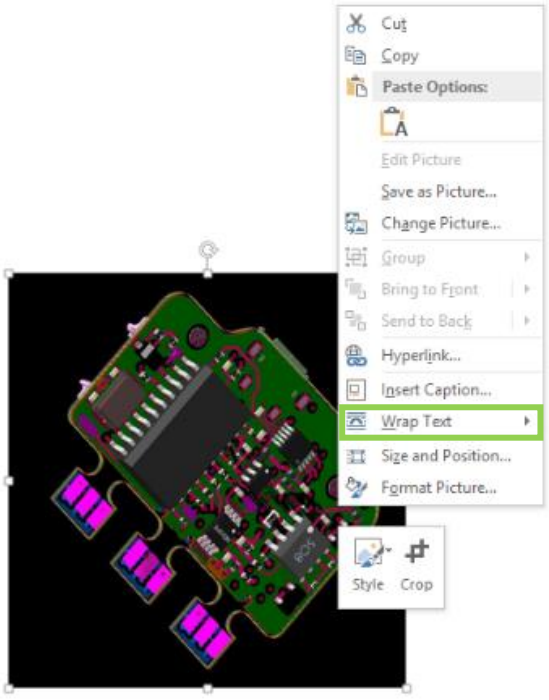
   Your Excel data appears on your document.

3.2 Insert Images

Words alone cannot always explain the complexities of engineering design as effectively as a picture can in much less space, so inserting images is critical for engineering documents.

1. Select the **Insert** ribbon on the ribbon.
2. Select **Pictures** in the **Illustrations** section.

3. Browse your files until you find the desired picture.
4. Adjust the size of the image by selecting the image then clicking and dragging the white dots lining the edge of the image.
5. Adjust the placement of the image by right-clicking the image and selecting **Wrap Text,** as highlighted in the picture below.



6. Select **Through,** which allows you to drag the image wherever you choose on the page, while also moving the text out of the way so nothing is covered.

7. Add a caption to your image by right-clicking on the image and selecting **Insert Caption**.

   This step allows you to clearly label your images so no confusion may arise.

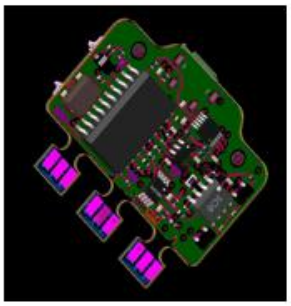


Figure 1.

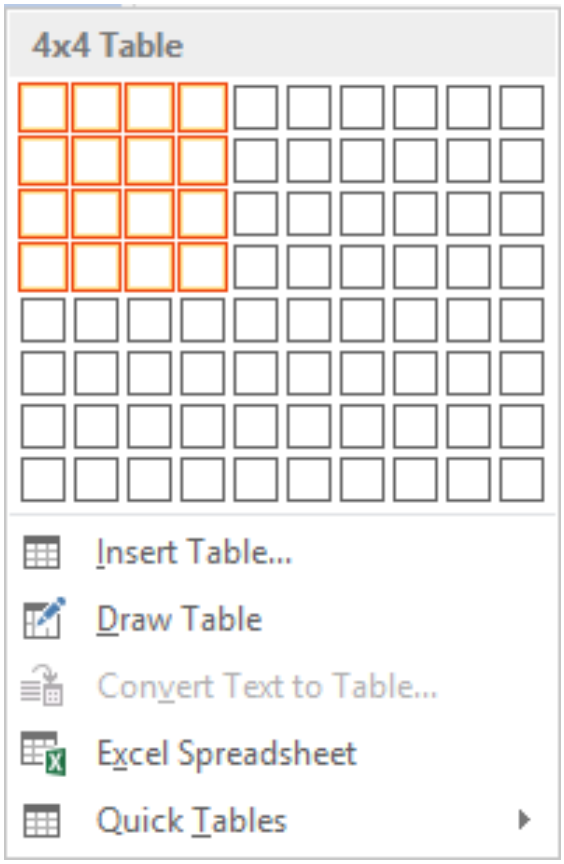
Figure 2.

