



## 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:** Light & Matter  
**Format of Textbook:** HTML

<b>Assistive Technology (AT) Evaluation Score: Overall</b>	<b>5.4 (Maximum score = 10)</b>
<p><b>Assistive Technologies (AT) Evaluations</b> 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.</p> <ul style="list-style-type: none"> <li>• Accessibility features of desktop operating systems (e.g. high-contrast display themes, settings from the Keyboard and Mouse control panels)</li> <li>• Accessibility-related software included with desktop operating systems (e.g. VoiceOver, Microsoft Narrator)</li> <li>• Third-party accessibility software and hardware:</li> <li>• Screen readers (e.g. JAWS, Window Eyes)</li> <li>• Magnification software (e.g. ZoomText Magnifier/Reader, MAGIC Pro with Speech)</li> <li>• Reading software for users with learning disabilities (e.g. Read and Write Gold, Kurzweil 3000)</li> <li>• Refreshable Braille displays</li> </ul>	
<b>Non- Assistive Technology (NAT) Evaluation Score: Overall</b>	<b>6.8 (Maximum score =10)</b>
<p><b>Non-Assistive Technologies (NAT) Evaluations</b> 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.</p>	



## **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.

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## **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.	<b>Fail</b>
Additional Information:	<b>Did not find any information about Merlot's Formal Accessibility Policy.</b>
B. The organization providing the online materials has an accessibility statement.	<b>Fail</b>
Additional Information:	<b>Did not find any information about Merlot's Accessibility Statement.</b>
C. An Accessibility Evaluation Report is available from an external organization.	<b>Fail</b>
Additional Information:	<b>Did not find any information about Merlot's Accessibility Evaluation Report.</b>

### 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.	<b>Fail</b>
Additional Information:	<b>0/5 Chapters passed. While all content within the book were successfully translated to audio, it would read from multiple points at once. While normal text was read properly, information was skipped or was read over again in chapters 7,13,19,29, and 34. Images in chapters 7,13,19,29, and 34 were translated in a way that was easy to understand, and a sufficient amount of detail was given. Equations in chapters 7,13,19,29, and 34 were not translated in a logical way, the word "math" would be said everytime an equation was presented. The reader</b>



	would be able to understand the mathematical content within the book.
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### 3. Text Adjustment

A. Text is compatible with assistive technology.	<b>Pass</b>
Additional Information:	<b>5/5 Chapters passed. Regular text and images were easily zoomed in (to 150%) and out (to 33%) without any disruptive alteration to either text or images. However, when zooming in to 175%+ the user would have to scroll horizontally to fully read content (Chps. 5, 17, 22,29,35).</b>
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).	<b>Fail</b>
Additional Information:	<b>0/5 chapters passed. Using Care for Your Eyes on Google Chrome, font and background did not change color when nightmode was selected (Chapters evaluated 4,15,23,28,33).</b>

### 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).	<b>Fail</b>
Additional Information:	<b>29/30 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, 24, 25, 26, 27, 28, 29, 30); however, in chapter 8.1 8.2, (when zoomed into 110% images would overlap text).</b>
B. If the digital resource is an electronic alternative to printed materials, the page numbers correspond to the printed material.	<b>Fail</b>



Additional Information:	HTML version of textbook goes by chapter and subchapter titles while PDF version of textbook goes by page numbers, you will not be able to find a specific page number in the HTML version (Chps. 1,2,3,4,5,10,15,16,17,24,25,26,27).
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### 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.	<b>Fail</b>
Additional Information:	<b>0/5 Chapters passed. While all contents within the book were successfully translated to audio, it would read from multiple points at once. While normal text was read properly, information was skipped or were read over again in chapters 7,13,19,29, and 34. Images in chapters 7,13,19,29, and 34 were translated in a way that was easy to understand, and a sufficient amount of detail was given. Equations in chapters 7,13,19,29, and 34 were not translated in a logical way, the word "math" would be said everytime an equation was presented. The reader would be able to understand the mathematical content within the book.</b>

### 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).	<b>Pass</b>
Additional Information:	<b>5/5 chapters passed. You were able to navigate through the text, among headers, lists, links, and tables, by using the NVDA hotkeys. Chapters checked (10,17,23,28,35 ).</b>



