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: **Chemistry (OpenStax)**
Format of Textbook: **HTML**

Assistive Technology (AT) Evaluation Score: Overall	**8.5 (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	**9.1 (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:	**There were no links provided for additional information regarding the formal accessibility policy. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
B. The organization providing the online materials has an accessibility statement.	**Fail**
Additional Information:	**There were no links provided for additional information regarding the accessibility statement. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
C. An Accessibility Evaluation Report is available from an external organization.	**Fail**
Additional Information:	**There were no links provided for additional information regarding accessibility. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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.	**Fail**
Additional Information:	**0/3 chapters were analyzed and passed text to speech. Chapters 1 through 3 were used for this**

	analysis. Although the NVDA program was able to read the text content, it paused every time it came to a word that was bolded or contained an equation. Once the NVDA reader was manually started after encountering these issues and pausing, some of the words in the sentence were missing. The reader would skip three or four words or entire sentences before beginning to read again. This section received a score of 5, which is failing, due to the fact that the reader did read most of the text but failed to perform adequately. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.

3. Text Adjustment

A. Text is compatible with assistive technology.	**Pass**
Additional Information:	**3/3 chapters were analyzed and passed text size compatibility. Chapters 1 through 3 were used for this analysis. The text content of the chapter allowed for adequate text size adjustment between the ranges of 30% to 300% zoom. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
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 were analyzed and passed. Chapters 1 through 3 were analyzed and allowed for adequate adjustment of the font/background color. The tool used to analyze this component was the Google extension "Care your Eyes." Google chrome was used to access the book online.**

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 web pages were analyzed and passed. Content was taken from chapters 1 through 4. All of the web pages analyzed allowed for adequate text reflow between 30% and 300% zoom levels. Horizantal scrolling was not required. Results may vary depending on screen size. Text reflow was analyzed using a standard Toshiba laptop with a 16 inch screen size. Google chrome was used to access the book online.**
B. If the digital resource is an electronic alternative to printed materials, the page numbers correspond to the printed material.	**N/A**
Additional Information:	**0/0 web pages were analyzed and passed for matching page number content in the PDF version. There was a PDF version of this text, however, the HTML version of the book does not provide page numbers to compare with the PDF version. The content covered in each chapter and section is the same in both the HTML and PDF versions. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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 were analyzed and passed for digital resource layout. Chapter 1 was used for this analysis. The reading order for digital resource content**

	logically corresponded to the visual layout of the page when rendered by assistive technology. The program used to analyze the digital resource layout was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.

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 were analyzed and passed markup for navigational text. Chapters 1 through 3 were used to analyze navigational text. The text of the digital resource included markup that allowed for navigation by heading levels using assistive technology. All heading levels were black text on a white background except for chapter section headings which were dark blue on white background. The program used to analyze navigational text was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
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 were analyzed and passed for structural markup of lists. Chapters 1 through 3 were used to analyze lists. The text of the digital resource included markup for bullets and numbered lists that was compatible with assistive technology. The program**

	used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.
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:	**0/0 text content analyzed for structural markup for eReader application. No additional eReader application being used in this evaluation. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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).	**Fail**
Additional Information:	**0/10 tables were analyzed and passed markup. Tables were taken from chapters 1 through 3. Data tables did not include markup that identified row and column headers in a manner that was compatible with assistive technology. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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	**N/A**

embedded links take you to the correct location in the book.	
Additional Information:	**The within book links are included in the live links analysis for HTML formats.**
B. Live hyperlinks take you to any website or webpages external to the book.	**Fail**
Additional Information:	**This is a combined average of the following two subsections of the links description and functionality. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
C. Live links take you to the correct webpage that is functioning properly.	**Pass**
Additional Information:	**50/50 links were analyzed and passed for functionality. The links were taken from chapters 1 through 3. The links took you to the correct location. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
D. Live links are descriptive enough for the users to know where it should take them.	**Fail**
Additional Information:	**13/50 links were analyzed and passed for link description. The links were taken from chapters 1 through 3. There was adequate descriptions of the passing links that aided in determining where they would take you. Failing links had no adequate description of the link was provided that was compatible with assistive technology, single words such as figure or link were used. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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	**Pass**

