

Accessible PDFs with L^AT_EX

for ~~DUMMIES~~ Teachers

Bryan Lewis and Carla Zeigler, Garrett College, January 2026

Why L^AT_EX?

- L^AT_EX is the de facto standard for the communication and publication of math and science. Chances are you *will* encounter L^AT_EX in STEM!
- L^AT_EX is widely used in publishing because it clearly separates presentation from content.
- L^AT_EX typesets technical symbols and mathematics beautifully.

Why Accessibility?

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More Accessibility — placeholder

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Accessible PDF Output is (Recently) Possible!

- Thanks to *years* of dilligent work by the L^AT_EXproject developers:

<https://www.latex-project.org>

- See this presentation at PDF Days 2025 Berlin:

<https://www.latex-project.org/news/2025/10/30/pdfadays>

- Also check out the many solution posters from the conference:

<https://pdfa.org/the-winning-technical-poster-at-pdf-days-europe-2025>

- Our slides walk you through a few basic steps to get things working.

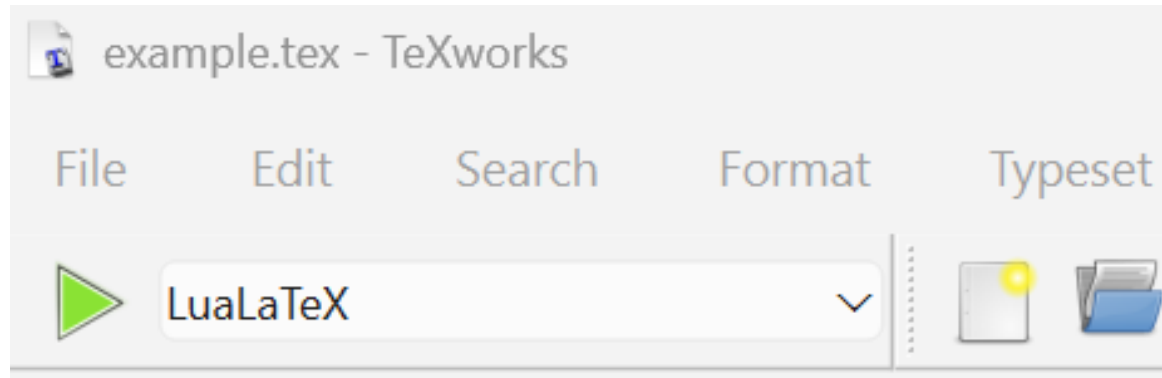
Step 1: Use `lualatex`

- `LATEX` can be processed by many different rendering engines (`pdflatex`, `lualatex`, ...)
- `lualatex` is currently the best engine to use for accessibility.
- On many GNU/Linux systems simply install with:

```
sudo apt install texlive-luatex
```

Using `lualatex` with MiKTeX on Macs and Windows Systems

1. Install MiKTeX (<https://miktex.org/download>)
2. Open the installed TeXworks editor and select the LuaLaTeX engine from the dropdown (see figure below).