<p>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).</p>	<p><b>Pass</b></p>
<p>Additional Information:</p>	<p><b>10/10 lists passed. You were able to navigate through the lists by using the NVDA hotkeys and the content within the lists were conveyed in a logical manner. Chapters checked 15 (1/1 lists), 19 (2/2 lists), 28 (2/2 lists), 31 (2/2 lists), 34 (1/1 lists), 35 (2/2 lists).</b></p>
<p>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.</p>	<p><b>N/A</b></p>
<p>Additional Information:</p>	<p><b>Not using eReader application in this evaluation.</b></p>

## 7. Tables

<p>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).</p>	<p><b>Fail</b></p>
<p>Additional Information:</p>	<p><b>10/19 tables passed. Tables did not consist of any description of what was inside the tables than the content within the table. The tables were translated properly by NVDA, read cell by cell, and you were able to navigate in all directions using directional keys. Chapters checked, Chapters checked, 10 (2/2 tables passed, had proper descriptions, read clearly by NVDA, and were able to navigate in all directions by using directional keys), 3 (0/1 tables passed, had proper descriptions, read clearly by NVDA, and were able to navigate in all directions by using directional</b></p>



	keys), Chapter 3 (0/1 tables passed), Chapter 4 (0/2 tables passed), Chapter 18 0/1 tables passed), 26 (8/12 tables passed, had proper descriptions, read clearly by NVDA, and were able to navigate in all directions by using directional keys).
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### 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:	<b>61/61 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. Chapters checked included 9 (36/36 links worked properly) and Chp. 16 (25/25 links worked properly).</b>
C. Live links take you to the correct webpage that is functioning properly.	Pass
Additional Information:	<b>61/61 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. Chapters checked included 9 (36/36 links worked properly) and Chp. 16 (25/25 links worked properly).</b>
D. Live links are descriptive enough for the users to know where it should take them.	Fail
Additional Information:	<b>0/61 live hyperlinks had a proper descriptions of the hyperlinks, while no URLs were found, the links solutions, exercises, chapters and figures were simply labeled solution, exercise, name of the chapter, and figures were actually labeled with a simple letter (k, f, etc.), they needed to be more</b>



	descriptive. Chapters checked included 9 (0/36 links had proper descriptions) and Chp. 16 (0/25 had proper descriptions).
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## 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:	5/5 chapters passed. Throughout the text, headers were consistently black against a light grey background, hyperlinks were not only navy blue against a light grey background, but were also consistently underlined and normal text was consistently black against a light grey background. In regards to size, headers were always larger than normal body text and it was easy to differentiate between the two (Checked chapters and subchapters 4,13, 19, 27, 35). 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 and subchapters checked 4,13, 19, 27, 35)
C. Contrast for headers passed WCAG AA standards for large texts (contrast ratio 3:1).	Pass
Additional Information:	Section heading passed (Chapters and subchapters checked 4,13, 19, 27, 35).
D. Contrast for text passed WCAG AA standards for normal texts (contrast ratio of 4.5:1).	Pass
Additional Information:	All text passed (Chapters and subchapters checked 4,13, 19, 27, 35).
E. Contrast for simple images (for example, images of atoms) passed WCAG AA standards (contrast ratio of 4.5:1).	N/A





Additional Information:	<b>All images within the text are complex.</b>
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### 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.	<b>Fail</b>
Additional Information:	<b>"lang="en-us" code was not found.</b>
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.	<b>N/A</b>
Additional Information:	<b>No passages found in foreign languages.</b>

### 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).	<b>Fail</b>
Additional Information:	<b>0/5 chapters had non-decorative images that were read properly by NVDA. When NVDA encountered these images they simply read out the description found within img "" code. When searching for image alt"" in the code, an alternative name is given; however, there is a lack of description for most of the images. (Chapters and subchapters checked 1,10,17,22,29.) In chapter 1, 2/26 non-decorative images have good descriptions within image alt "". Images were simply read of as fig:boat or fig:chair etc. This would not be descriptive enough for the reader. For chapter 10, 0/10 non-decorative images have good descriptions within image alt "" . Again, images were simply read of as boat:graphic or mass:graphic etc. This would not be descriptive</b>



