

# UNIVERSITY OF WATERLOO



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User Guide

## **LaTeX2Mobius**

A Convenient Tool for LaTeX to HTML Conversion

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# 1 Introduction

## 1.1 General Background

Online learning is becoming increasingly prevalent and due to the pandemic, its implementation has become much more urgent. As such, it becomes important to utilize tools which will maximize productivity and enhance the experience of online students. One such tool that is currently used by the University of Waterloo is Möbius. Möbius is a robust online authoring and delivery environment specifically designed for the needs of STEM classrooms created by DigitalEd with whom UWaterloo has partnered.[1] While Möbius is an extremely helpful tool, content creation is mainly done on LaTeX platforms such as OverLeaf and there is no easy method to convert LaTeX into the HTML/MathJax input that Möbius requires. In order to facilitate easy conversion between the two platforms, the tool LaTeX2Mobius was developed.

## 1.2 About Latex2Mobius

LaTeX2Mobius is a tool developed by a group of students under the instruction of Math Faculty member, Amanda Garcia. It was developed with the goal of converting LaTeX documents into formats suitable for Möbius while maintaining as much of the formatting and equations from the original LaTeX document as possible. At the heart of this tool is a Python script that takes the LaTeX and directly converts to the equivalent HTML/MathML syntax. For LaTeX commands that cannot be directly converted to HTML/MathML, suitable substitutes were implemented to reflect the original LaTeX documents as closely as possible. While a lot of commonly used LaTeX commands are accounted for, there are some that simply cannot be converted accurately. Find a list of these commands in Section 3. A web application has also been developed in order to allow for user friendly conversion. The LaTeX2Mobius web application can be accessed at <http://latex2mobius.uwaterloo.ca> and for detailed instructions on how to use this tool please refer to Section 2.

## 2 Conversion Instructions

1. The LaTeX2Mobius tool can be accessed at <http://latex2mobius.uwaterloo.ca>.
  - (a) In order to access the web application, you must be on campus or connected to [campus VPN](#).

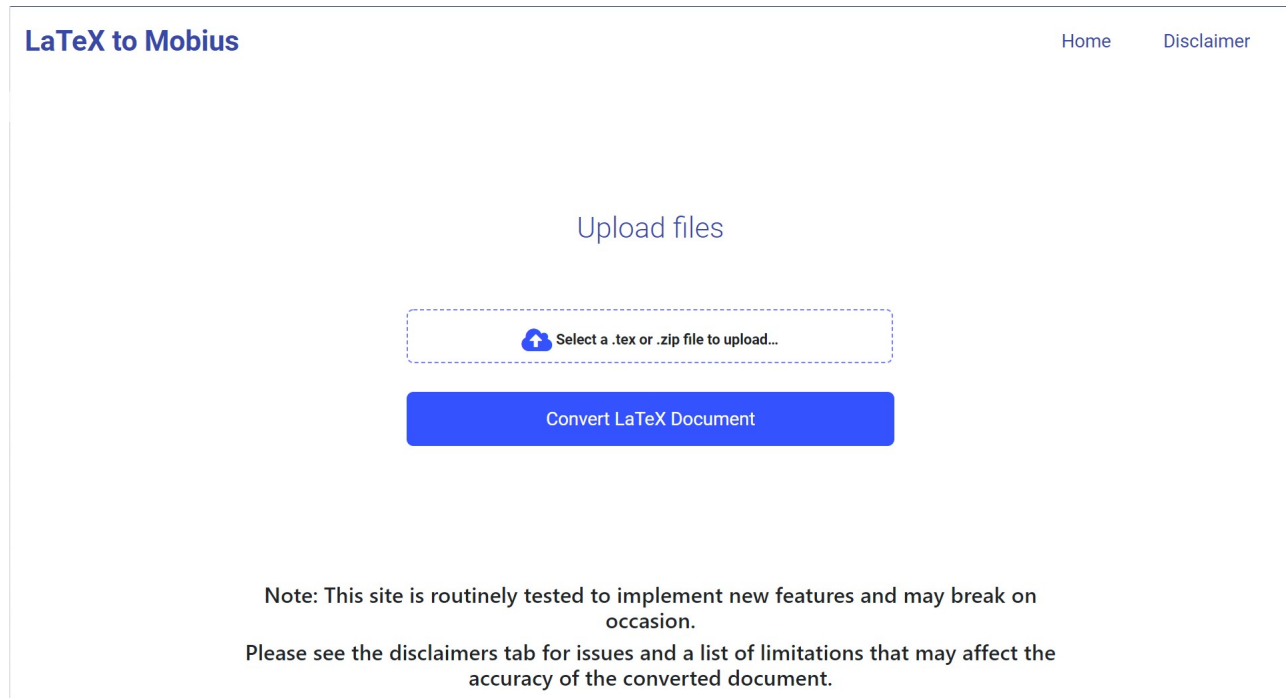


Figure 1: Landing Page of Web Application

2. Click the button labeled "Select a .tex or .zip file to upload...", and select the file to be converted.
  - (a) .tex files and .zip files are supported. If a .zip file is uploaded, every .tex file within it will be converted to HTML
  - (b) There is a **size limit of 2MB** for the files/folders uploaded
  - (c) It is recommended that if you are trying to convert a book file, the master/main file is not included. Please refer to Section 3.3 for more details.
3. Click the button labeled "Convert LaTeX Document".
4. Once converted the HTML file should automatically download.
5. If you wish to convert another file, simply click the file selection area again and select the new file

### 3 What to Watch For

There are many commands and formats used in the LaTeX that do not have a direct HTML or MathJax equivalent. In such cases, the converter is designed to find the next best alternative or simply replace the commands with placeholders. The following sections include more detailed explanations for specific commands, but for ease of access, below is a table that summarizes all placeholders inserted by the converter.

