WEB ACCESSIBILITY *Guidelines* 2015

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The Anatomy of an Accessible Page

Syllabus

Heading 1 → Syllabus

Heading 2 → ## DL 101 - Introduction to Online Learning

Heading 3 → ### Course Information:

Format lists as proper lists

- **Course Title:** Introduction to Online Learning
- **CRN:** 12345
- **Credits:** 3
- **Term:** Winter 2014

Heading 3 → ### Instructor Information:

Hello! My name is John Doe, and I'll be your instructor for this course. I've taught this course online for the past two years. Each time I teach it, I learn something new.

Add Alternative (Alt) text to images

John Doe
Instructor

Heading 3 → ### Assignments/Assessments:

Heading 4 → Grading Scale

Table Column Header

Table Row Header

Grade	Grading Scale by Points	Grading Scale by Percentages
A	202 - 225 +	90 - 100%
B	180 - 201	80 - 89%
C (or P)	157 - 179	70 - 79%
D	135 - 156	60 - 69%
F (or NP)	< 134	< 59%

Heading 4 → Late Work & Make-up Policy

Assignments must be completed on time in order to earn full credit.

Sufficient Color Contrast

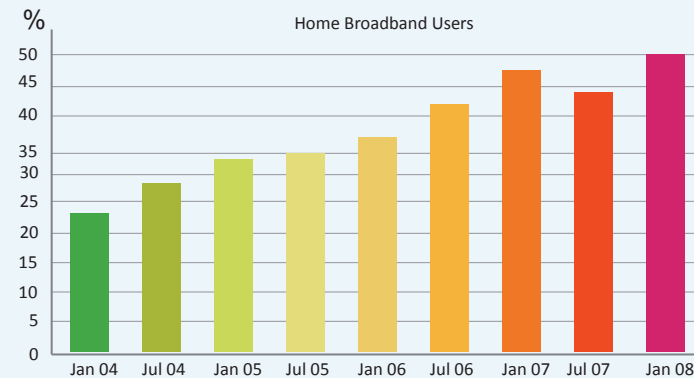(Late assignments will earn 50% credit.)

page 1/2

Write meaningful link texts

Heading 3 → ### Special Accommodations:

Students who experience disability-related barriers should contact Disability Services (www.pcc.edu/disability). If students elect to use approved academic adjustments, they must provide in advance formal notification from Disability Services to the instructor.

Heading 2 → ## DL 101 - Online Learning Best Practices

Heading 3 → ### Best Practices when using complex graphics:

%
Home Broadband Users

50
45
40
35
30
25
20
15
10
5
0

Jan 04 | Jul 04 | Jan 05 | Jul 05 | Jan 06 | Jul 06 | Jan 07 | Jul 07 | Jan 08

This graph summarizes the growth using home broadband during the period of January 2004 to 2008. The percentage increased from 22% in 2004 to 48% in 2008.

When using complex images, include Alt text as you would for any other image but also include additional description as a caption. If more description is needed, include it in the content of the page.

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Web Accessibility

Adhering to web accessibility guidelines while developing your online course will benefit all students, including those with visual, hearing, mobility and learning disabilities.

PCC Web Accessibility Guidelines

The PCC Accessibility Guidelines for Online Course Content, developed in 2011 and implemented in 2012, are based on the internationally accepted Web Content Accessibility Guidelines AA standards (WCAG 2.0).*

This handbook is a reference guide. For more information, visit *www.pcc.edu/access*.

* Web Content Accessibility Guidelines 2.0, W3C World Wide Web Consortium Recommendation 12 Month Year (http://www.w3.org/TR/2008/REC-WCAG20-20081211/, Latest version at http://www.w3.org/TR/WCAG20/)

Required by Federal Law

"Requiring use of an emerging technology in a classroom environment when the technology is inaccessible to an entire population of individuals with disabilities... is discrimination prohibited by the Americans with Disabilities Act of 1990 (ADA) and Section 504 of the Rehabilitation Act of 1973 (Section 504) unless those individuals are provided accommodations or modifications that permit them to receive all the educational benefits provided by the technology in an equally effective and equally integrated manner."

Source: 6/29/2010
Dear Colleague letter sent to every college and university president http://www2.ed.gov/about/offices/list/ocr/letters/colleague-20100629.html

WEB Accessibility Guidelines

Component	Guideline	Why Is This Important?
Headings	Use properly formatted headings to structure a page.	Headings help to organize content, making it easier for everyone to read. Headings are also a primary way for people using screen reading software to navigate a page of text.
Lists	Format lists as proper lists.	Formatting is conveyed to assistive technologies and mobile devices so they can present information as it's meant to be presented. Properly formatted documents are more understandable and accessible.
Links	Write meaningful link text.	Links embedded in text should describe the link's destination. This helps all users navigate more efficiently, especially screen reader users.
Tables	Create tables with column and/or row headers, and ensure a proper reading order.	• **Why Column Headers in a Data Table are Important** Using table headers is important to conveying tabular data accurately. • **Why the Reading Order in a Table is Important** Screen readers read tables from left to right, top to bottom, one cell at a time (& only once). If cells are split or merged, it could throw the reading order off which may make the table difficult to comprehend by users who are blind and using a screen reader to navigate.
Color	• Use sufficient color contrast. • Don't use color alone to convey meaning.	Without sufficient color contrast between font and background, people who are color blind and low vision will not benefit from the information. And using color alone to convey meaning will leave those who are color blind or blind unable to interpret the meaning.
Keyboard	Ensure that any action that uses a mouse can also be completed using only the keyboard.	Mobility and visual disabilities often make using a mouse impossible or ineffective. If content is not keyboard accessible, it will limit who can learn from the content.
Images	Provide alternative (Alt) text descriptions for images.	Alt text is read by a screen reader. It should adequately describe what is being displayed and why it's important. This allows screen reader users to benefit from the information being conveyed by the image, even if they cannot see it.