	<p>enough for the reader. Chapter 17, 0/14 non-decorative images have good descriptions within image alt ". Images were simply read of as flower:graphic or wavelength:graphic etc. This would not be descriptive enough for the reader. In chapter 22, 0/38 non-decorative images have good descriptions within image alt ". Images were simply read of as one word caption with the word graphic following each time. This would not be descriptive enough for the reader. In chapter 29, 0/18 non-decorative images have good descriptions within image alt ". Images were simply read of one word caption with the word graphic following each time. This would not be descriptive enough for the reader.</p>
<p>B. Decorative images are marked with null alternate text or contain markup that allows them to be ignored by assistive technology.</p>	<p>N/A</p>
<p>Additional Information:</p>	<p>No decorative images found. Chapters and subchapters checked 1 (no decorative images), 10 (no decorative images), 22 (no decorative images), 29 (no decorative images found).</p>
<p>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).</p>	<p>Fail</p>
<p>Additional Information:</p>	<p>0/5 chapters had complex images that were read properly by NVDA. When NVDA encountered these images they simply read out the description found within img "" code. Furthermore, there were no captions that conveyed a logical and proper description of each image. Chapters checked 1 (2/26 complex images have a caption that conveys a logical and proper description of the presented image) , 10 (0/10 complex images have a caption that conveys a logical and proper description of the presented image), 17 (0/14 complex images have a caption that conveys a logical and proper description of the</p>



	presented image), 22 (0/38 complex images have a caption that conveys a logical and proper description of the presented image), 29 (0/18 complex images have a caption that conveys a logical and proper description of the presented image).
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### 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. Figures were not properly marked as figures. When NVDA encountered these images they simply read out the description found within img "" code. Furthermore, there were no captions that conveyed a logical and proper description of each image. Chapters checked 21 (0/10 images passed).



B. STEM graphs have appropriate markup that indicates that the image is a graph.	<b>N/A</b>
Additional Information:	<b>Did not find any graphs within the textbook.</b>
C. STEM equations have appropriate markup that indicates that the image is an equation.	<b>Fail</b>
Additional Information:	<b>0/10 equations pass. Equations were not properly marked as equations. When NVDA encountered these images they simply read out "math." Chapter 1 (0/10 equations).</b>
D. STEM tables have appropriate markup that indicates the image is a table.	<b>Fail</b>
Additional Information:	<b>8/12 tables were properly marked. Tables did have proper descriptions of what was inside the tables. The tables were translated properly by NVDA, read cell by cell, and you were able to navigate in all directions using directional keys. Chapters checked, 26, 8/12 tables passed.</b>
E. STEM figures have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	<b>Fail</b>
Additional Information:	<b>0/10 figures pass. When NVDA encountered these images they simply read out the description found within img "" code. Chapter 21 (0/10 figures) pass.</b>
F. STEM graphs have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	<b>N/A</b>
Additional Information:	<b>Did not find any graphs within the textbook.</b>
G. STEM equations have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	<b>Fail</b>
Additional Information:	<b>0/10 equations pass. When NVDA encountered these equations they simply read out "math", Chapter 1 (0/10 equations) pass.</b>



H. Assistive technology used can access the content from the STEM tables.	<b>Fail</b>
Additional Information:	<b>8/12 tables were translated properly by NVDA, read cell by cell, and you were able to navigate in all directions using directional keys. Chapters checked, 26 (8/12 tables passed).</b>

### *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.	<b>Pass</b>
Additional Information:	<b>Successfully navigated through 5 chapters (2, 10, 17, 23, 35) by using the TAB and ENTER keys on the keyboard.</b>
B. Each interactive element conveys information to assistive technology regarding the element's name, type, and status (e.g. "Play, button, selected").	<b>N/A</b>
Additional Information:	<b>No markup interactive elements found.</b>
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).	<b>N/A</b>
Additional Information:	<b>No text interactive elements found.</b>



## 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.	<b>Fail</b>
Additional Information:	<b>Did not find any information about Merlot's Formal Accessibility Policy.</b>
B. The organization providing the online materials has an accessibility statement.	<b>Fail</b>
Additional Information:	<b>Did not find any information about Merlot's Accessibility Statement.</b>
C. An Accessibility Evaluation Report is available from an external organization.	<b>Fail</b>
Additional Information:	<b>Did not find any information about Merlot's Accessibility Evaluation Report.</b>

### 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.	<b>Pass</b>
Additional Information:	<b>Using Select and Speak on Google Chrome, all text in chapters 1, 8, 19, 27 and 36 were successfully translated to audio.</b>

### 3. Text Adjustment

A. Text is compatible with assistive technology.	<b>Pass</b>
Additional Information:	<b>Regular text and images were easily zoomed in ( to 200%) and out (to 33%) with out any disruptive alteration to either text or images. However, when</b>



