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 Beamer to create teaching slides.
- But Beamer is not **and never will be** compatible with these requirements.
- Fortunately, the LaTeX Project team has created `ltx-talk`, a purpose-built accessible presentation class that:
  1. Generates accessible output meeting WCAG 2.1 Level AA standards,
  2. Requires little modification to existing Beamer source (uses same `frame` syntax), and
  3. Requires *no* manual processing of the resulting PDF file.
  - Part of the LaTeX Tagging Project
  - Requires LaTeX kernel 2025-11-01 (update packages using TeX Live Manager or TeX Live Utility)
  - See latest detailed instructions

What is this project?

- An experiment exploring the LaTeX Tagging Project's `ltx-talk` class
  - Contains: Sample slides with math, text, graphics, and tables
  - Scores: Perfect 100% from the bCourses accessibility checker (Ally)

- How to use it:
  1. **As a sample:** Working example you can copy and adapt for your slides
  2. **As documentation:** The slides and README explain what you need to do, plus heavily commented code
  3. **For quick migration:** Copy the preamble to your Beamer files for (almost) plug-and-play conversion
     - Still required: Manual tagging of figures (`alt={...}`) and tables (`header-rows`)
  4. **For guidance:** Advice on accessibility considerations to keep in mind

- Available at: https://github.com/rhstanton/accessible_LaTeX

Important workflow change: Use LuaLaTeX

- You'll need to change your LaTeX compiler from pdfLaTeX to LuaLaTeX.
- Why switch to LuaLaTeX?
  1. **Automatic MathML:** LuaLaTeX automatically generates MathML (Mathematical Markup Language), making math accessible to screen readers without extra work.
  2. **Easier workflow:** While pdfLaTeX has partial support, it requires manually providing MathML files for each equation—tedious and error-prone.

  Also provides modern font support and full UTF-8 compatibility.
- How to switch:
  - Command line: `lualatex myfile.tex`
  - Most LaTeX editors: Select "LuaLaTeX" from the compiler menu
- TeX version requirements:
  - Minimum: TeX Live 2023 or later with all packages updated
  - Critical: Must have LaTeX kernel 2025-11-01 (update via TeX Live Manager/Utility)
  - Overleaf: Use Rolling TeXLive (labs) - see next slides for setup options
  - Will NOT work: TeX Live 2022 or earlier

You **CAN** use Overleaf (with special setup)

- `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

- **Follow these steps to migrate your Beamer slides:**

  1. Use Overleaf Labs (see setup slide) OR install TeX Live locally
  2. If local: Update all packages using TeX Live Manager (Windows) or TeX Live Utility (Mac)
  3. Download this template from https://github.com/rhstanton/accessible_LaTeX
  4. Copy the preamble (everything before `\begin{document}`) to your Beamer files
  5. Add `alt` text to images and `table/header-rows` to tables
  6. Set your compiler to LuaLaTeX
  7. Compile and test!

- Questions or suggestions? richard.stanton@berkeley.edu