California Open Online Library for Education & Accessibility

COOL4Ed (the California Open Online Library for Education) was created so that faculty can easily find, adopt, utilize, review and/or modify free and open etextbooks for little or no cost. The COOL4Ed accessibility open textbook evaluations can inform faculty, staff, and students how the free and open etextbooks meet 15 accessibility "checkpoints" that could impact the learning of learners with a range of disabilities.

SUMMARY OF ACCESSIBILITY EVALUATION:

Textbook: **Linear Algebra Done Wrong**
Format of Textbook: **PDF**

Assistive Technology (AT) Evaluation Score: Overall	7.7 (Maximum score = 10)
Assistive Technologies (AT) Evaluations applies specialized tools and software in the accessibility evaluation process. These specialized assistive technologies, see list below, are typically not used or available by the general public into the accessibility evaluation process. • Accessibility features of desktop operating systems (e.g. high-contrast display themes, settings from the Keyboard and Mouse control panels) • Accessibility-related software included with desktop operating systems (e.g. VoiceOver, Microsoft Narrator) • Third-party accessibility software and hardware: • Screen readers (e.g. JAWS, Window Eyes) • Magnification software (e.g. ZoomText Magnifier/Reader, MAGIC Pro with Speech) • Reading software for users with learning disabilities (e.g. Read and Write Gold, Kurzweil 3000) • Refreshable Braille displays	
Non- Assistive Technology (NAT) Evaluation Score: Overall	4.7 (Maximum score =10)
Non-Assistive Technologies (NAT) Evaluations applies only native or basic tools and software such as the keyboard and Narrator in the accessibility evaluation process. These non-assistive technologies are readily available and used by the general public.	

COOL4Ed Accessibility Evaluation Methods:

The California State University Accessible Technology Initiative and MERLOT (Multimedia Educational Resources for Learning and Online Teaching) developed the rubric or "checkpoints" for the accessibility evaluation. CAST, a nationally recognized organization with expertise in accessibility and UDL, reviewed and affirmed the appropriateness and value of the accessibility evaluation rubric and contributed the references and support resources to help people learn how best to design, evaluate, and remediate the learning materials to maximize the accessibility of the learning resources for all. The "checkpoints" have been built upon the Section 508 technical standards and has been organized and tailored to the typical characteristics of digital resources used in higher education courses.

The accessibility evaluations were performed by the Center for Usability in Design and Accessibility at California State University, Long Beach; faculty and graduate students with expertise in human factors, usability, and accessibility performed the evaluations of over 150 free and open etextbooks. COOL4ed.org has published the accessibility evaluation rubric and provides a detailed description of the methodology used to evaluate the accessibility of the etextbooks in COOL4ed.

LOOKING FOR DETAILED ACCESSIBILITY REPORTS?

See Detailed Accessibility Evaluation Report using Assistive Technologies

See Detailed Accessibility Evaluation Report using Non-Assistive Technologies

DETAILED ACCESSIBILITY EVALUATION REPORT using
Assistive Technologies

Assistive Technologies (AT) Evaluations applies specialized tools and software in the accessibility evaluation process.   These specialized assistive technologies, such as Kurzweil and NVDA, are typically not used or available by the general public into the accessibility evaluation process.

1. Accessibility Documentation

A. The organization providing the online materials has a formal accessibility policy.	**Fail**
Additional Information:	**No accessibility documentation was found.**
B. The organization providing the online materials has an accessibility statement.	**Fail**
Additional Information:	**No accessibility documentation was found.**
C. An Accessibility Evaluation Report is available from an external organization.	**Fail**
Additional Information:	**No accessibility documentation was found.**

2. Text Access

A. The text of the digital resource is available to assistive technology that allows the user to enable text-to-speech (TTS) functionality.	**Pass**
Additional Information:	**5/5 pages pass.**

3. Text Adjustment

A. Text is compatible with assistive technology.	**Fail**
Additional Information:	**0/5 pages pass.**
B. The resource allows the user to adjust the font size and font/background color (or is rendered by an application such as a browser, media player, or reader) that offers this functionality).	**Pass**
Additional Information:	**5/5 pages pass.**