	<b>zooming in to 175%+ the user would have to scroll horizontally to fully read content ( Chps. 3, 11, 18,25,31).</b>
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).	<b>Fail</b>
Additional Information:	<b>0/5 chapters passed. Using Care for Your Eyes on Google Chrome, font and background did not change color when nightmode was selected ( Chapters evaluated 4,15,23,28,33).</b>

#### **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).	<b>Pass</b>
Additional Information:	<b>29/30 pages passed for reflow of text. Page numbers checked include (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15,16,17,18,19,20,21,22,23,24,25,26,27, 28, 29, 30); however, in chapter 8.1 8.2, (when zoomed into 110% images would overlap text).</b>
B. If the digital resource is an electronic alternative to printed materials, the page numbers correspond to the printed material.	<b>Fail</b>
Additional Information:	<b>HTML version of textbook goes by subchapter titles ( 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18.1,18.2,1 8.3,18.4,18.5,18.6,18.7,18.8,18.9,18.10,18.11,18.12, 19) PDF version of textbook goes by page numbers, you will not be able to find a specific page number in the HTML version.</b>



### 5. Reading Order

<p>A. The reading order for digital resource content logically corresponds to the visual layout of the page when rendered by assistive technology.</p>	<p><b>N/A</b></p>
<p>Additional Information:</p>	<p><b>Not using assistive technology in this evaluation, need assistive technology to evaluate.</b></p>

### 6. Structural Markup/Navigation

<p>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).</p>	<p><b>N/A</b></p>
<p>Additional Information:</p>	<p><b>No source code, cannot evaluate.</b></p>
<p>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).</p>	<p><b>N/A</b></p>
<p>Additional Information:</p>	<p><b>No source code, cannot evaluate.</b></p>
<p>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.</p>	<p><b>N/A</b></p>
<p>Additional Information:</p>	<p><b>Not using additional eReader.</b></p>

### 7. Tables

<p>A. Data tables include markup (e.g. tags or styles) that identifies row and column headers</p>	<p><b>N/A</b></p>
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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).	
Additional Information:	<b>No source code, cannot evaluate.</b>

## 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.	
Additional Information:	<b>All withinbook link are considered live.</b>
B. Live hyperlinks take you to any website or webpages external to the book.	<b>Pass</b>
Additional Information:	<b>61/61 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. Chapters checked included 9 (36/36 links worked properly) and Chp. 16 (25/25 links worked properly).</b>
C. Live links take you to the correct webpage that is functioning properly.	<b>Pass</b>
Additional Information:	<b>61/61 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. Chapters checked included 9 (36/36 links worked properly) and Chp. 16 (25/25 links worked properly).</b>
D. Live links are descriptive enough for the users to know where it should take them.	<b>Fail</b>
Additional Information:	<b>0/61 live hyperlinks had a proper descriptions of the hyperlinks, while no URLs were found, the links solutions, exercises, chapters and figures were simply labeled solution, exercise, name of the chapter, and figures were actually labeled with a</b>



	<p>simple letter (k, f, etc.), they needed to be more descriptive. Chapters checked included 9 (0/36 links had proper descriptions) and Chp. 16 (0/25 had proper descriptions).</p>
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## 9. Color and Contrast

<p>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.</p>	<p><b>Pass</b></p>
<p>Additional Information:</p>	<p><b>5/5 chapters passed. Throughout the text, headers were consistently black against a light grey background, hyperlinks were not only navy blue against a light grey background, but were also consistently underlined and normal text was consistently black against a light grey background. In regards to size, headers were always larger than normal body text and it was easy to differentiate between the two (Checked chapters and subchapters 4,13, 19, 27, 35). All text passes the AA standard.</b></p>
<p>B. Information is conveyed from the sub-categories for contrast.</p>	<p><b>Pass</b></p>
<p>Additional Information:</p>	<p><b>Section heading, sub heading, and text passed (Chapters and subchapters checked 4,13, 19, 27, 35).</b></p>
<p>C. Contrast for headers passed WCAG AA standards for large texts (contrast ratio 3:1).</p>	<p><b>Pass</b></p>
<p>Additional Information:</p>	<p><b>Section heading passed (Chapters and subchapters checked 4,13, 19, 27, 35).</b></p>
<p>D. Contrast for text passed WCAG AA standards for normal texts (contrast ratio of 4.5:1).</p>	<p><b>Pass</b></p>
<p>Additional Information:</p>	<p><b>All text passed (Chapters and subchapters checked 4,13, 19, 27, 35).</b></p>
<p>E. Contrast for simple images (for example, images of atoms) passed WCAG AA standards (contrast ratio of 4.5:1).</p>	<p><b>N/A</b></p>