2A

WEB Accessibility Guidelines

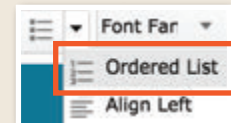| Component	Guideline	Why Is This Important?
Navigation	Design clear and consistent navigation.	Clear and consistent navigation in your course will allow students to focus on your content rather than on how to find it.
Blinking	Eliminate or limit blinking / flashing content to 3 seconds.	Blinking content is distracting, and it can cause seizures to occur in people with a photosensitive disorder.
Forms	• Label form fields and buttons clearly. • Ensure a proper logical reading order in a form.	■ **Why the reading order of a form is important** Using the tab key, your cursor should follow through the form in the same order it is intended to be completed. This benefits users who cannot use a mouse. ■ **Why labeling buttons and form fields is important** A screen reader will identify the button or form field by reading the label. The label should adequately describe the button's action, and the form field label should indicate what information should be filled in to the form field.
Video	Keep a list of videos and audio recordings that are not captioned / subtitled or transcribed. DL will ask you for that list when you have a student with a captioning accommodation.	Video captions benefit many viewers. Captions are essential for those who are deaf and hard of hearing, but they also aid in comprehension for non-native English speakers, those who are unfamiliar with vocabulary, and viewers with some learning disabilities or in a noisy environment.
Audio		Audio transcripts benefit many students. They are essential for those who are deaf or hard of hearing, but they also assist anyone who would like to read or search the transcript.
Software	Require only accessible software & applications.	Inaccessible software and applications will shut students with disabilities out. Contact us to have your interactive applications and software accessibility tested.
Math & Science	Write math and science equations accessibly.	For web pages, use an equation editor that outputs MathML. For MS Word and PPT documents, use the MathType plugin.

2B

How to Make Accessible D2L Web Pages

Component	Accessibility Guideline	How to Make it Accessible
Page Template	■ Use the most current D2L page template.	■ If you don't have the most current page template, contact the Faculty Help Desk or your campus Instructional Technology Specialist (ITS).
Headings	■ Properly format headings. ■ Use headings in the correct order.	■ Highlight the text and select the Heading # from the **Format** drop-down menu on the tool bar. ■ There should be only one Heading 1 (h1) per page. But there can be multiple h2, h3, h4, h5, h6. **DO NOT** skip heading levels.
Images	■ Add alternative (Alt) text to images.	1. Place the cursor where you want to insert an image, and click the **Insert image** icon from the toolbar. The **Add a File** window will open. 2. Browse to the image location and select the image file. Click **Add** button. 3. The **Provide Alternative Text** window will open. Describe the purpose of the image in the **Alternative Text** field, or check the box if the image is just decorative. 4. Click **OK**.
Lists	■ Format a list as a list using Ordered or Unordered lists.	1. Select the content you want to make into a list. 2. From the toolbar, click the **Unordered/Bulleted list** icon if the order doesn't matter. Select **Ordered List** from the drop-down menu (next to the bulleted list icon) if the order does matter.

Links	■ Write meaningful link text that indicates the link's destination.	1. Highlight meaningful text for the link (ex. Portland Community College)
		2. From the toolbar, click on the **Insert Quicklink** icon .
		3. Select **URL** in the **Insert Quicklink** window
		   ■ Type in the URL (http://www.pcc.edu).
		   ■ Select **New Window** in the **Target** section.
		4. Click the **Insert** button.

3A
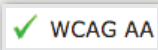
How to Make Accessible D2L Web Pages

For more information
www.pcc.edu/access-d2l

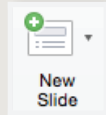| Component	Best Practices	How to Make it Accessible
Tables	■ Indicate column (or row) headers in data tables.	1. Select the cells to be marked up as a row or column header. 2. Click on the drop-down menu next to the **Table** icon in the toolbar. 3. Choose **Cell Properties**. The Table cell properties window will open. 4. In the **Cell type** field, click on the drop-down list and select **Row Header** or **Column Header**. 5. Click **Update** button.
	■ Add table caption.	1. Select the table and click on the drop down menu next to the **Table** icon. 2. Select **Table Properties**, and check **Include Caption**. 3. Click **Update** when done.
	■ Check the reading order.	■ A screen reader reads tables from left to right, and top to bottom, never repeating a cell. ■ Merged, nested, and split cells may alter the reading order of a table. ■ Make sure you construct your tables in a way that accommodates a good reading order.
Color	■ Use sufficient color contrast.	1. Select the text that you want to change to another color. 2. Click drop-down menu next to the **Apply Color** icon in the toolbar. 3. Select the color and click **Save**. **Note:** When picking a color for your text in D2L, make sure you choose a color that registers with a green checkmark for WCAG AA in the **Select a Color** palette ✓ WCAG AA
	■ Don't use color alone to convey meaning.	Don't use color alone to make a distinction, a comparison or to set something apart from the rest of the web page. If you categorize something by color alone, those who are color blind or blind will not benefit from the color distinction.
Math & Science	■ Write math and science equations using MathML.	Use the D2L equation editor. For more information, go to the Math & Science page in this handbook.
Multimedia	■ Eliminate or limit blinking/flashing content to 3 seconds. ■ Make sure all mouse actions can also be completed with a keyboard alone (without a mouse.) ■ Use an accessible media player like YouTube or the DL Kaltura player.	

