

Digital Content Accessibility Standards (DCAS): Implementation Guidance

This document serves as guidance for the Digital Content Accessibility Standards (DCAS), and will provide additional rationale and guidance for obtaining the standards listed. Please note: This document, and the supporting DCAS standards include baseline accessibility guidelines and do not reflect all digital accessibility practices. Refer to the SUNY EIT Accessibility Policy for further information.

Digital content comprises any kind of content or media existing in the form of digital data which includes text, audio, video files, graphics, animations, and images. Accessible design principles apply broadly across various digital formats, methods of communication (e.g., email), and engagement. Digital content accessibility refers to the inclusive practice of making digital contents usable by people of all abilities and disabilities, with or without assistive technologies.

As colleges and universities advance their web presence and services through digital means, equal access to electronic and digital information is critical for universal inclusion. Accessibility is often built into technologies and systems used across campuses. There are numerous free and fee-based methods to enhance accessibility. How to achieve accessibility using various technologies and systems may differ, depending on the tools and methods supported on campus.

Digital accessibility is comprehensive. Institutions should determine a prioritization framework for digital content, based on their most pressing needs and resources. To the greatest extent possible, accessible digital content should be made readily available to all users. The onus to create readily accessible materials begins with content creators and subject matter experts. Individuals with disabilities may still require accommodations through the Student Disability/Accessibility Services office for specific use cases. On rare occasions, it may even be reasonable to have digital content made accessible just in time.

Accessibility impact (barriers to access) ranges from low impact to high impact. Impact may be assessed by numerous risk and probability factors including public consumption, audience type and size, and the essentialness of an academic or administrative function.

Generally speaking, it is strongly advised to prioritize digital content accessibility in the following hierarchy:

- Content for registered students with disabilities
- Public facing communications
- Essential Intranet functions (e.g., course registration)
- New content
- Modified content
- Legacy content

For course content accessibility, prioritization should be achieved as follows:

- Courses with registered students with disabilities

- Frequently or regularly offered courses
- Large enrollment courses
- Required courses
- General education courses
- One time course

Table of Contents

❖ Text Alternatives

- A text equivalent for every non-text element is provided
- Link text describes the destination of the link
- All links are distinguishable
- Graphs, charts and maps include contextual or supporting details in text surrounding the image

❖ Color

- Color is not the only means used to convey information
- There is sufficient contrast between foreground color and background color

❖ Typography

- Use readable fonts and sizes, color contrast, and keep the number of fonts used to a minimum

❖ Data Tables

- Table header rows and columns are assigned
- Avoid split cells, empty cells, merged cells, and embedded tables.

❖ Images

- Provide meaningful alt text for all images, except in the cases described below
- Use null alt text for decorative images
- Images used as links have alt text indicating link target
- If the same visual presentation can be made using text alone, an image is not used to present that text

❖ Formulas

- For web pages, use an equation editor that outputs MathML
- For documents and presentations, use an equation editor that supports accessibility

❖ Structure and Navigation

- Fillable documents (forms) are labeled appropriately
- Machine readable
- Keyboard navigable
- Reading order is logical and intuitive
- The document contains a descriptive page title that makes sense

❖ Multimedia

- Establish a timely process for requesting synchronized captions for multimedia
- Provide synchronized captions for newly created or adopted audio-video content
- Provide transcripts for audio-only content

Table of Contents Cont.

- [Provide descriptive audio for prerecorded audio-video and video-only content](#)
- [Ensure video player controls are available and accessible by keyboard](#)
- [Ensure audio and video does not begin playing on page load](#)
- [Provide synchronized captions for live audio-video content](#)

- ❖ [Accessibility Awareness & Verification](#)
 - [Course syllabi contain an accessibility statement to inform students of available campus resources](#)
 - [Use built-in accessibility checkers in various software tools](#)
 - [Newly developed courses undergo accessibility review](#)
 - [Recurring courses undergo accessibility review](#)

Text Alternatives

A text equivalent for every non-text element is provided (alternative (“alt”) tags/text, captions, transcripts, etc.)

Required

What it Means

Write alt-text that informs what the content of the non-text element is and what it means. What is the purpose of this non-text element? What is its educational value? What is it communicating?

Why it Matters

Alt-text is accessible by screen readers and provides information about the visual content to help the user understand the relevance of having the specific image within content. Alt-text can also be useful when internet connections are poor and images are unable to load.

How to Implement

To add alt-text in Microsoft Office, right click on the non-text element to open the context sensitive menu, select properties and enter Alt-Text in the description field. You can also add a shorter title in the title field. The title can help the reader decide whether or not to read the full description.

To add a alt-text or caption in Learning Management Systems, edit the object in which the non-text element appears. When in the content editor, right click on the element and click on Insert/Edit, then find the caption option. Enter the caption.

How to Test

- In Microsoft Office (including PowerPoint), [conduct an accessibility check](#).
- In Adobe Acrobat Pro DC, conduct a full accessibility check [using the Full Check option in the Accessibility Tool](#).
- In Learning Management Systems or on linked websites, try reading and navigating the screen (using the free) through NVDA screen reader software. You can also use the [WAVE tool](#) to test web content for accessibility.

Link text describes the destination of the link (No "click here" or "learn more")

Required

What it Means

Use descriptive link text that provides details about the destination of the link. For example, "Click Here", "Learn More", and "See All" do not provide enough information about the destination of the link.