LaTeX Command	Placeholder
<code>\ref</code>	INSERT REFERENCE HERE
<code>minipages</code>	UPPER-SECTION-SHOULD-BE-MINIPAGE
<code>\varbox</code> or <code>\fbox</code>	THE FOLLOWING IS BOXED:
<code>\raisebox+</code> <code>\textcircle</code>	Equation Number:
<code>\tableofcontents</code> , <code>\listoftables</code> , and <code>\listoffigures</code>	TABLE-OF-CONTENTS-INSERTED-MANUALLY-HERE
<code>\multicol</code>	UPPER-SECTION-SHOULD-BE-MULTICOL

Table 1: List of Placeholders

#### 3.1 Internet Explorer

We do not support conversion on Internet Explorer. Please use the converter on Chrome, Safari, Firefox, Opera or Edge.

#### 3.2 OverLeaf Warnings/Errors

The most important thing to watch for is warnings and errors provided by OverLeaf. Generally, OverLeaf is able to compile despite these errors as it either ignores those lines or will replace the error with an acceptable command. The converter does not have this functionality and thus if OverLeaf provides errors for invalid input, the conversion will most likely fail. Please ensure that the LaTeX document does not contain any such warnings/errors.

#### 3.3 Book Files

It is common for book files to have a main file or a master .tex file that calls other .tex files using `\input`. While the web application can generally convert such files, it is highly recommended that the main/master file be removed and the individual section files are uploaded to the web application in a zip folder. This is due to the fact that the converter will convert all .tex files that the main file calls and then additionally it will convert all the .tex files individually, essentially converting every file twice. This takes longer and in some rare cases it also causes the conversion to fail.

#### 3.4 Def Commands

The `def` command's primary difference when compared to the similar `newcommand` is that it does not check whether the command is already defined. As a result, this allows for the duplication of definitions without error. Any of these reoccurring definitions will prevent conversion and must be removed before attempting conversion.

### 3.5 Custom Commands

If custom commands were declared in a separate file and called in the .tex file you wish to convert, a .zip file must be uploaded with both the commands file and the .tex file in the same directory. If the two files are not included in this manner, then the custom commands will be left untouched as it is assumed to be text. In some cases it is also possible for conversion to fail if the files are not converted together in the same .zip.

### 3.6 Table of Contents

The commands `\tableofcontents`, `\listoftables`, and `\listoffigures` cannot be converted to HTML and must be manually included in the HTML file. If `\tableofcontents`, `\listoftables`, or `\listoffigures` are used, placeholders are included in their place. Please search for "TABLE-OF-CONTENTS-INSERTED-MANUALLY-HERE" and manually include the table in that location.

### 3.7 Figures

The inclusion of images in the converted HTML file is not supported by LaTeX2Mobius and thus all images must be manually inserted on Mobius.

### 3.8 Cross Referencing

References to sections, equations, and tables cannot be converted and as such instances where the `\ref` command was used, a placeholder has been inserted. If you have included references, please search and replace all instances of "INSERT REFERENCE HERE" with your desired reference.

### 3.9 Enumerate

If the `enumerate` command has been used in the LaTeX document that is to be converted, there are two things to be mindful of.

#### 3.9.1 Subsections Within Enumerate

If subsections are embedded within `\begin{enumerate}` and `\end{enumerate}`, the converter will remove those commands to ensure that conversion does not fail. If subsections are embedded within those commands, the numbering will have to be done manually in the converted file.

#### 3.9.2 Numbering with Letter, Roman Numerals, etc.

If there are multiple enumerates embedded within each other and there is a preferred numbering (letters, roman numerals, etc.), please specify the preference in the `enumerate` command (ex. `\begin{enumerate}[(a)]`) to ensure it is converted as such. Failure to specify will result in all numbering being 1, 2, 3, etc.

### 3.10 Minipages

Minipages cannot be converted to HTML as there is no direct equivalent. The contents of minipages are preserved upon conversion and a placeholder is included at the end of minipage content to indicate the preceding content was previously formatted as a minipage. Please search for "UPPER-SECTION-SHOULD-BE-MINIPAGE" and reformat as needed.

### 3.11 Varbox and Fbox

Varbox and fbox cannot be converted to HTML. Similar to the minipages, there is no direct equivalent. The contents of the varbox and fbox will be preserved, but the formatting won't be. For varbox, please search for

the text "THE FOLLOWING IS BOXED:". All text following this placeholder that is bolded was inside a varbox in LaTeX. Format the text that follows the placeholder as necessary.

### 3.12 Intertext

The intertext command in the align environment is not supported in MathJax. In order to preserve the content of the intertext command, it is not deleted. Please find "\intertext" in the converted file and format accordingly.

### 3.13 Multicols

The multicols command is not supported by the converter as there is no straight forward equivalent HTML that will allow side by side placement of text. As such, the text is stacked vertically with a line dividing them. A placeholder is also included. Please search for "UPPER-SECTION-SHOULD-BE-MULTICOL" and format as desired.

### 3.14 Raisebox and Textcircle

The commands raisebox and textcircle are commonly used to number equations formally in LaTeX. However, there is no direct equivalent in HTML. As such, to ensure conversion succeeds, these commands are deleted and replaced with the placeholder "Equation Number:" following by the text that was previously contained within the two commands. Please search for that placeholder and format the following text as necessary.

### 3.15 Using \\$

Conversion on the escaped \$ is completed correctly, but as a result of formatting, a space is placed between the \$ and the values that follow it. If currency commands were utilized in the .tex file, please find all instances and remove the space.