3B

How to Make
Accessible PowerPoints & Google Slides

Component	PowerPoint (2011, 2013, 2016)	Google Slides
Outline View ■ Check the outline view.	1. Click on **View** tab (Mac: **View > Outline View** icon - *PPT 2016*.) 2. In the **Presentation Views** group, click on **Outline View.** 3. In the **Outline** panel, make sure all text from the slides appears in the **Outline View**.	There is no **Outline View** in Google Slides.
Slide Layout Use the PPT provided slide layouts when building slides to help your slide's reading order remain intact.	■ From **Home** tab, choose the **New Slide** drop down menu and select a slide template. (Don't use the Blank slide template.)	1. Create a new slide (**Slide > New Slide**). 2. Go to **Slide** menu, click on **Apply Layout** and choose one of slide template (not the Blank one).
Reading Order ■ Ensure the tab order = the reading order	1. On the **Home** tab, click on **Arrange** and choose **Selection Pane** (**Reorder Objects** *for Mac - PPT 2011 & 2016.*) 2. To see the reading order of the slide, tab through the slide and the corresponding element will highlight. 3. To re-arrange the reading order, click arrow up/down button on the **Selection Pane** (Mac: drag layers. Highest number is read first.) 4. Test reading order with the **Tab** key again.	1. Tab through the slide and the corresponding element will highlight. 2. In the slide area, click on the element that you want to change. 3. To change the reading order, click on **Arrange menu > Order**. **Send backward** will raise the element to a higher reading order. **Bring forward** will make the element lower in the reading order. 4. Test reading order with the **Tab** key again.
Images ■ Add alternative (Alt) text to images and shapes.	1. Right click on the image and select **Format Picture**. 2. Click the ⬦ icon to open **Alt Text** field. 3. Enter appropriate alt text in the **Description** field (not the **Title** field.)	1. To insert an image, choose **Image** from the **Insert** menu and follow the instructions. 2. To add Alt text, click on the image. Then in the **format** menu, select **Alt text** (at the very bottom of the menu). 3. Enter alt text in the **Description** field (not the **Title** field).

Lists
■ Format a list as a list.
	1. Select the text to make into a list and click on the **Home** tab.
	2. In the **Paragraph** group, select the **Numbering** or **Bullets** icon.
	  ■ Use *Numbering lists* if a sequential order is important to the list.
	  ■ Use *Bullets lists* if all items are of equal value.
		Go to **Format** menu > **Lists** and select one of list styles.
		  ■ Use *Numbered lists* if a sequential order is important to the list.
		  ■ Use *Bulleted lists* if all items are of equal value.

4A
Save your original files. You may need them if you have a student who needs alternative formats.

How to Make
Accessible PowerPoints & Google Slides

For more information
www.pcc.edu/access-powerpoint

Component	PowerPoint (2011, 2013, 2016)	Google Slides
Links ▪ Create a meaningful link that describes its destination.	1. Type out text that describes the destination of the link (i.e.PCC Homepage). 2. Select the text, right click and choose **Hyperlink**... from the menu. 3. The **Insert Hyperlink** window will open. Enter a URL address in the **Address** field (i.e. http://www.pcc.edu) *(Mac - PPT 2011: **Link to** field.)* 4. Click the **OK** button to save the link.	1. Type out text that describes the destination of the link. 2. Select the text, right click and choose **Link** from the menu. 3. Paste or type in a hyperlink. 4. Click **Apply** button to save the link.
Tables ▪ Check the reading order.	▪ A screen reader reads a table from left to right, & top to bottom **(never repeating a cell.)** ▪ Merged, nested, and split cells may change the reading order of a table. ▪ Construct your table in a way that accommodates a good reading order.	
▪ Indicate column headers for data tables. **Note:** A table in Slide Show view is not accessible. Use Alt text!	1. Place the cursor in the top row of your data table. 2. Click the **Design** tab under **Table Tools** *(Mac - PPT 2011/2016: **Tables** tab)* 3. In the **Table Style Options** group *(Mac - PPT 2011 - **Table Options** > **Options** / Mac - PPT 2016 - **Table Design** tab)*, select the **Header Row** check box. 4. The cells in the top row of your table make up the column headers.	You cannot create table column/row headers in Google Slides.
Color ▪ Use sufficient color contrast.	▪ Use enough color contrast between the text (i.e. black color) and the background color (i.e. white color). ▪ Without sufficient color contrast, people who are low-vision and color blind will not benefit from the information. ▪ Go to ***www.pcc.edu/access-powerpoint*** for How to Check Color Contrast.	
▪ Don't use color alone to convey meaning.	Don't use color alone to make a distinction. If you categorize something by color alone, those who are color blind or blind won't benefit from the information.	
Math & Science ▪ Use MathType to write Math equations.	Use the **MathType plugin** *http://www.dessci.com/en/* for MS Word to create math and science equations, formulas and notations. (**DO NOT** use MS equation editor.)	Math and Science equations and formulas cannot be written to be accessible in Google Slides.
Video & Audio	Don't embed the video, instead, link out to videos.	

