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: **Human Physiology**
Format of Textbook: **HTML**

Assistive Technology (AT) Evaluation Score: Overall	**7.9 (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	**7.3 (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:	**Did not find any information about Merlot's Formal Accessibility Policy.**
B. The organization providing the online materials has an accessibility statement.	**Fail**
Additional Information:	**Did not find any information about Merlot's Accessibility Statement.**
C. An Accessibility Evaluation Report is available from an external organization.	**Fail**
Additional Information:	**Did not find any information about Merlot's Accessibility Evaluation Report.**

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:	**3/3 Chapters passed, all contents within the book were successfully translated to audio. However, all images within the text were not translated with enough detail so that the reader would understand what was happening within the image. Chapters checked, (1,13,23).**

3. Text Adjustment

A. Text is compatible with assistive technology.	**Pass**

Additional Information:	**3/3 chapters passed. Regular text and images were easily zoomed in (to 200%) and out (to 33%) with out any disruptive altercation to either text or images (Chapters evaluated 4,12,19).**
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:	**3/3 chapters passed. Using Care for Your Eyes on Google Chrome, font and background did change color when nightmode was selected (Chapters evaluated 4,12,19).**

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:	**30/30 pages passed for reflow of text. Page numbers checked include (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23).**
B. If the digital resource is an electronic alternative to printed materials, the page numbers correspond to the printed material.	**Fail**
Additional Information:	**HTML version of textbook goes by chapter titles (1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23). PDF version of textbook goes by page numbers, you will not be able to find a specific page number in the HTML version.**

5. Reading Order

A. The reading order for digital resource content logically corresponds to the visual layout of	**Pass**

the page when rendered by assistive technology.	
Additional Information:	**3/3 Chapters passed. While all contents within the book were successfully translated to audio and were read out in a logical reading order. Chapters Checked (2,15,22).**

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).	**Pass**
Additional Information:	**3/3 chapters passed. You were able to navigate through the text, among headers, lists, links, and tables, by using the NVDA hotkeys. Chapters checked (2,9,17).**
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).	**Pass**
Additional Information:	**10/10 lists passed. Lists were recognized by NVDA as lists. Furthermore, you were able to navigate through the lists by using the NVDA hotkeys. Additionally, lists were not conveyed in a logical manner. Chapters checked 2 (10/10 lists).**
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 eReader application in this evaluation.**

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).	**Pass**
Additional Information:	**8/10 tables were translated properly by NVDA, read cell by cell, and you were able to navigate in all directions using directional keys. Chapter 2 (5/5 tables pass), chapter 8 (0/2 tables pass), chapter 14 (3/3tables pass). The two tables that did not pass in chapter 8 were inserted as figures, they did have enough description that conveyed the meaning behind them.**

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.	**N/A**
Additional Information:	
B. Live hyperlinks take you to any website or webpages external to the book.	**Pass**
Additional Information:	**20/20 live hyperlinks functioned properly and took the reader to the expected websites on the internet and/or to figures, examples, and solutions within the textbook Chapter 14, 20/20 links. 20/20 live hyperlinks worked and had proper descriptions of the hyperlinks, while no URLs were found, the links were only in a different color chapter 14, 20/20 links.**
C. Live links take you to the correct webpage that is functioning properly.	**Pass**
Additional Information:	**20/20 live hyperlinks functioned properly and took the reader to the expected websites on the internet**

	and/or to figures, examples, and solutions within the textbook Chapter 14, 20/20 links.
D. Live links are descriptive enough for the users to know where it should take them.	**Pass**
Additional Information:	**20/20 live hyperlinks worked and had a proper descriptions of the hyperlinks, while no URLs were found, the links were only in a different color, chapter 14, 20/20 links.**