not perceive color, and information conveyed by color is also conveyed in other ways.	
Additional Information:	**3/3 chapters were analyzed and passed for color redundancy. Chapter 1 through 3 were analyzed. The text content was color redundant in that it provided adequate means of distinguishing the content aside from color. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
B. Information is conveyed from the sub-categories for contrast.	**Pass**
Additional Information:	**This is an average score taken from the combined sub sections of the color and contrast field. The content was analyzed using the color contrast analyzer tool. Google chrome was used to access the book online.**
C. Contrast for headers passed WCAG AA standards for large texts (contrast ratio 3:1).	**Pass**
Additional Information:	**3/3 chapters were analyzed and passed for adequate header color contrast. Chapters 1 through 3 were used for analysis. All heading levels were black text on a white background except for chapter section headings which were dark blue on white background. The content was analyzed using the color contrast analyzer tool. Google chrome was used to access the book online.**
D. Contrast for text passed WCAG AA standards for normal texts (contrast ratio of 4.5:1).	**Pass**
Additional Information:	**3/3 chapters were analyzed and passed for adequate text color contrast. Chapters 1 through 3 were used for analysis. All standard text samplings were of black text on a white background,and all text link samples were dark blue text on a white backround. The content was analyzed using the color contrast analyzer tool. Google chrome was used to access the book online.**

E. Contrast for simple images (for example, images of atoms) passed WCAG AA standards (contrast ratio of 4.5:1).	**Pass**
Additional Information:	**3/3 chapters with simple images were analyzed and passed color contrast. The images were taken from chapters 1 through 3. The content was analyzed using the color contrast analyzer tool. Google chrome was used to access the book online.**

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:	**The text of the digital resource includes markup that declares the language of the content in a manner that is compatible with assistive technology. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
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:	**The digital resource did not include passages in a foreign language. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

11.Images

A. Non-decorative images have alternative text that is compatible with assistive technology (or is rendered by an application such as a	**Pass**

browser, media player, or reader that offers this functionality).	
Additional Information:	**48/48 non-decorative images were analyzed and passed. Chapters 1 through 3 were used for this analysis. Alternate text descriptions are provided for each image that are compatible with assistive technology. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
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:	**0/0 decorative images were analyzed and passed. No decorative images were found within chapters 1 through 3. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
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).	**Pass**
Additional Information:	**28/28 complex images were analyzed and passed. Chapters 1 through 3 were used for this analysis. Text descriptions are provided for each image that are compatible with assistive technology. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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 were found within the text resource. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
B. A transcript is provided with all audio content.	**N/A**
Additional Information:	**No multimedia were found within the text resource. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
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 were found within the text resource. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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:	**While analyzing book material there was no flickering on any of the pages. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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

A. STEM figures have appropriate markup that indicates that the image is a figure.	**Pass**
Additional Information:	**10/10 figures were analyzed and passed. All STEM figures were taken from chapters 1 through 3. The figures are marked up in a manner that is compatible with assistive technology. The program used to analyze text content was NVDA which is an open**

	source screen reader for Windows. Google chrome was used to access the book online.
B. STEM graphs have appropriate markup that indicates that the image is a graph.	**Pass**
Additional Information:	**10/10 graphs were analyzed and passed. The graphs were taken from chapters 1 through 5. The graphs are marked up in a manner that is compatible with assistive technology. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
C. STEM equations have appropriate markup that indicates that the image is an equation.	**Fail**
Additional Information:	**0/10 equations were analyzed and passed. STEM equations were found in chapters 1 through 3. The equations were not marked up in a manner that is compatible with assistive technology. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
D. STEM tables have appropriate markup that indicates the image is a table.	**Fail**
Additional Information:	**0/10 tables were analyzed and passed. Stem tables were found in chapters 1 through 3. The tables did not contain markup that was compatible with assistive technology. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
E. STEM figures have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**Pass**
Additional Information:	**10/10 figures were analyzed and passed. All STEM figures were taken from chapters 1 through 3. The resource conveys both the notation (presentation) and meaning (semantics) of the STEM content. The**