4. Reading Layout

A. Text of the digital resource is compatible with assistive technology that allows the user to reflow the text by specifying the margins and line spacing (or is rendered by an application such as a browser, media player, or reader that offers this functionality).	**Pass**
Additional Information:	**5/5 pages pass.**
B. If the digital resource is an electronic alternative to printed materials, the page numbers correspond to the printed material.	**N/A**
Additional Information:	**No printed version.**

5. Reading Order

A. The reading order for digital resource content logically corresponds to the visual layout of the page when rendered by assistive technology.	**Pass**
Additional Information:	**5/5 pages pass.**

6. Structural Markup/Navigation

A. The text of the digital resource includes markup (e.g. tags or styles) that allows for navigation by key structural elements (chapters, headings, pages) using assistive technology (or is rendered by an application such as a browser, media player, or reader that offers this functionality).	**Fail**
Additional Information:	**0/15 pages pass.**
B. The text of the digital resource includes markup for bullets and numbered lists that is compatible with assistive technology (or is rendered by an application such as a browser,	**Fail**

media player, or reader that offers this functionality).	
Additional Information:	**3/10 lists pass.**
C. If the text of the digital resource is delivered within an ebook reader application, a method is provided that allows users to bypass the reader interface and move directly to the text content that is compatible with assistive technology.	**N/A**
Additional Information:	**Not using reader application.**

7. Tables

A. Data tables include markup (e.g. tags or styles) that identifies row and column headers in a manner that is compatible with assistive technology (or are rendered by an application such as a browser, media player, or reader that offers this functionality).	**N/A**
Additional Information:	**No tables were found.**

8. Hyperlinks

A. In-book links take you to a location within the textbook. For example, the table of contents would be considered in-book links and embedded links take you to the correct location in the book.	**Pass**
Additional Information:	**30/30 links pass.**
B. Live hyperlinks take you to any website or webpages external to the book.	**N/A**
Additional Information:	**No live links were found.**
C. Live links take you to the correct webpage that is functioning properly.	**N/A**
Additional Information:	**No live links were found.**

D. Live links are descriptive enough for the users to know where it should take them.	N/A
Additional Information:	No live links were found.

9. Color and Contrast

A. All information within the material that is conveyed using color is also available in a manner that is compatible with those that do not perceive color, and information conveyed by color is also conveyed in other ways.	Fail
Additional Information:	0/15 pages pass.
B. Information is conveyed from the sub-categories for contrast.	Pass
Additional Information:	2/2 subsections pass.
C. Contrast for headers passed WCAG AA standards for large texts (contrast ratio 3:1).	Pass
Additional Information:	15/15 pages pass.
D. Contrast for text passed WCAG AA standards for normal texts (contrast ratio of 4.5:1).	Pass
Additional Information:	15/15 pages pass.
E. Contrast for simple images (for example, images of atoms) passed WCAG AA standards (contrast ratio of 4.5:1).	N/A
Additional Information:	No simple images found.

10. Language

A. The text of the digital resource includes markup that declares the language of the content in a manner that is compatible with assistive technology.	Fail
Additional Information:	Primary language failed.
B. If the digital resource includes passages in a foreign language, these passages include	N/A

markup that declares the language in a manner that is compatible with assistive technology.	
Additional Information:	**No foreign language was used in the text.**

11.Images

A. Non-decorative images have alternative text that is compatible with assistive technology (or is rendered by an application such as a browser, media player, or reader that offers this functionality).	**Pass**
Additional Information:	**28/28 pages pass.**
B. Decorative images are marked with null alternative text or contain markup that allows them to be ignored by assistive technology.	**N/A**
Additional Information:	**No decorative images were found.**
C. Complex images, charts, and graphs have longer text descriptions that are compatible with assistive technology (or are rendered by an application such as a browser, media player, or reader) that offers this functionality).	**N/A**
Additional Information:	**No complex images found.**