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:	**Throughout the text, headers were consistently black against a white background, as were hyperlinks a blue color against a white background, and normal text was consistently black against a white background. In regards to size, headers were always larger than normal body text, and hyperlinks were always blue, however, hyperlinks should be bolded and underlined to differentiate them from the rest of the text. (Checked chapters and subchapters 1,9,18). All text passes the AA standard.**
B. Information is conveyed from the sub-categories for contrast.	**Pass**
Additional Information:	**Section heading, sub heading, and text passed (Chapters checked 8,15,23).**
C. Contrast for headers passed WCAG AA standards for large texts (contrast ratio 3:1).	**Pass**
Additional Information:	**Section heading passed(Chapters checked 8,15,23).**
D. Contrast for text passed WCAG AA standards for normal texts (contrast ratio of 4.5:1).	**Pass**
Additional Information:	**All text passed (Chapters checked 8,15,23).**

E. Contrast for simple images (for example, images of atoms) passed WCAG AA standards (contrast ratio of 4.5:1).	**N/A**
Additional Information:	**All images within the text are complex.**

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.	**Pass**
Additional Information:	**"lang="en-us" code found.**
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 passages found in foreign languages.**

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).	**Fail**
Additional Information:	**0/3 chapters passed. All non-decorative images that were found were not read properly by NVDA. When NVDA encountered images it read off the a url. When searching for image alt"' in the code, alternative names and captions were not given. Chapters checked, 14, 16, 17.**
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:	**There were no decorative images found. Chapters and subchapters checked 6.2 (no decorative images),**

	10.2 (no decorative images), 12.4 (no decorative images), 26.4 (no decorative images), 31.6 (no decorative images).
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 chapters passed. All complex images that were found were not read properly by NVDA. When NVDA encountered images, it read off the url. When searching for image alt"' in the code, alternative names and captions were not given. Chapters checked, 14, 16, 17.**

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.**
B. A transcript is provided with all audio content.	**N/A**
Additional Information:	**No multimedia content 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 content 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 content.**

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

A. STEM figures have appropriate markup that indicates that the image is a figure.	**Fail**
Additional Information:	**0/10 figures pass. Chapter 16 (0/10 figures have a description that convey notion and meaning), 15 (0/1 figures have a description that convey notion and meaning).**
B. STEM graphs have appropriate markup that indicates that the image is a graph.	**N/A**
Additional Information:	**Did not find any graphs within the text.**
C. STEM equations have appropriate markup that indicates that the image is an equation.	**N/A**
Additional Information:	**Did not find any equations within the text.**
D. STEM tables have appropriate markup that indicates the image is a table.	**Pass**
Additional Information:	**8/10 tables were properly marked. Tables did have proper descriptions of what was inside the tables. Chapter 2 (5/5 tables pass), chapter 8 (0/2 tables pass), chapter 14 (3/3tables pass).**
E. STEM figures have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**Fail**
Additional Information:	**0/10 figures pass. Chapter 16 (0/10 figures have a description that convey notion and meaning), 15 (0/1 figures have a description that convey notion and meaning). NVDA read each figure off as a URL, the reader would not be able to decipher what the figure was just by listening to the NVDA translations.**
F. STEM graphs have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**N/A**
Additional Information:	**Did not find any graphs within the text.**
G. STEM equations have appropriate notation markup that conveys both the notation	**N/A**

(presentation) and meaning (semantics) of the STEM content.	
Additional Information:	**Did not find any equations within the text.**
H. Assistive technology used can access the content from the STEM tables.	**Pass**
Additional Information:	**8/10 tables were translated properly by NVDA, dread cell by cell, and you were able to navigate in all directions using directional keys. Chapter 2 (5/5 tables pass), chapter 8 (0/2 tables pass), chapter 14 (3/3tables pass). The two tables that did not pass in chapter 8 were inserted as figures, they did have enough description that conveyed the meaning behind them.**