4B

Save your original files. You may need them if you have a student who needs alternative formats.

How to Make Accessible
Word Documents & Google Docs

For more information
www.pcc.edu/access-word

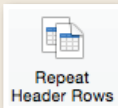| Check	Word Document (2011, 2013, 2016)	Google Docs
Headings ▪ Properly format headings.	1. Select the text that you want to make into a heading. 2. Go to the **Home** tab. 3. Choose the appropriate heading level from the **Styles** group.	1. Select the text that you want to make into a heading. 2. Go to the **Styles** menu (or "**Normal** text") and choose the appropriate heading level from the **Normal** text drop down list.
▪ Use headings in the correct order.	▪ Heading 1 should only be used **ONCE** per page. Heading 2, 3, etc. can be used multiple times. (**DO NOT skip heading levels!**.)	
Images ▪ Add alternative (Alt) text to images.	1. Right click on the image, and select **Format Picture....** 2. The **Format Picture** window will open. 3. Select the [icon] icon and click on the **ALT TEXT** to open **Alt text field.** 4. Enter image description in the **Description** field (Not the **Title** field.)	1. Select the image. 2. From the **Format menu** choose **Alt text.** 3. Type in description text in the **Description** field. (**NOT in the Title field**.) 4. Click the **OK** button when done.
Lists ▪ Format a list as a list.	1. Select the text that you want to make into a list. 2. On the **Home** tab, in the **Paragraph** group, select the **Bullets** or **Numbering list**. [icon]	1. Select the text that you want to make into a list, and do one of these: a. On the **Format** menu, choose **Lists** & select **Numbered** or **Bulleted list**. b. Go to the icon toolbar, and choose the **Numbered** or **Bulleted list** icon.
Links ▪ Create a link that describes its destination.	1. Type out text that describes the destination of the link. (i.e. PCC). 2. Select the text, right click and choose **Hyperlink...** from the menu. 3. The **Insert Hyperlink** window will open. Enter a URL address in the **Address** field (*Mac - Word 2011*: **Link to** field.) 4. Click the **OK** button to save the link.	1. Type out text that describes the destination of the link (i.e. PCC). 2. Select the **Insert link icon (Ctrl/Cmd + K).** 3. The **Link** window will open. Type the URL of the webpage in the **Link** field. (i.e. "http://www.pcc.edu") 4. Then click the **Apply** button to save the link.
Math & Science	▪ Use the MathType plugin *http://www.dessci.com/en/* for MS Word to create math and science equations, formulas and notations. **DO NOT** use Microsoft's equation editor.	▪ Math and Science equations and formulas cannot be written accessibly in Google Docs.

5A

Save your original files. You may need them if you have a student who needs alternative formats.

How to Make accessible
Word Documents & Google Docs

Component	Word Document (2011, 2013, 2016)	Google Docs
Tables ■ Indicate column headers for data tables.	1. Place the cursor in the top row of your data table. 2. Click on the **Design tab** under **Table Tools** (**Table** tab on Mac - *Word 2011*/**Table Design** tab - *Word 2016*). 3. In the **Table Style Options** group, select the **Header Row** check box. 4. Under **Table Tools,** click the **Layout** tab (**Table Layout** tab - *Word 2011*) 5. In the **Data** group (*Word 2016* - **Table Design** > **Layout** tab), click the **Repeat Header Row** button. This will indicate the top row as the table's header.	Google Docs doesn't allow you to designate column or row headers, so keep your tables small so they are understandable without headers.
■ Check the reading order.	■ Screen reader reads a table from **left to right/top to bottom** (never repeating a cell.) ■ **Merged, nested, and split cells** may change the reading order of a table. ■ **Construct your table** in a way that accommodates a good reading order. ■ To test the reading order, place your cursor in the first cell of the table. On the keyboard, press the **Tab** key repeatedly to navigate through the table. This will be the reading order that assistive technologies will use.	
Color ■ Use sufficient color contrast.	■ Use enough color contrast between the font and its background colors. ■ Without sufficient color contrast, people who have low-vision or are color blind will not benefit from the information. ■ Go to *www.pcc.edu/access-word* to learn **How to Check Color Contrast.**	
■ Don't use color alone to convey meaning.	■ Don't use color alone to make a distinction. If you categorize something by color alone, those who are color blind or blind will not be able to benefit from the information.	
Forms ■ Label form fields and buttons.	■ Use a form template to create a form.	Use Google Forms, NOT Google Docs
	■ Use real text labels for form fields and alternative text for buttons.	
■ Check the reading order of forms.	■ Press the tab key repeatedly to check the order a screen reader would navigate through the form. If it doesn't land on the form fields in the correct order, you will need to edit the form. ■ The tab order (or reading order) is important to those who are blind or physically disabled and rely on keyboard access.	