	program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.
F. STEM graphs have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**Pass**
Additional Information:	**10/10 graphs were analyzed and passed. The graphs were found in chapters 1 through 3. The resource conveys both the notation (presentation) and meaning (semantics) of the STEM content. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
G. STEM equations have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**Pass**
Additional Information:	**0/10 equations were analyzed and passed. STEM equations were found in chapters 1 through 3. Although the reader could not identify or read the eaquation, the surrounding text conveys both the notation (presentation) and meaning (semantics) of the STEM content. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
H. Assistive technology used can access the content from the STEM tables.	**Pass**
Additional Information:	**0/10 tables were analyzed and passed. STEM tables were found in chapters 1 through 3. Although the reader could not identify or read the tables, the surrounding text conveys both the notation (presentation) and meaning (semantics) of the STEM content. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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 within the text resource. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
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 within the text resource. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**
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 within the text resource. The program used to analyze text content was NVDA which is an open source screen reader for Windows. Google chrome was used to access the book online.**

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. Chapters 1, 7 and 21 were checked.**

3. *Text Adjustment*

A. Text is compatible with assistive technology.	**Pass**
Additional Information:	**3/3 chapters pass. Chapters 1, 7 and 21 were checked.**
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,	**Pass**

media player, or reader) that offers this functionality).	
Additional Information:	**3/3 chapters pass. Chapters 1, 7 and 21 were checked.**

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. Chapters reflow when making google web browser smaller or zooming in to 200%. Chapters 1, 7 and 21 were checked.**
B. If the digital resource is an electronic alternative to printed materials, the page numbers correspond to the printed material.	**Pass**
Additional Information:	**3/3 chapters match content of the PDF version. Chapters 1, 7 and 21 were checked, which is about 22 total web pages.**

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	**N/A**

such as a browser, media player, or reader that offers this functionality).	
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 rendered by an application such as a browser, media player, or reader that offers this functionality).	**N/A**
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 f ound 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. Links are functional.**
D. Live links are descriptive enough for the users to know where it should take them.	**Pass**
Additional Information:	**20/20 links have proper description.**

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:	**They use the color blue to show a link but there is another code to demonstrate it's a link as well, they underline the word. However for the link you are currently on it showed as green and there is no other way to know you are on that link unless you can detect the word is green.**
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 a dark blue with a light background.**
D. Contrast for text passed WCAG AA standards for normal texts (contrast ratio of 4.5:1).	**Pass**
Additional Information:	**Text is black with a light background.**
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 pass.**
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. 1, 7 and 21 were checked. Chapters were checked 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. 1, 7 and 21 were checked. Chapters were checked 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).	**Pass**

Additional Information:	**3/3 chapters pass. 1, 7 and 21 were checked. Chapters were manually checked.**

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 technology. This includes support for all criteria listed in Section 15 below.	**N/A**
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 1, 7 and 21 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:	**9/10 figures have a proper mark up.**
B. STEM graphs have appropriate markup that indicates that the image is a graph.	**Pass**
Additional Information:	**10/10 graphs have proper mark ups.**
C. STEM equations have appropriate markup that indicates that the image is an equation.	**Pass**
Additional Information:	**8/10 equations have proper mark up.**

D. STEM tables have appropriate markup that indicates the image is a table.	**Pass**
Additional Information:	**7/10 tables have proper mark up.**
E. STEM figures have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**Pass**
Additional Information:	**All corresponding figures from above had notations.**
F. STEM graphs have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**Pass**
Additional Information:	**All corresponding graphs from above had notations.**
G. STEM equations have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	**Pass**
Additional Information:	**All corresponding equations from above had notations.**
H. Assistive technology used can access the content from the STEM tables.	**Pass**
Additional Information:	**All corresponding tables from above had notations.**

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.**