- **NOTE:** If you keep the automated numbering system inserted in the caption (such as "Figure 1"), inserting a caption on an image earlier in the text will automatically switch the numbers of the later figures.

3.3 Insert Tables

Microsoft Word offers incredibly easy access to the creation of tables, from a simple two column comparison to more complex diagram.

1. Click the **Insert** tab on the ribbon.
2. Select **Table** under the **Tables** section.
3. Drag your cursor over the provided box chart as seen in the figure below to estimate how many rows and columns you need.



- **NOTE**: At this step, you don't yet need to know *precisely* how many rows or columns you will need—you can always add more after the fact.

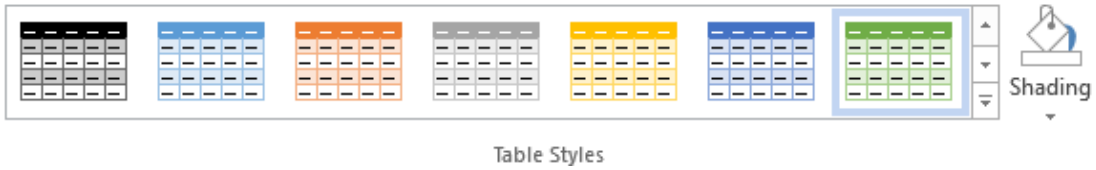
4. Click the bottom right-most box of the table on the menu to insert that table into your document.

   A table appears on your document.

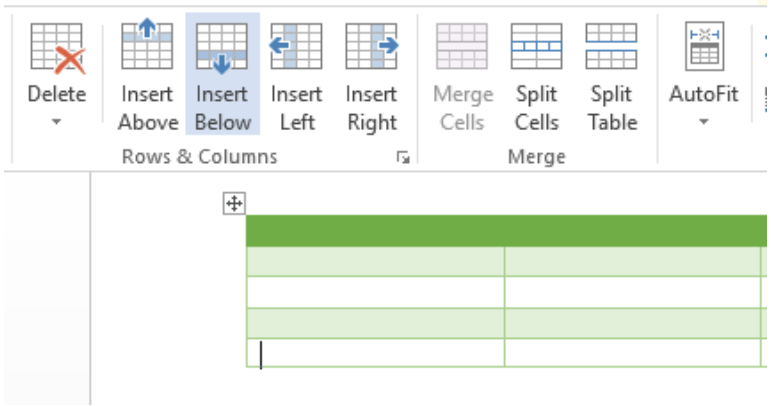
5. Format the table by using the options under the new **Design** and **Layout** tabs that have appeared on the end of the ribbon.

6. Color the table by using the preset options under the **Design** tab.

   If the style you want is not one of the preset options, click on **New Table Style** as seen at the bottom of the menu and creating a format of your own design based on one of the preset designs.



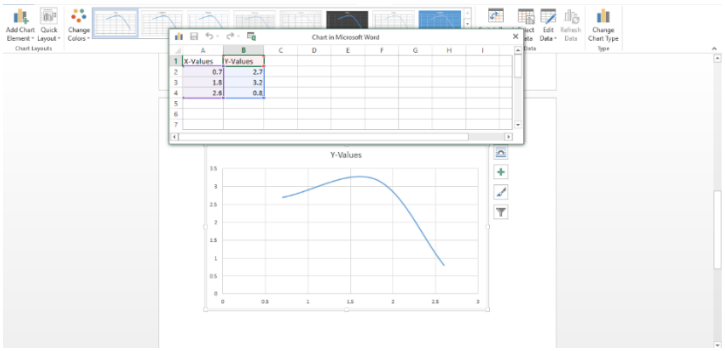
7. Add more columns by selecting **Insert Above** or **Insert Below** under the **Layout** tab. Add more rows by selecting **Insert Left** or **Insert Right**.



