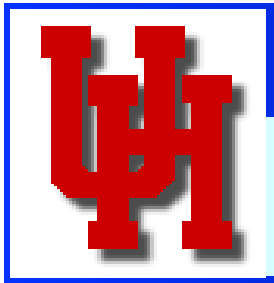

UNIVERSITY of HOUSTON
CULLEN COLLEGE of ENGINEERING

Introduction to:

MathType

and

References

Writing Equations

The most common ways:

- Latex
  - Various free Latex packages are available (Scientific Workplace, TeXstudio, MiKTeX, etc.).
  - Overleaf is a free online version of Latex, good for sharing.
- Word
  - Equation Editor is built in to Word (use “Insert” then “Equation”).
  - MathType.

MathType

What is MathType?

- MathType is software that is designed to be used with Microsoft Word (and PowerPoint), to allow you to create and manage equations in your document.
- It directly integrates with Microsoft Word (and PowerPoint) once you install it.
- It is not free, but at a minimal cost for students ($39.95/year).
- You can download a 30 day free trial.
- You can also download only the MathType fonts if you wish (click on “Free Downloads” and “Font Installers”.

MathType website: http://www.dessci.com

MathType

Advantages of MathType:

- Easy to use.
- Directly integrates in with Microsoft Word (and PowerPoint).
- Professional looking equations.
- MathType almost always knows the correct format for your symbols.
- Can create inline or stand-alone ("displayed") equations.
- Allows for automatic numbering of equations*.
- Allows for automatic referencing of equations*.

* If you add or delete an equation, all of the equation numbers are automatically updated, both in the equations and in the text.

MathType

MathType

Examples:

This is an "inline" equation: $y = x^2$.

The equation number is added and updated automatically.

Equation (4) is a "displayed" equation (equation on a separate line):

$$\int_V -\frac{1}{2}\left(\underline{E}\cdot\underline{J}^{i*} + \underline{M}^{i}\cdot\underline{H}^{*}\right)dV = \oint_S \underline{S}\cdot\hat{\underline{n}}\,dS$$

$$+2j\omega\int_V\left(\frac{1}{4}\mu'\left|\underline{H}\right|^2 - \frac{1}{4}\varepsilon_c'\left|\underline{E}\right|^2\right)dV \qquad (4)$$

$$+\int_V\left(\frac{1}{2}\omega\varepsilon_c''\left|\underline{E}\right|^2 + \frac{1}{2}\omega\mu''\left|\underline{H}\right|^2\right)dV.$$

MathType

For more information, please see the document on the College website called:

MathType for Making and Managing Equations

https://www.egr.uh.edu/sites/ccoe.egr.uh.edu/files/files/mathtype_for_making_and_managing_equations.pdf

Doing References in Word

Automatic Reference Numbering in Word

When you have many references in your document, it is convenient to be able to update the reference numbers automatically, so that when you add or delete a reference, the citation numbers change automatically in your document, both in the bibliography and in the text.

Example: "The information presented here comes from [21]."

The citation number "[21]" is not typed manually, but added automatically.

Doing References in Word

Automatic Reference Numbering in Word

(instructions for Word 2007-2016)

1) Create a list of references (bibliography) at the end of the document, using the feature in Word that allows you to create a numbered list. (This list of instructions here is an example of such a list.) This will ensure that each item in the list of references has a number that Word can recognize, and it also ensures that if you add or delete an item from the reference list, the numbers in the reference list will change automatically.
2) Place the cursor in the document where you want to add a citation to a reference (for example, you want to cite reference [21]).
3) Click on “Insert” and then “Cross-reference”. For “Reference type” it should say “Numbered item”. For “Insert reference to” it should say “Paragraph number”.
4) Select the item that you wish to reference and then click on “Insert”. (4)
5) To update all of the citations (i.e., all of the fields), click on “Ctrl” and “A” (which selects the entire document). Then click on F9 which will update all of the fields. You can also right click on any one citation and select the option to update the field, if you only wish to update that one citation.

Doing References in Word

Sample Bibliography

1) W. W. Hansen, "Radiating Electromagnetic Waveguide," U.S. Patent No. 2,402,622, 1940.

2) J. N. Hines and J. R. Upson, "A Wide Aperture Tapered-Depth Scanning Antenna," *Ohio State Univ. Res. Found.,* Report 667-7, Columbus, Ohio, December 1957.

3) G. V. Trentini, "Partially reflecting sheet arrays," *IEEE Transactions on Antennas and Propagation*, vol. 4, pp. 666–671, Oct. 1956.

4) C. Mateo-Segura, M. Garcia-Vigueras, G. Goussetis, A. P. Feresidis, and J. L. Gomez-Tornero, "A simple technique for the dispersion analysis of Fabry-Perot cavity leaky-wave antennas," *IEEE Transactions on Antennas and Propagation*, vol. 60, no. 2, pp. 803–810, Feb. 2012.

5) S. K. Podilchak, S. F. Mahmoud, A. l. P. Freundorfer, and Y. M. M. Antar, "Perturbation analysis of planar periodic leaky-wave antennas fed by cylindrical surface-waves," *URSI General Assembly and Scientific Symposium*, Aug. 13–20, 2011.

6) A. Foroozesh, L. Shafai, "2-D truncated periodic leaky-wave antennas with reactive impedance surface ground planes," *IEEE Antennas and Propagation Society International Symposium*, pp. 15-18, 9-14 July 2006.

Doing References in Word

For more information, please see the document on the College website called:

Automatic Referencing in Word

https://www.egr.uh.edu/sites/ccoe.egr.uh.edu/files/files/automatic_reference_numbering_in_word.pdf