

Accessible Slides in LaTeX

https://github.com/rhstanton/accessible_LaTeX

Version 1.1

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Introduction

- On January 8, 2026, we were notified by campus that, beginning in April 2026,
“The updated requirements of the ADA require that digital course materials provided to students, even materials inside password-protected course sites like bCourses, will need to comply with accessibility standards (Web Content Accessibility Guidelines ([WCAG](#)) 2.1 Level AA).”
- Many of us use \LaTeX to create teaching materials—both slides and documents.
- Standard \LaTeX (including Beamer) does not automatically generate accessible PDFs.
- **The good news:** The \LaTeX Project team has developed solutions!

Converting to accessible LaTeX is straightforward

- Your existing **\LaTeX skills transfer** - you're just adding accessibility features
- The changes are **minimal** and follow consistent patterns
- Six common requirements for both slides and articles:
 1. Add `\DocumentMetadata` before `\documentclass`
 2. Enable math accessibility: `\tagpdfsetup{math/alt/use}`
 3. Tag images with alt text: `alt={description}`
 4. Tag table header rows: `\tagpdfsetup{table/header-rows={1}}`
 5. Use accessible colors (sufficient contrast)
 6. Compile with LuaLaTeX (automatic MathML generation)

What's different by document type

- For articles: Keep using your existing class!
 - No need to change `\documentclass{article}`
 - Just add the common requirements (previous slide)
 - Works with article, report, book, etc.
- For slides: Use the new ltx-talk class (replaces Beamer)
 - Change `\documentclass{beamer}` to ltx-talk
 - Similar frame syntax, but themes/templates don't work
 - You'll need to recreate styling using standard LaTeX packages
 - Handles slide-specific tagging automatically
 - Part of the [LaTeX Tagging Project](#)
- Both require LaTeX kernel 2025-11-01 (update via TeX Live Manager/Utility)
- See [latest detailed instructions](#)

What is this project?

- An experiment exploring accessible \LaTeX documents using the \LaTeX Tagging Project
 - Two templates: Articles (article class) and slides (ltx-talk)
 - Shows: What's common to both, what's different
 - Contains: Working examples with math, text, graphics, and tables
 - Scores: Perfect 100% from the bCourses accessibility checker (Ally)
- How to use it:
 1. Learn the common requirements: Apply to any \LaTeX document
 2. See class-specific needs: Understand slides vs. articles
 3. Copy and adapt: Use as templates for your documents
 4. Study the code: Heavily commented for learning
- Available at: https://github.com/rhstanton/accessible_LaTeX

Common requirements (1/4): Document Metadata

- REQUIRED for both slides AND articles
- Every accessible document **must** begin with \DocumentMetadata
- Goes *before* \documentclass

```
\DocumentMetadata{  
    pdfstandard=A-2u,      % PDF/A-2u format  
    lang=en-US,           % Language for screen readers  
    tagging=on            % Enable PDF tagging  
}
```

- This configures the PDF for accessibility compliance

Common requirements (2/4): Images and Tables

- **REQUIRED for both slides AND articles**
- **Images:** All images must include alt text descriptions
 - Allows screen readers to describe visual content
 - Even decorative images need marking
 - See dedicated “Figures” slide for examples
- **Tables:** Must specify which rows are headers
 - Helps screen readers navigate table structure
 - Essential for data accessibility
 - See dedicated “Tables” slide for examples

Common requirements (3/4): Colors and Math

- **REQUIRED** for both slides AND articles
- **Accessible colors:** WCAG 2.1 requires 4.5:1 contrast ratio

```
\colorlet{AccessibleRed}{red!80!black}  
\colorlet{AccessibleGreen}{green!40!black}  
% Standard blue is fine as-is
```

- **Automatic MathML:** Add to your preamble

```
\tagpdfsetup{math/alt/use}
```

Common requirements (4/4): LuaLaTeX

- REQUIRED for both slides AND articles
- You **must** compile with LuaLaTeX (not pdfLaTeX or XeLaTeX)
- Why LuaLaTeX?
 1. **Automatic MathML:** Makes math accessible without manual work
 2. **Full tagging support:** Complete PDF accessibility features
 3. **Modern fonts:** Handles Unicode and OpenType fonts
- How to switch:
 - Command line: `lualatex filename.tex`
 - Most editors: Select “LuaLaTeX” from compiler menu

TeX version requirements (both slides and articles)

- **Minimum:** TeX Live 2023 or later with all packages updated
- **Critical:** Must have LaTeX kernel 2025-11-01
 - Update via TeX Live Manager (Windows) or TeX Live Utility (Mac)
 - Or use Overleaf Labs (see next slides)
- **Will NOT work:** TeX Live 2022 or earlier