12.Multimedia

A. A synchronized text track (e.g. open or closed captions) is provided with all video content.	**N/A**
Additional Information:	**No multimedia was found.**
B. A transcript is provided with all audio content.	**N/A**
Additional Information:	**No multimedia was found.**
C. Audio/video content is delivered via a media player that is compatible with assistive technology. This includes support for all criteria listed in Section 15 below.	**N/A**

Additional Information:	**No multimedia was found.**

13.Flickering

A. The digital resource content does not contain anything that flashes more than three times in any one-second period.	**Pass**
Additional Information:	**No flickering was found.**

14.Science, Technology, Engineering, and Math (STEM)

A. STEM figures have appropriate markup that indicates that the image is a figure.	**Pass**
Additional Information:	**6/6 figures passed.**
B. STEM graphs have appropriate markup that indicates that the image is a graph.	**Fail**
Additional Information:	**Graphs not marked as graphs.**
C. STEM equations have appropriate markup that indicates that the image is an equation.	**Fail**
Additional Information:	**Equations not marked as equations.**
D. STEM tables have appropriate markup that indicates the image is a table.	**N/A**
Additional Information:	**No tables were found.**
E. STEM figures have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**Pass**
Additional Information:	**6/6 figures passed.**
F. STEM graphs have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**N/A**
Additional Information:	**Graphs considered figures.**
G. STEM equations have appropriate notation markup that conveys both the notation	**Pass**

(presentation) and meaning (semantics) of the STEM content.	
Additional Information:	**10/10 pass.**
H. Assistive technology used can access the content from the STEM tables.	**N/A**
Additional Information:	**No tables were found.**

15.Interactive Elements

A. Each interactive element (e.g. menu, hyperlink, button) and function (e.g. annotations) allows keyboard-only operation both with and without assistive technology.	**N/A**
Additional Information:	**No interactive elements were found.**
B. Each interactive element conveys information to assistive technology regarding the element's name, type, and status (e.g. "Play, button, selected").	**N/A**
Additional Information:	**No interactive elements were found.**
C. All instructions, prompts, and error messages necessary to complete forms are conveyed as text to assistive technology (or are rendered by an application such as a browser, media player, or reader that offers this functionality).	**N/A**
Additional Information:	**No interactive elements were found.**

DETAILED ACCESSIBILITY EVALUATION REPORT using
Non-Assistive Technologies

Non-Assistive Technologies (NAT) Evaluations applies only native or basic tools and software such as the keyboard and Narrator in the accessibility evaluation process. These non-assistive technologies are readily available and used by the general public.

1. Accessibility Documentation

A. The organization providing the online materials has a formal accessibility policy.	**Fail**
Additional Information:	**No Formal Accessibility Policy found.**
B. The organization providing the online materials has an accessibility statement.	**Fail**
Additional Information:	**No Accessibility Statement found.**
C. An Accessibility Evaluation Report is available from an external organization.	**Fail**
Additional Information:	**No Accesibility Evaluation Report found.**

2. Text Access

A. The text of the digital resource is available to assistive technology that allows the user to enable text-to-speech (TTS) functionality.	**Pass**
Additional Information:	**5/5 pages read text to speech. The pause between each word is too long. Checked pages 1-5. Adobe Acrobat Pro XI was used.**

3. Text Adjustment

A. Text is compatible with assistive technology.	**Pass**
Additional Information:	**5/5 pass compatible size check. Checked pgs 1-5. However, when changing the settings to "reflow" text, the text format is destroyed. The spacing between words becomes non-existent and some words are split by return. Adobe Acrobat Pro XI was used.**

B. The resource allows the user to adjust the font size and font/background color (or is rendered by an application such as a browser, media player, or reader) that offers this functionality).	**Pass**
Additional Information:	**5/5 pass font and colors check. Checked pgs 1-5. Adobe Acrobat Pro XI was used.**

4. Reading Layout

A. Text of the digital resource is compatible with assistive technology that allows the user to reflow the text by specifying the margins and line spacing (or is rendered by an application such as a browser, media player, or reader that offers this functionality).	**Pass**
Additional Information:	**5/5 pass reflow check. Checked pgs 1-5. However, when changing the settings to "reflow" text, the text format is destroyed. The spacing between words becomes non-existent and some words are split by return. Adobe Acrobat Pro XI was used.**
B. If the digital resource is an electronic alternative to printed materials, the page numbers correspond to the printed material.	**Pass**
Additional Information:	**5/5 pass match page number with text. Pgs 1-5 checked. Adobe Acrobat Pro XI was used.**