5B

Save your original files. You may need them if you have a student who needs alternative formats.

How to Make Accessible PDFs

Method	Software / Hardware	How to Make it Accessible
Convert MS Office to an Accessible PDF document	■ Microsoft Office 2010, 2013 Pro	1. Start with a well-structured word document or presentation. 2. Click the **File** tab and select **Save as**. In the **Save as type** field, select **PDF (*.pdf.)** 3. Enter a file name in the **File name** field. 4. Click on the **Options** button and make sure the **Document structure tags for accessibility** and **Create bookmarks using Headings** checkboxes are checked. 5. Click **OK** and **Save**. This will tag all of the text formatting, so page headings and lists are correctly interpreted by a screen reader.
Save your original files (PPT, Word)	■ MS Office 2011 (for Mac)	■ Microsoft Word & PowerPoint 2011 for the Mac cannot produce a fully accessible PDF. ■ Go to *http://www.pcc.edu/resources/instructional-support/access/pdfs-from-mac.html* for options on how to create an accessible PDF.
Run Optical Character Recognition (OCR) on scanned document	■ Adobe Acrobat Professional (Version XI Pro)	1. Open the scanned PDF file. 2. Open the **Tools** panel (click **Tools** in top right) and click **Text Recognition**. 3. Click **In This File** and the **Recognize Text** window will open. 4. Click the **Edit button** to adjust OCR settings. Select **English (US)** for **Primary OCR Language**, **Searchable Image** for **PDF Output Style** and **600 dpi** for **Downsample To**. 5. Click **OK** when done**.**

Run Adobe Acrobat Built-in Accessibility Checker	■ Adobe Acrobat Professional (Version XI Pro)
	
	All versions. No matter what you are converting to PDF, it's important to save your original files in case a student needs an alternate format.
		1. Click the **Tools** tab to open the **Accessibility** panel on the right hand side.
		  ■ If you don't see it, click the **View** menu and select **Tools** > **Accessibility**.
		2. Under **Accessibility**, select the **Full Check** button.
		3. The **Accessibility Checker** window will open.
		  ■ Under the **Report Options**, check on the **Create Accessibility Report**.
		  ■ Under the **Checking Options** section:
		    • Category: **Document** and check all the items.
		4. Click the **Start Checking** button.
		5. The **Accessibility Checker Report** will display on the left pane.

6 **Save your original files.** You may need them if you have a student who needs alternative formats.
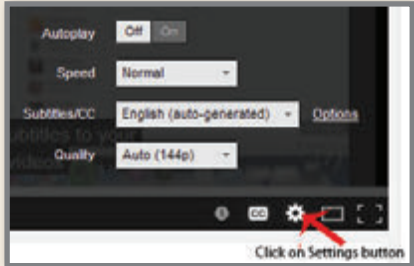
How to Make
Accessible Video & Audio

Component	Best Practices	How to Make it Accessible
Media Player The buttons need to be properly labeled so a screen reader user can operate the player.	**Keyboard Navigation** It is important to accessibility that students can access and operate a media player with the keyboard alone (not using a mouse).	▪ To test for keyboard accessibility, press the **Tab** key to navigate to the player, and use the **Tab, Arrow keys, Enter, and Spacebar** to interact with the media player buttons.
Captioned Media We recommend you first search for captioned media, but you are not required to use only captioned media. Use the best media for your lesson. Uncaptioned media will be accommodated at the time of need.	**Search for captioned media** The PCC Library has a wide selection of captioned media. Check with your Subject Area Librarian.	How do I find **human transcribed captioned videos** on **YouTube**? (Search from YouTube site) 1. Enter your search keyword in the **YouTube Search field**. 2. Add a: **, CC** (a comma, CC) 3. Press **Enter** or click the magnifying glass icon 🔍 How do I find **human transcribed captioned videos from Google**? 1. Fill out the **Advanced Video Search** fields *(http://www.google.com/advanced_video_search)* that you need. 2. Choose the "**Subtitles: Closed captioned only**" option. 3. Press **Enter** or click the **Advanced Video search button**.
	Make sure the YouTube video you use IS NOT Auto-generated.	**How do I know?** ▪ Click the **Settings** button and check the **Subtitles** field. Avoid auto-generated subtitles and the **Translate** feature which are not usually accurate. Autoplay Off On Speed Normal Subtitles/CC English (auto-generated) Options Quality Auto (144p) Click on Settings button

7

How to Make Accessible Complex Images

Complex Images include graphs, charts, diagrams, maps, and illustrations. Below are 3 ways to provide alternative (alt) text-based description for complex images, when a simple alt text attribute is insufficient. Choose the best Alt text method for your image types.
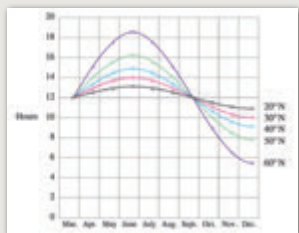
A — Use a Caption

For Web Pages: Your caption must be associated with the image, so make sure to properly add a caption using the '**figcaption**' html tag. (Requires HTML editing). *Note:* For MS Word and PowerPoint: Right click on the image and select **Add Caption**.