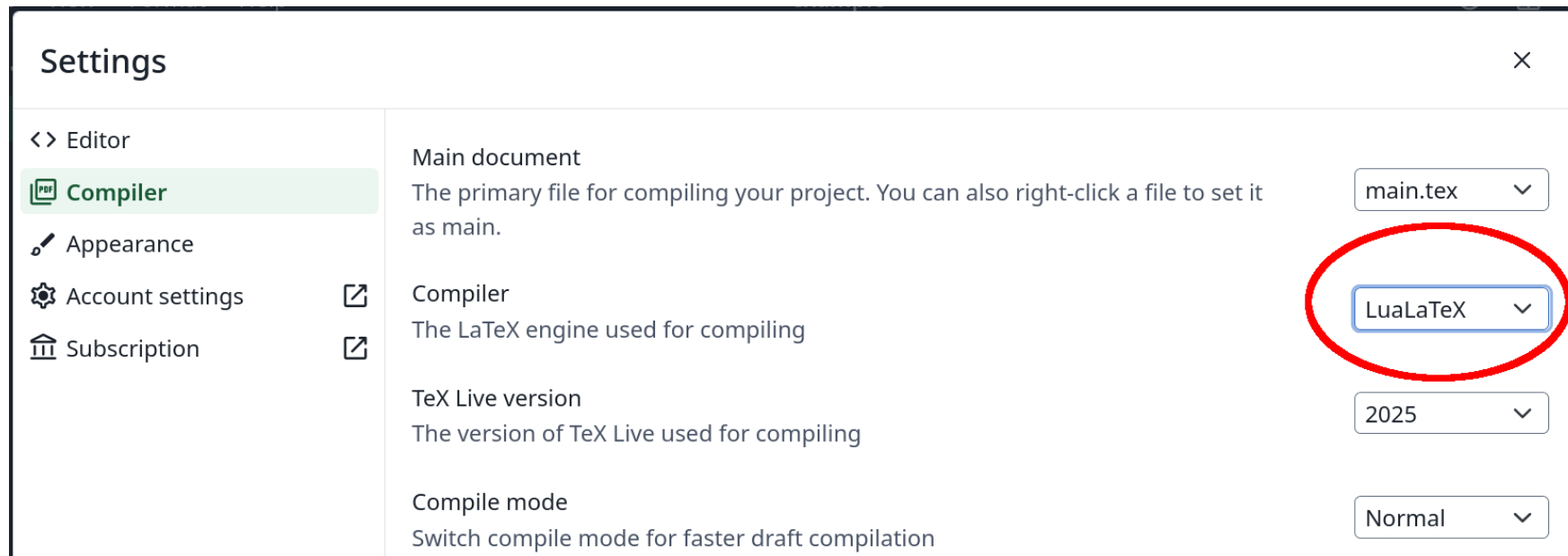


That's it! Note that MiKTeX may need to download and install a few packages the first time you select the LuaLaTeX option.

Using `lualatex` with Overleaf

Overleaf is a popular online \LaTeX editor with over 20 million users. You can set it up to use the `lualatex` engine. Alas, this might only work with the paid version ☹.

- From the File menu, select the “Settings” option.
- Navigate to “Compiler” and select “LuaLaTeX” as shown in the figure below.



Step 2: Metadata in your documents

Add the following to the very top of your document (adjusting `lang` as needed):

```
\DocumentMetadata{
  tagging=on,
  tagging-setup={math/setup={mathml-SE,mathml-AF}},
  pdfstandard=ua-2,
  pdfstandard=a-4f,
  lang=en-US
}
```

This turns on tagging and embeds *two* kinds of mathematical notation markup for widest compatibility with reader software.

PDF document metadata

Add the following to your preamble above `\begin{document}` (adjusting entries as needed):

```
\usepackage{hyperref}
\hypersetup{
  pdftitle={Accessible PDF with LaTeX},
  pdfauthor={Bryan W. Lewis},
  pdfsubject={Accessibility},
  pdfkeywords={Accessibility, LaTeX, PDF},
}
```

Use the `unicode-math` math symbol package

Include the following package in your document preamble:

```
\usepackage{unicode-math}
```

Avoid use of the following packages if possible (`unicode-math` may work in their place):

~~\usepackage{amsmath}~~

~~\usepackage{amssymb}~~

This may not be strictly necessary but tends to produce good embedded MathML output.

Be sure to add text descriptions to every included image

Whenever you include an image in your document, be sure to include a text description defined with `alt`. For example:

```
\includegraphics[alt={Accessible PDFs with LaTeX for Teachers}]{filename}
```

Congratulations! Your L^AT_EX-generated PDF documents are now accessible!

See

[https://github.com/bwlewis/latex-pdf-accessibility/tree/main/
example](https://github.com/bwlewis/latex-pdf-accessibility/tree/main/example)

for a complete, self-contained example document.

Setting up NVDA reader software with MathCAT

- These techniques are all *very* new and not yet uniformly supported, but that's changing quickly.
- The reader software with the most complete support is NVDA (NV Access) equipped with the MathCAT add-on. It's free, supports audible and braille output in more than 50 languages, and works very well!

<https://www.nvaccess.org/download/>

Issues...

- These techniques are all *very* new! Most (all?) accessibility checkers simply don't work correctly yet. That includes, at least, Blackboard's built-in checker as of Spring 2026. Look for proof in pudding and run your PDF output through a reader like NVDA to make sure it works well.
- *Most* L^AT_EX packages “just work.” Your mileage may vary however with less mainstream packages. If you run into issues you might need to consider some changes.

About us

Carla Zeigler is the Coordinator of Distance Learning and Instructional Design at Garrett College...



Bryan Lewis teaches math at Garrett College and has been using \LaTeX since the mid 1990s. He's written dozens of journal papers, a book, many talks, and lots of classroom notes in \LaTeX .