Additional Information:	<b>All images within the text are complex.</b>
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### 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.	<b>Fail</b>
Additional Information:	<b>"lang="en-us" code was not found.</b>
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.	<b>N/A</b>
Additional Information:	<b>No passages found in foreign languages.</b>

### 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).	<b>Fail</b>
Additional Information:	<b>0/5 chapters passed. When searching for image alt" in the code, alternative names and descriptions are given; however, they are not sufficient enough to convey an understanding to the reader. Chapters and subchapters checked 1,10,17,22,29. In chapter 1, 2/26 non-decorative images have good descriptions within image alt ".For chapter 10, 0/10 non-decorative images have good descriptions within image alt ". Chapter 17, 0/14 non-decorative images have good descriptions within image alt ". In chapter 22, 0/38 non-decorative images have good descriptions within image alt ". In chapter 29, 0/18 non-decorative images have good descriptions within image alt ".</b>



<p>B. Decorative images are marked with null alternate text or contain markup that allows them to be ignored by assistive technology.</p>	<p><b>N/A</b></p>
<p>Additional Information:</p>	<p><b>No decorative images found. Chapters and subchapters checked 1 (no decorative images), 10 (no decorative images), 22 (no decorative images), 29 (no decorative images found).</b></p>
<p>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).</p>	<p><b>Fail</b></p>
<p>Additional Information:</p>	<p><b>0/5 chapters passed. When searching for image alt"" in the code, alternative names and descriptions are not given. Chapters checked 1 (2/26 complex images have a caption that conveys a logical and proper description of the presented image) , 10 (0/10 complex images have a caption that conveys a logical and proper description of the presented image), 17 (0/14 complex images have a caption that conveys a logical and proper description of the presented image), 22 (0/38 complex images have a caption that conveys a logical and proper description of the presented image), 29 (0/18 complex images have a caption that conveys a logical and proper description of the presented image).</b></p>

## 12. Multimedia

<p>A. A synchronized text track (e.g. open or closed captions) is provided with all video content.</p>	<p><b>N/A</b></p>
<p>Additional Information:</p>	<p><b>No multimedia content found.</b></p>
<p>B. A transcript is provided with all audio content.</p>	<p><b>N/A</b></p>
<p>Additional Information:</p>	<p><b>No multimedia content found.</b></p>
<p>C. Audio/video content is delivered via a media player that is compatible with assistive</p>	<p><b>N/A</b></p>



technology. This includes support for all criteria listed in Section 15 below.	
Additional Information:	<b>No multimedia content found.</b>

### ***13.Flickering***

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

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

A. STEM figures have appropriate markup that indicates that the image is a figure.	<b>N/A</b>
Additional Information:	<b>No Stem content.</b>
B. STEM graphs have appropriate markup that indicates that the image is a graph.	<b>N/A</b>
Additional Information:	<b>No Stem content.</b>
C. STEM equations have appropriate markup that indicates that the image is an equation.	<b>N/A</b>
Additional Information:	<b>No Stem content.</b>
D. STEM tables have appropriate markup that indicates the image is a table.	<b>N/A</b>
Additional Information:	<b>No Stem content.</b>
E. STEM figures have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	<b>fail</b>
Additional Information:	<b>0/10 figures pass. Chapter 1 (0/10 figures have a description that convey notion and meaning).</b>
F. STEM graphs have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	<b>N/A</b>



Additional Information:	<b>Did not find any graphs within the textbook.</b>
G. STEM equations have appropriate notation markup that conveys both the notation (presentation) and meaning (semantics) of the STEM content.	<b>fail</b>
Additional Information:	<b>0/10 equations passed. In Chapter 1 ( 0/10 equations) pass, they do not have a description that convey notion and meaning.</b>
H. Assistive technology used can access the content from the STEM tables.	<b>Pass</b>
Additional Information:	<b>8/12 tables passed. In Chapter 26 (8/12 tables) pass, they do have a description that convey notion and meaning.</b>

### ***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.	<b>Pass</b>
Additional Information:	<b>Successfully navigated through 5 chapters (2, 10, 17, 23, 35) by using the TAB and ENTER keys on the keyboard.</b>
B. Each interactive element conveys information to assistive technology regarding the element's name, type, and status (e.g. "Play, button, selected").	<b>N/A</b>
Additional Information:	<b>No markup interactive elements found.</b>
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).	<b>N/A</b>
Additional Information:	<b>No text interactive elements found.</b>



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