5. Reading Order

A. The reading order for digital resource content logically corresponds to the visual layout of the page when rendered by assistive technology.	**Fail**
Additional Information:	**0/5 pages passed reading order check. The pause between words is too long. Adobe Acrobat Pro XI was used.**

6. Structural Markup/Navigation

A. The text of the digital resource includes markup (e.g. tags or styles) that allows for navigation by key structural elements (chapters, headings, pages) using assistive technology (or is rendered by an application such as a browser, media player, or reader that offers this functionality).	**Fail**
Additional Information:	**3/4 criteria failed Accessiblity check for navigation text. Accessibility checker failed check for tagged PDF, Title, and Headings. Bookmarks passed. Adobe Acrobat Pro XI was used.**
B. The text of the digital resource includes markup for bullets and numbered lists that is compatible with assistive technology (or is rendered by an application such as a browser, media player, or reader that offers this functionality).	**Fail**
Additional Information:	**Accessibility checker failed list criteria. Adobe Acrobat Pro XI was used.**
C. If the text of the digital resource is delivered within an ebook reader application, a method is provided that allows users to bypass the reader interface and move directly to the text content that is compatible with assistive technology.	**N/A**
Additional Information:	**No eReader application found.**

7. Tables

A. Data tables include markup (e.g. tags or styles) that identifies row and column headers in a manner that is compatible with assistive technology (or are rendered by an application such as a browser, media player, or reader that offers this functionality).	**N/A**

Additional Information:	No tables found within the entire document. Accessibility checker failed table check. Adobe Acrobat Pro XI was used.

8. Hyperlinks

A. In-book links take you to a location within the textbook. For example, the table of contents would be considered in-book links and embedded links take you to the correct location in the book.	Pass
Additional Information:	30/30 links passed within book check. Pages vii-viii checked (table of contents). Accessiblity checker passed navigation links check. Adobe Acrobat Pro XI was used.
B. Live hyperlinks take you to any website or webpages external to the book.	N/A
Additional Information:	No live on internet links found within entire book.
C. Live links take you to the correct webpage that is functioning properly.	N/A
Additional Information:	No live on internet links found within entire book.
D. Live links are descriptive enough for the users to know where it should take them.	N/A
Additional Information:	No live on internet links found within entire book.

9. Color and Contrast

A. All information within the material that is conveyed using color is also available in a manner that is compatible with those that do not perceive color, and information conveyed by color is also conveyed in other ways.	Pass
Additional Information:	15/15 Pages passed color redundancy test. Most text does not have color. Only navigation links are depicted in red do not show color redundancy; however, they are used sparingly withint the text. Pages 65-79 checked. Pages 65, 77, and 78 had a few

		navigation links with no color redundancy. Adobe Acrobat Pro XI and Colour Contrast Analyser tool were used.
B.	Information is conveyed from the sub-categories for contrast.	**Pass**
Additional Information:		**Average of Header and Text. Adobe Acrobat Pro XI was used.**
C.	Contrast for headers passed WCAG AA standards for large texts (contrast ratio 3:1).	**Pass**
Additional Information:		**15/15 pages passed. Pages 65-79 checked. All headers are black text on white background. Adobe Acrobat Pro XI and Colour Contrast Analyser tool were used.**
D.	Contrast for text passed WCAG AA standards for normal texts (contrast ratio of 4.5:1).	**Pass**
Additional Information:		**15/15 pages passed contrast check. Pages 65-79 checked. Most pages are black text on white background. Only navigation text is depicted in red. Navigation test fails the contrast check but the links are used sparingly. Pages 65, 77, and 78 included navigation text. Adobe Acrobat Pro Xi and Colour Contrast Analyser tool were used.**
E.	Contrast for simple images (for example, images of atoms) passed WCAG AA standards (contrast ratio of 4.5:1).	**N/A**
Additional Information:		**No simple images found within entire text. Adobe Acrobat Pro XI was used.**