Example Code:

```
<figure><img src="images/fig9" alt=""
width="160" height="120" />
<figcaption><em>Caption goes here,
Fig.9-Graph..</em></figcaption></figure>
```


Fig.9 - Graph of the length of daylight from March through December at various latitudes. For example, at 40 degree latitude there are 12 hours of daylight in March. In October, there are 10.8 hours of daylight at 40 degree.

B — Describe in surrounding text

If the image is adequately described in surrounding text (including text-based data tables), so that the image is just reinforcing the text, no further description is needed necessary.

Example:

Modeling amount of daylight as a function of time of year, Figure 9 and the table beside it, show the number of hours of daylight as functions of the time of the year at several latitudes, from March through December.
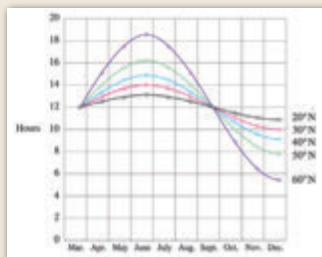
Fig.9

Month	Hours in varied latitudes				
	20°	30°	40°	50°	60°
Mar.	12	12	12	12	12
Apr.	12.3	13.2	13.5	14	17.5
May	12.9	13.7	14.3	15.5	17.7
Jun.	13	14	14.9	16.1	18.2
Jul.	12.8	13.8	14.2	15.7	17.8
Aug.	12.5	12.8	13.2	14	15
Sep.	12	12	12	12	12
Oct.	11.6	11.2	10.8	10	9
Nov.	11	10.2	9.7	8.3	6.5
Dec.	10.9	10	9.1	7.9	5.7

Example of Data Table for Figure 9

C — Link out to a web page with a longer description

If the image cannot be described using methods A or B, use the 'longdesc' attribute (Requires HTML editing).

Example code:

```
<img src="images/fig9.jpg" alt="Fig.9-
Graph of the length of daylight from
March 21 through December 21 at various
latitudes." width="400" height="290"
longdesc="fig9-longdesc.html" />
```
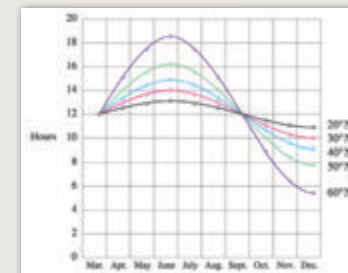

Fig. 9

```
<html>
<p>Modeling amount of daylight as a function of time of year Figure 9 shows graphs of the number of hours of daylight...</p>
</html>
```

fig9-longdesc.html

8A

How to Make
Accessible Complex Images

Resources for Image Description

- **Guidelines for Describing STEM (Science Technology Engineering and Math) images**
  http://goo.gl/TBT01Z

- **How Do We Access Meaning in Art? (Describing art images in alt text)**
  http://goo.gl/dAXZOx

- **Video: How to Describe Complex Images for Accessibility (From Diagram Center's Webinars)**
  http://goo.gl/QgsS5G

- **Diagram Center's Accessible Image Sample Book**
  http://goo.gl/N0arvW

Tactile Representations

Sometimes touching a model or a tactile graphic is the best way to describe something.

Tactile graphics

Tactile graphics have different sized raised dots to show variation in graphs, charts and maps. Disability Services and Distance Learning also can create tactile graphics for your courses needed. Please contact Haris Gunadi or Supada Amornchat for more information.

Example:

Indicate if a model is available

If you know where a 3D model of the image is available, indicate that in your image caption or on the same page as the image.
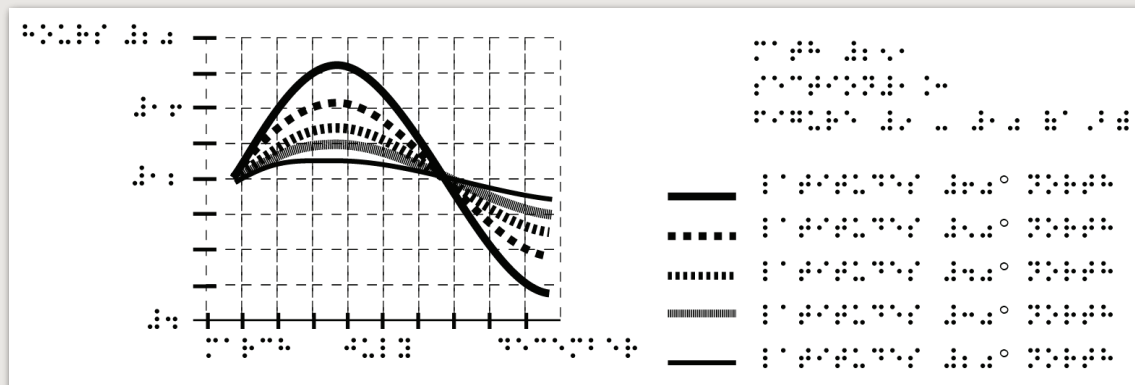
A 3D model of chest anatomy