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.	**Pass**
Additional Information:	**Successfully navigated through 3 chapters (1,13,21) by using the TAB and ENTER keys on the keyboard.**
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 markup interactive elements 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 text interactive elements 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:	**Not found.**
B. The organization providing the online materials has an accessibility statement.	**Fail**
Additional Information:	**Not found.**
C. An Accessibility Evaluation Report is available from an external organization.	**Fail**
Additional Information:	**Not 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:	**3/3 chapters pass.**

3. *Text Adjustment*

A. Text is compatible with assistive technology.	**Pass**
Additional Information:	**3/3 chapters 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:	**3/3 chapters 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:	**3/3 chapters pass. Pages reflow when making web browser smaller or zooming to 200%.**
B. If the digital resource is an electronic alternative to printed materials, the page numbers correspond to the printed material.	**Fail**
Additional Information:	**There are chapters on the pdf version. Also when you compare a chapter they have in common (e.g. Homeostasis) the pdf has more content.**

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.	**N/A**
Additional Information:	**Non AT Tech only.**

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).	**N/A**
Additional Information:	**Non AT Tech only.**
B. The text of the digital resource includes markup for bullets and numbered lists that is compatible with assistive technology (or is	**N/A**

rendered by an application such as a browser, media player, or reader that offers this functionality).	
Additional Information:	**Non AT Tech only.**
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:	**Non AT Tech only.**

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:	**Non AT Tech only.**

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.	**N/A**
Additional Information:	**No within book links in HTML.**
B. Live hyperlinks take you to any website or webpages external to the book.	**Pass**
Additional Information:	**Average Score.**
C. Live links take you to the correct webpage that is functioning properly.	**Pass**
Additional Information:	**20/20 links pass.**

D. Live links are descriptive enough for the users to know where it should take them.	**Pass**
Additional Information:	**20/20 links pass.**

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:	**Link are coded blue to show they are links but there is no other way of knowing they are links if you can not idenfity the color.**
B. Information is conveyed from the sub-categories for contrast.	**Pass**
Additional Information:	**Average Score**
C. Contrast for headers passed WCAG AA standards for large texts (contrast ratio 3:1).	**Pass**
Additional Information:	**Headers are black and background is white.**
D. Contrast for text passed WCAG AA standards for normal texts (contrast ratio of 4.5:1).	**Pass**
Additional Information:	**Text is black and background is white.**
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.	**Pass**
Additional Information:	**3/3 chapters have proper language code.**

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 other language found.**

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:	**3/3 chapters pass using w3c.**
B. Decorative images are marked with null alternate text or contain markup that allows them to be ignored by assistive technology.	**Pass**
Additional Information:	**3/3 chapters pass using w3c.**
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:	**Complex images found chapters have null alt tags.**

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 found.**
B. A transcript is provided with all audio content.	**N/A**
Additional Information:	**No multimedia found.**
C. Audio/video content is delivered via a media player that is compatible with assistive	**N/A**

technology. This includes support for all criteria listed in Section 15 below.	
Additional Information:	**No multimedia 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. Chapters 2, 8, 12 and 24 were checked.**

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

A. STEM figures have appropriate markup that indicates that the image is a figure.	**Pass**
Additional Information:	**8/10 figures have proper markup.**
B. STEM graphs have appropriate markup that indicates that the image is a graph.	**N/A**
Additional Information:	**No graphs found.**
C. STEM equations have appropriate markup that indicates that the image is an equation.	**N/A**
Additional Information:	**No equations found.**
D. STEM tables have appropriate markup that indicates the image is a table.	**Pass**
Additional Information:	**7/10 tables have proper markup.**
E. STEM figures have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**Fail**
Additional Information:	**0/10 figure have notation.**
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.**
G. STEM equations have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**N/A**
Additional Information:	**No equations found.**
H. Assistive technology used can access the content from the STEM tables.	**Fail**
Additional Information:	**0/10 tables have notation.**

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:	**Non-Assistive Technologies only.**
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:	**Non-Assistive Technologies only.**
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:	**Non-Assistive Technologies only.**

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