3.4 Insert Charts

Microsoft Word offers several options for inserting charts that could elucidate many topics that you might deal with. Though you will likely use many other programs to create important graphs, if you want to make a simplified one or an example of a potential graph, this is a helpful option.

1. Click the **Insert** tab on the ribbon.
2. Select **Chart** in the **Illustrations** group.
3. Select the type of chart you want in the window that pops up.

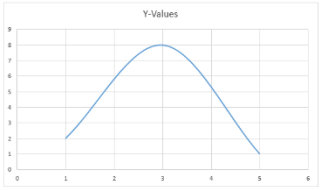


Two figures appear: one is a whole new window entitled **Chart in Microsoft Word** featuring a table with pre-entered data that Word automatically applies to your chart, and the other is the graph that is now be in your document, reflecting the data entered into the table.

4. Enter your own data in the table.

   The chart adjusts automatically to the new data when you move your cursor from the box in which you entered the new data.

	A	B
1	X-Values	Y-Values
2	1	2
3	3	8
4	5	1

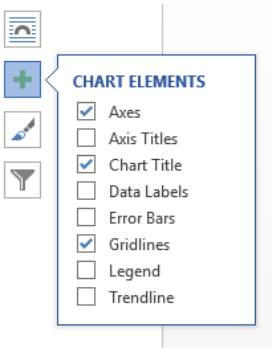


TIP: The figures above use the **XY (Scatter)** plot with the **Scatter with Smooth Lines** setting, but there are dozens more options, from Pie Charts to Bar Graphs, for you to choose from, with a wide variety of settings for your ease as well as the ease of your audience.

5. When you are satisfied with the data you have entered into the table, close the **Chart in Microsoft Word** by clicking the X.

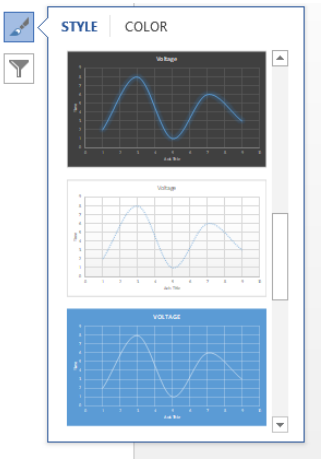
➢ **NOTE:** If at any point you need to edit the data you entered, you can do so by right-clicking on the chart and selecting **Edit Data**.

6. Add further information, such as **Axis Titles** or **Error Bars**, to your chart by clicking on **Chart Elements** (as signaled by a green + to the right of your chart) and selecting the desired options.



7. Edit any words appearing on the charts by clicking on the text in question and typing what you want.

8. Select a new color scheme from numerous styles Word offers by clicking on **Chart Styles** (as signaled by the paintbrush to the right of your chart) and selecting the desired option.



9. Adjust the size and placement of the chart as you would an image, as demonstrated in Module 3.2.

10. If at any point you regret the specific additional formatting you've added to your chart, you can return to Word's automatic formatting by selecting the **Format** tab under **Chart Tools** and clicking **Reset to Match Style**.

FINISHING UP

Chapter 4

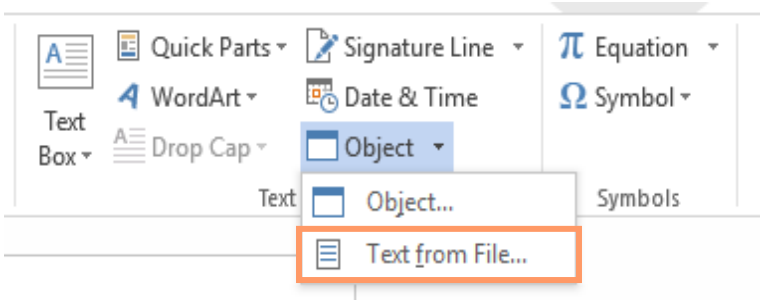
Now that you have your documents written, there are a few more steps to take so you can share your documents with others.