You CAN use Overleaf (both slides and articles)

- ltx-talk requires a very recent TeX Live version
- This is available through Overleaf's [Labs program](#) (not standard Overleaf)
- **Using Overleaf (2 steps)**
 1. **Join Overleaf Labs:**
 - Visit <https://www.overleaf.com/labs/participate>
 - Opt in and enable "Rolling TeX Live releases"
 2. **Configure project:**
 - Set TeX Live version to "Rolling TeXLive (labs)" (bottom of list)
 - Set Compiler to [LuaLaTeX](#)
- **Resources:** <https://docs.overleaf.com/writing-and-editing/creating-accessible-pdfs>

The basics

- Slides are put inside a `frame` environment, just like in Beamer.
- So **existing source files don't need a lot of editing.**
- Here's some gratuitous *math* for the accessibility checker.

```
\begin{frame}{The basics}
\begin{itemize}
\item Slides are put inside a \texttt{frame} environment, just like in Beamer.
\item So \textbf{\color{blue}{existing source files don't need a lot of editing.}}
\item Here's some gratuitous \$\mathit{math}\$ for the accessibility checker.
\end{itemize}
\end{frame}
```

- **Note:** I set the fonts in this file so that numbers, percent signs, and dollar signs look the same in both math and text mode (my pet Beamer peeve...)
 - **Text:** \$1234567890%.
 - **Math:** \$1234567890%.

Figures

- Including figures is the same as in Beamer (e.g., using `\includegraphics`), but you need to provide a **text description**.

```
\includegraphics[height=.4\textheight,alt={A capybara}]{capybara.jpg}
```



Tables

- Including tables is the same as in Beamer (e.g., using the `tabular` environment).
- Also need to specify **header rows**. Use `{1}` for 1 header row, `{1,2}` for 2 rows, etc. E.g.,

```
\tagpdfsetup{table/header-rows={1,2,3}}
\begin{tabular}{ccccrcccr}
\toprule
← 3 header rows
\midrule
← data rows
\bottomrule
\end{tabular}
```

Payment date	Caplet expiry date	DF_{pay}	Forward rate	Days to expiry	Days in accrual period	T_{expiry}	Δ	Caplet
2004/12/01	—	0.99550	0.01790	0	91	0.00000	0.25278	—
2005/03/01	2004/11/29	0.99008	0.02188	89	90	0.24384	0.25000	1,178.77
2005/06/01	2005/02/25	0.98401	0.02413	177	92	0.48493	0.25556	4,844.73
2005/09/01	2005/05/27	0.97733	0.02675	268	92	0.73425	0.25556	10,016.71

Common pitfalls

- **Forgetting alt text for images**
 - Every `\includegraphics` needs an `alt={...}` parameter
 - Even decorative images need alt text (use `alt={decorative}`)
- **Not specifying table header rows**
 - Add `\tagpdfsetup{table/header-rows={...}}` before each table
 - Use `{1}` for 1 header row, `{1,2}` for 2 header rows, etc.
- **Insufficient color contrast**
 - WCAG 2.1 requires 4.5:1 contrast ratio for normal text
 - Avoid light colors: yellow, cyan fail contrast requirements
 - Darken red and green: use `red!80!black`, `green!40!black`
 - Standard blue is fine and meets WCAG requirements
 - Test with a contrast checker: <https://webaim.org/resources/contrastchecker/>
- **Using the wrong compiler**
 - Make sure your editor is set to use `LuaLaTeX`, not `pdfLaTeX`
- **Old TeX distribution**
 - TeX Live 2022 or earlier won't work
 - Update packages using TeX Live Manager (Windows) or TeX Live Utility (Mac)

Getting started: Common steps for both

1. **Setup environment:** Use Overleaf Labs OR install/update TeX Live locally
 - Overleaf: See earlier slides for Labs setup
 - Local: Update via TeX Live Manager/Utility
2. **Get templates:** Download from https://github.com/rhstanton/accessible_LaTeX
3. **Add accessibility features:**
 - Add alt text to images
 - Add table/header-rows to tables
4. **Set compiler to LuaLaTeX**
5. **Compile and test!**

Getting started: What's different by document type

For Articles (using article, report, book, etc.):

- Add \DocumentMetadata before \documentclass
- Add \tagpdfsetup{math/alt/use} to preamble
- Switch to fontspec and unicode-math packages
- Keep your existing documentclass!

For Slides (migrating from Beamer):

- Copy preamble from accessible_slides.tex
- Change \documentclass{beamer} to \documentclass[frame-title-arg]{ltx-talk}
- Remove Beamer themes/templates/colors
- Recreate styling using standard LaTeX/xcolor
- One-time preamble work—then reuse for all future talks!
- Questions? richard.stanton@berkeley.edu