8B

How to Make Accessible Math & Science

Component	Math Tools	Best Practices
Math & Science equations, formulas and notation	■ **MathML**	MathML stands for 'Math Markup Language' which is the web standard for accessible online math and science notation/equations/formulas. Typically, a user does not create MathML, but instead uses a conversion process to output MathML.
	■ **D2L**	We recommend that as much of the online class as possible be conducted within D2L. All output from D2L's equation editor is stored as MathML, which is screen reader-accessible.
	■ **Word documents**	MathType is an equation editor created by Design Science that is compatible with MS Word for Windows and Mac. Together, MS Word with MathType can be exported as MathML or it can be converted to braille. (Save your original files.) **DO NOT** use Microsoft's equation editor.
	■ **PDFs**	Math **IS NOT** accessible in PDF. Save the original file with the original MathType or LaTeX equations. Disability Services will ask for your original files when there is an accommodation need.
	■ **PowerPoints**	For MS PowerPoint 2013, use the MathType 6.9 plugin or later to create math and science equations, formulas and notations. **DO NOT** use Microsoft's equation editor. If you convert to a PDF or export to a webpage, save your original MS PowerPoint files which Disability Services may ask for.
	■ **Graphs**	To make graphs accessible, do your best to describe them using alternative text, long descriptions, or captions. We can supplement with tactile graphics if necessary.
	■ **LaTeX**	LaTeX is a mark-up language. Converting LaTeX documents into an accessible format is usually straightforward. Keep LaTeX original files if you convert to other formats.
	■ **WeBWorK**	WeBWorK is an accessible and free online homework platform for math and sciences courses.
	■ **LibreOffice**	LibreOffice (with its native equation editor) exports easily to web pages that contain MathML.

9 **Save your original files.** You may need them if you have a student who needs alternative formats.

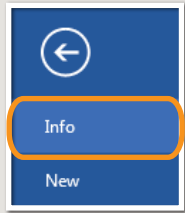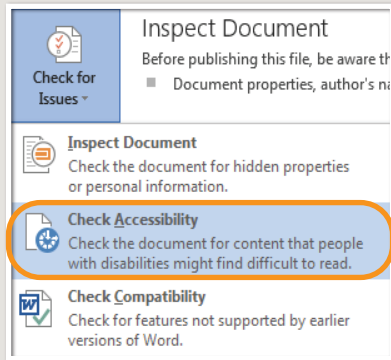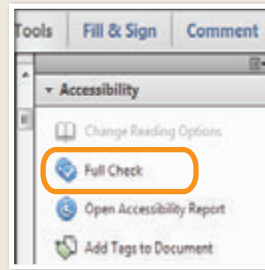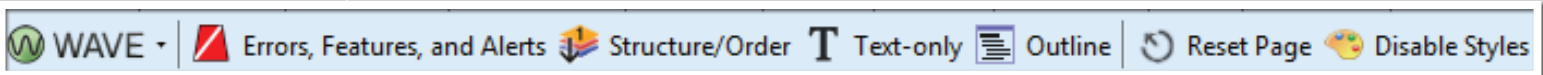| Ask about	Questions and Considerations
How accessible are their digital materials?	■ **Are the videos captioned and audio recordings transcribed?** There should be transcripts for audio recordings and captions or subtitles for video. If they aren't available, ask the publishing representative when they plan to have them. If they have no plans, ask them to give PCC written permission to transcribe or caption the media when there's an accommodation need. ■ **Are images described in alternative text?** PowerPoint slides from publishers often have images without any alt text. Ask your publishers if their images have alt text. ■ **Can all of the text that is displayed on the screen be read aloud by text-to-speech software?** Screen readers (assistive technology used by people who are blind) read real text. They cannot read images of text or text embedded in Flash animations/movies/simulations. ■ **How accessible are the E-books?** Are the images described? Are embedded objects like videos keyboard accessible and captioned? Is the E-reader keyboard and screen reader accessible? Have it tested by DL or DS. ■ **Can all interactivity (media players, quizzes, flashcards, etc.) function using only the keyboard (no mouse)?** People who are blind or have upper mobility disabilities cannot use a mouse. They use the keyboard to navigate and interact on the Web. It is required that any interactive elements on a publisher's website (or on a DVD included with the book) be operable by keyboard alone if they are used in your course. ■ **Is there any documentation available (VPAT or White Paper for example) that confirms accessibility or usability testing results?** A VPAT (Voluntary Product Accessibility Template) is used by many organizations to report the level of accessibility of software products. ■ **Is your multimedia (Adobe) Flash or (Oracle) Java-based? Can your materials be watched on mobile devices?** Content created in Flash or Java can be inaccessible and may not run on mobile devices and tablets, which are becoming more prevalent. ■ **What are the computer requirements for using their materials? Will the materials work on mobile devices?** Distance Learning informs online students about the computer requirements for taking an online course in the Distance Education Orientation for students. If your course requirements are different, make them known in the course syllabus.
Open Educational Resources (OER)	■ **OERs** have the same accessibility requirements as all other digital materials. However if they are not accessible, we can usually retrofit them to be accessible which we can't do if the materials reside on a publisher's server. Plus OERs are usually free to students! Check out: *http://www.pcc.edu/library/oer/*

10

CONTACT DL or DS to have 3rd party online material accessibility tested.

✔ AUTOMATED Accessibility Checkers

Software	Tools	How to Check
MS Offices 2010 & 2013 Windows (Word, PowerPoint)	■ A built-in accessibility checker (**Note:** The accessibility checker **only checks** .docx and .pptx files)	1. Go to the **File** tab. 2. Select **Info** from the sidebar menu. 3. Click on the **Check for Issues** button. 4. Select **Check Accessibility** from the drop-down list. The **Accessibility Checker** panel will open to the right of the document. The accessibility checker provides you with **a list of errors, warnings & tips**. When you click on an error or warning, instructions on how to fix it appear below in "Additional Information".

