# Accessible Slides in LaTeX

https://github.com/rhstanton/accessible_LaTeX

Version 1.0

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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 (get via `tlmgr update --all`)
  - See latest detailed instructions

# This project

- You can use this presentation as a template for modifying your own work.
  - Contains math, text, graphics, and tables.
  - Scores a perfect 100% from the bCourses accessibility checker, Ally.
  - It's easy! Most of the work is just editing the preamble.

- The template is available at:
  https://github.com/rhstanton/accessible_LaTeX

# **IMPORTANT**: Overleaf does **NOT** currently work

- `ltx-talk` requires LaTeX kernel 2025-11-01
- As of February 7, 2026, Overleaf is using LaTeX kernel 2025-06-01
- **So you must compile locally**

- **Installing TeX Live (Free)**
  - **Windows**: Download TeX Live from https://tug.org/texlive/
    - Run the installer (~4 GB download)
    - Choose a TeX editor: TeXworks (included) or TeXstudio
  - **Mac**: Download MacTeX from https://tug.org/mactex/
    - Install the .pkg file (~5 GB download)
    - Includes TeXShop editor
  - **After installation**: Run `tlmgr update --all` to get latest updates

# 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.
  3. **Modern Fonts:** LuaLaTeX handles OpenType fonts (like Lato) natively, essential for proper Unicode support.
  4. **Full UTF-8:** Complete support for international characters and screen readers.
- How to switch:
  - Command line: `lualatex myfile.tex`
  - Most LaTeX editors: Select "LuaLaTeX" from the compiler menu

# 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 peave...)
  - 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), but you need to specify the header rows.
- Use `{1}` for 1 header row, `{1,2}` for 2 rows, `{1,2,3}` for 3 rows, etc.
- Example (table with 3 header rows):

```
\tagpdfsetup{table/header-rows={1,2,3}}
\begin{tabular}{ccccrcccr}
...
\end{tabular}
```

| Payment date | Caplet expiry date | $DF_{\text{pay}}$ | Forward rate | Days to expiry | Days in accrual period | $T_{\text{expiry}}$ | $\Delta$ | 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
  - Run `tlmgr update --all` if using TeX Live 2023

# Conclusions

- Migrating Beamer-based materials to make them accessible is quite easy.
- Next steps:
  1. Download this template from https://github.com/rhstanton/accessible_LaTeX
  2. Copy the preamble to your existing Beamer files
  3. Change `\documentclass{beamer}` to `\documentclass[frame-title-arg]{ltx-talk}`
  4. Add `alt` text to images and `table/header-rows` to tables
  5. Set your compiler to LuaLaTeX
  6. Compile and test!
- Questions or suggestions? richard.stanton@berkeley.edu