10. Language

A.	The text of the digital resource includes markup that declares the language of the content in a manner that is compatible with assistive technology.	**Fail**
Additional Information:		**Accessibility checker failed primary language check. Adobe Acrobat Pro XI was used.**

B. If the digital resource includes passages in a foreign language, these passages include markup that declares the language in a manner that is compatible with assistive technology.	**N/A**
Additional Information:	**No foreign language found within entire text.**

11. Images

A. Non-decorative images have alternative text that is compatible with assistive technology (or is rendered by an application such as a browser, media player, or reader that offers this functionality).	**N/A**
Additional Information:	**No non decorative images found within entire text**
B. Decorative images are marked with null alternate text or contain markup that allows them to be ignored by assistive technology.	**N/A**
Additional Information:	**No decorative images found within entire text.**
C. Complex images, charts, and graphs have longer text descriptions that are compatible with assistive technology (or are rendered by an application such as a browser, media player, or reader) that offers this functionality).	**Fail**
Additional Information:	**0/3 images passed. Only 3 images were found in entire text. Pages 13, 34, and 35 checked. None of the images had an adequate description. Accessibility checker failed figures alternate text check.**

12. Multimedia

A. A synchronized text track (e.g. open or closed captions) is provided with all video content.	**N/A**
Additional Information:	**No Multimedia content found within entire text.**

B. A transcript is provided with all audio content.	N/A
Additional Information:	**No Multimedia content found within entire text.**
C. Audio/video content is delivered via a media player that is compatible with assistive technology. This includes support for all criteria listed in Section 15 below.	N/A
Additional Information:	**No Multimedia content found within entire text.**

13.Flickering

A. The digital resource content does not contain anything that flashes more than three times in any one-second period.	Pass
Additional Information:	**No flickering found within text.**

14.Science, Technology, Engineering, and Math (STEM)

A. STEM figures have appropriate markup that indicates that the image is a figure.	Fail
Additional Information:	**0/3 figures passed markup check. Only 3 figures found within entire text. Pages 13, 34, and 35 checked. Adobe Acrobat Pro Xi was Used.**
B. STEM graphs have appropriate markup that indicates that the image is a graph.	N/A
Additional Information:	**No graphs found within entire text.**
C. STEM equations have appropriate markup that indicates that the image is an equation.	Fail
Additional Information:	**0/10 equations passed. Pages 7-16 checked. The reader does not read the material in a coherent manner. The space between words is too long and renders the information unintelligible. None of the equations are read in a logical manner.**
D. STEM tables have appropriate markup that indicates the image is a table.	N/A
Additional Information:	**No tables found within entire text.**

E. STEM figures have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**Fail**
Additional Information:	**0/3 figures passed notation markup check. Only 3 figures found within entire text. Pages 13, 34, and 35 checked. Adobe Acrobat Pro XI was used.**
F. STEM graphs have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**N/A**
Additional Information:	**No graphs found within entire text.**
G. STEM equations have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**Fail**
Additional Information:	**0/10 equations passed notation check. Pages 7-16 checked. The reader is not understandable since the pause between words is too long. There is no real explanation for the specific equations, they are just embedded within the text without notation or markup.**
H. Assistive technology used can access the content from the STEM tables.	**N/A**
Additional Information:	**No tables found within entire text.**

15. Interactive Elements

A. Each interactive element (e.g. menu, hyperlink, button) and function (e.g. annotations) allows keyboard-only operation both with and without assistive technology.	**N/A**
Additional Information:	**No interactive elements found within entire text.**
B. Each interactive element conveys information to assistive technology regarding the	**N/A**

element's name, type, and status (e.g. "Play, button, selected").	
Additional Information:	**No interactive elements found within entire text.**
C. All instructions, prompts, and error messages necessary to complete forms are conveyed as text to assistive technology (or are rendered by an application such as a browser, media player, or reader that offers this functionality).	**N/A**
Additional Information:	**No interactive elements found within entire text.**

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