PDF (Adobe Acrobat XI Professional)	■ A built-in accessibility checker (**View > Tools > Accessibility**)	1. Click the **Tools** tab to open the **Accessibility Tool** panel on the right.
		   (If you don't see it, click the **View** menu and select **Tools > Accessibility**).
		2. Select the **Full Check** button & the **Accessibility Checker Options** will open.
		   ■ On the **Report Options** section, check on **Create Accessibility Report** .
		   ■ On the **Checking Options** section: select **Document** under **Category** field, and check all items.
		3. Click on the **Start Checking** button and the **Accessibility Report** will display.

D2L & Web Pages		WAVE ▾ | Errors, Features, and Alerts Structure/Order T Text-only Outline Reset Page Disable Styles
	■ A browser-based checker, WebAIM WAVE accessibility add-on to the Firefox browser	1. Download & Install the WAVE toolbar (*http://wave.webaim.org/toolbar/*) 2. Open the D2L page in its own window by clicking on the **Open** in a new window icon. 3. **Right-click** on the page in the new window, and select **WAVE**, then choose "**Errors, Features, and Alerts**" to see what accessibility errors you have on the page. 4. Error icons in green, red, yellow and blue will appear on the page. If you hover over an error icon, more information on the error will appear. 5. Return to the original D2L page, and open the D2L editor to repair the problems you found.

11

WHO's Responsible for Accessibility of Online Courses?

Instructors, Distance Education and Disability Services

▶ **Test** the accessibility of software and web apps used in online courses.
▶ **Develop** Accessibility Plans proactively when barriers are found.
▶ **Work** together to identify and implement appropriate accommodations when barriers are encountered.

Instructors
RESPONSIBILITIES

As the subject matter expert and the course developer, an instructor:

Designs clear and consistent navigation.
Writes alternative text descriptions for images.
Creates documents using accessibility guidelines *(pcc.edu/access)*.
Retains original files (PowerPoint, Word, etc.)
Uses captioned media whenever possible.
Writes math and science with MathML (D2L equation editor), LaTeX, MathType or Libre Office.
Checks accessibility of required software & web applications used in course at *pcc.edu/access*.
Supplies DL and DS with course materials upon request for an accommodation.
Prepares Accessibility plans for inaccessible content.

Distance Education (DL)
RESPONSIBILITIES

As the online course development facilitator and faculty resource, Distance Education (DL):

Provides media captioning for DL course accommodations.
Assists DS with retrofitting course material for timely accommodation.
Offers training sessions (F2F & Online) & over-the-shoulder assistance.
Develops training materials (Accessibility Guidelines Handbook & Quick Guide).
Reviews courses for accessibility & provides feedback & support to instructors.
Supports Accessibility Plan development to proactively address course barriers.
Facilitates subject area accessibility studies.
Maintains *pcc.edu/access* website with how-to video tutorials and step-by-step instructions.

Disability Services (DS)
RESPONSIBILITIES

As a student & faculty resource, with expertise in alt formats and assistive technologies, DS:

Increases awareness of the disability experience & works with staff & faculty to proactively reduce barriers by
▶ **Hosting** open events,
▶ **Offering** drop-in hours, & individual consultations.
Reviews documentation of disability & determines student eligibility for accommodation.
Leads efforts to ensure students are appropriately accommodated.
▶ **Notifies** faculty & DL when an accommodation is required.
▶ **Supplies** students with an accessible format of the textbook.
▶ **Provides** alternative format of PDFs, math/science and publisher PPTs.
▶ **Administers** other reasonable auxiliary aids & services.

12

WEB ACCESSIBILITY Guidelines

Training & Support

www.pcc.edu/access

Check the accessibility website for how-to instructions & video tutorials.

Accessibility Training

Go to www.pcc.edu/access to sign up for our accessibility trainings.

Faculty Help Desk

Phone: **Portland Area: 971-722-8227**

Outside Portland Area: 1-866-922-1010 ext. 8227

Email: **dlhelp@pcc.edu**

Questions about online course accessibility

Karen Sorensen (SY)...............971-722-4720   karen.sorensen@pcc.edu
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Andre Temkin (SE)..................971-722-6130   andre.temkin@pcc.edu

Testing Tools

- **Firefox: WAVE Toolbar**
  http://wave.webaim.org/toolbar/
- **Firefox & IE: Favelets**
  http://jimthatcher.com/favelets/
- **MS Word: Built-in 2010, 2013, 2016 (PC)**
- **MS PPT: Built-in 2010, 2013, 2016 (PC)**
- **PDF: Built-in Adobe Acrobat Pro**
- **Colour Contrast Analyser**
  http://www.paciellogroup.com/resources/
  contrastAnalyser

Websites

- **Accessibility: www.pcc.edu/access**
- **Instructional Support: www.pcc.edu/is**
- **Distance Education: www.pcc.edu/dl**
- **Disability Services:**
  www.pcc.edu/disability
- **Collegewide Accessibility:**
  www.pcc.edu/about/accessibility/