4.1 Combine Multiple Documents

Oftentimes, you will need to combine multiple documents—or concatenate—to create one master document that has all the information you need on a particular project.

1. Create a new blank document with a title explaining its function.
2. Select the **Insert** tab on the ribbon.
3. Click the down arrow by **Object** in the **Text** section.
4. Select **Text from File,** as highlighted in the figure below.

   A window opens.



5. Browse for the documents you want to combine in your new document.
6. Select the document(s) you want and click open.

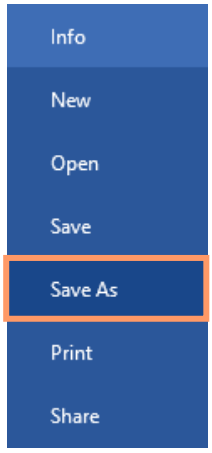
   The documents appear in the order you selected them.

TIP: If you want the documents in a certain order that is not reflected by the alphabetical order automatically placed on your files, insert the documents in groups or individually, rather than all at once. When you reach the bottom of one document and want another document to follow it, place your cursor at the end of the present document and then use **Text from File** to insert the next.

4.2 Convert into a PDF

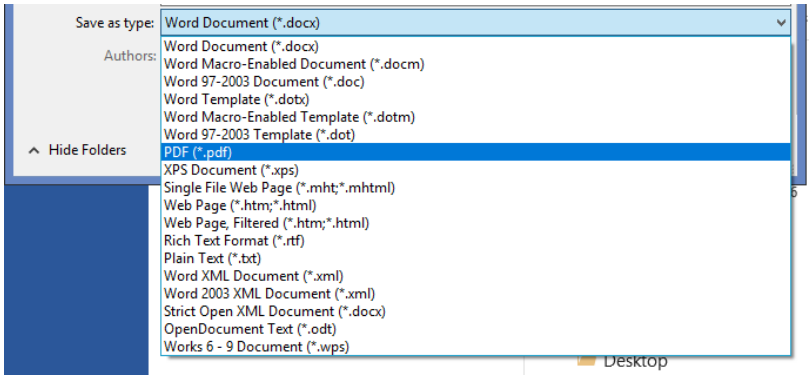
PDFs are often used in the engineering world since they keep the document's formatting more precisely when sharing the document than Word documents do on their own.

1. Select **File** in the top left corner of the window.
2. Select **Save As**, as highlighted in the figure below.



3. Choose the destination for this file.
4. Click on the **Save as a type** menu.

   Several options appear.
5. Select **PDF (*.pdf)**.



6. Select **Save**.

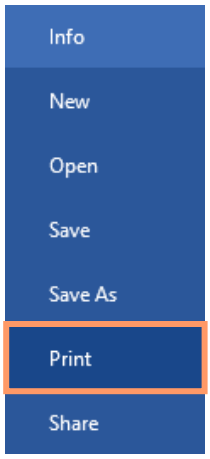
4.3 Print Documents

Oftentimes, people find reading physical copies of documents much easier than reading documents online, since you don't have to strain your eyes to read them as much and you're able to mark them up easily with a standard writing utensil.

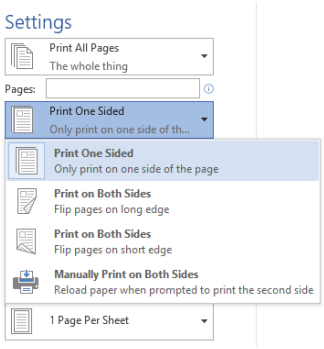
1. Select **File**.

   A menu appears.

2. Select **Print,** as highlighted in the figure below.



3. Select the device at which you want to print your document by choosing from the options in the drop down menu labeled **Printer**.



4. Under **Settings,** format the style of your printed document: how many pages you want printed, whether or not you want it doubled sided (as seen in the figure above), what orientation your document should be, or any other specifications that you require.