Why it Matters

Many screen readers include an option to read a list of links on the page which makes it easier to navigate quickly through the page. Because of this, links should be meaningful out of context.

How to Implement

When inserting hyperlinks, use link text that clearly describes the destination of the link. Please refer to the table below reflecting inaccessible and accessible hyperlink examples.

Users should also be alerted to links that lead to non-HTML resources. If the link is a downloadable document, provide information regarding the format of the document (e.g., PDF)

inside the link. Downloadable documents should be opened in the same window, so as not to confuse screen reader users. If it will be opened outside the current window or frame, alert the user.

Table 1: Meaningful Hyperlinks

Original Example	Barrier	Accessible Example
Article 1	Link titles are not descriptive of the underlying content.	Article: The College Where Students Can Minor in Craft Beer
http://www.theguardian.com/media/greenslade/2014/sep/12/coffee-south-carolina	The hyperlink is too long and not contextual.	Journalists Drink More Coffee than Anyone
Google search engine, click here	The link titles are not unique.	Google
SUNY Electronic & Information Technology (EIT) Accessibility Committee Final Report and Recommendations	If the browser does not alert the screen reader user that the link is a non-HTML link, it can cause confusion. It assumes that individuals have the program (e.g., Acrobat) installed, to open the content.	SUNY Electronic & Information Technology (EIT) Accessibility Committee Final Report and Recommendations (PDF)

How to Test

Remove any surrounding text and read the link text on its own. Can a user tell where the link will go by reading just the link text?

To add, most automated tools can be used to find common words and phrases that do not provide enough information about the link destination.

All links are distinguishable (must be able to differentiate links from non-link text)

Required

What it Means

There are no links with the same text that go to different locations (e.g., Click Here).

Links should be visually different from other types of content on the page. For example it is fairly standard practice for a hyperlink to be underlined as a signal that it is an interactive element.

For the same reason it is important to avoid using underlines on content (text, headings, etc.) that is not interactive to avoid confusing users/readers. Be conscious of utilizing color with link text, particularly with web pages. The hyperlink color should have sufficient contrast so that people who cannot perceive the color difference can still perceive the tonal contrast difference.

Why it Matters

When different links have the same link text, the destination of those links may not be apparent without context. Links that do not have unique identifiers like underlines in comparison to other content may be missed by a large portion of users accustomed to this convention. Links conveyed by color cannot be discerned by some people who are color-blind or who are visually impaired.

How to Implement

Use descriptive link text to differentiate hyperlinks. For repeated link text like *Read More*, include screentip text describing the location of the link which will provide more information to screen readers and user agents. This technique is described on the [Microsoft Office Support page](#).

Use additional visual cues such as an underline to identify hyperlinks.

How to Test

- [Tanaguru Contrast Finder](#)
- [Contrast Ratio by Lea Verou](#)
- [Colour Contrast Analyzer by Paciello Group](#)
- [Color Contrast Checker by WebAIM](#)

Graphs, charts and maps include contextual or supporting details in text surrounding the image

Strongly Recommended

What it Means

Graphs, charts, and maps should include a text description of the image, or data displayed.

Why it Matters

If a document contains graphs, charts, and maps, the content within these items will be inaccessible to people who are unable to see. Contextual or supporting details in text format will help present the content to a screen reader users.

How to Implement

At minimum, provide a title and caption. If the information in the chart is not described in the chart or is an image, provide a description and a summary of the information. For example, some charts present data from surveys and may require background information for the user to understand the data presented in the chart. It is not necessary to describe visual characteristics.

Color

Color is not the only means used to convey information.

There is sufficient contrast between foreground color and background color.

Required

What it Means

Color is made up of three properties: hue (e.g. red, orange, yellow, etc.), value (tint/shade or lightness/darkness), and saturation (intensity). There is great variability in how humans perceive color. Luminance is the measure of the perceived brightness of a hue which uses a combination of value and saturation. The contrast or difference between the luminance of a foreground color, like text or hyperlink, in comparison to the background color is important to measure for accessibility.

Color alone should not be the sole way used to convey information.

Examples of failures: “required fields are red”, or “disabled form fields are displayed in gray”.

Use of color or spatial information is not discouraged, as long as other accessible methods of conveying the information are also utilized.

Why it Matters

There are a number of visual disabilities that are impacted by the sole use of color and not enough color contrast to convey information. People who are blind can't see color at all. People with low vision may have limited color vision. People who are color blind will have difficulty distinguishing between certain color combinations. Human ability to distinguish between colors diminishes with the aging process.

How to Implement

Provide a secondary layer of information that can be discerned visually without color, and that can be determined by screen readers. Options include adding symbols, labels, shapes, or adjusting position.

Example: If “required fields are red”, add a symbol such as an asterisk (*) to indicate that fields that are both red and have an asterisk are required.

WebAIM's [Contrast and Color Accessibility](#) provides detailed examples for a number of color and contrast related concerns.

How to Test

Many automated accessibility checkers do not check all aspects of color usage, so use of color does need to be reviewed manually. Color contrast can be checked with a tool like [WebAIM's color contrast checker](#) or with tools like the WAVE browser extension.

Typography

Use readable fonts and sizes, color contrast, and keep the number of fonts used to a minimum

Required

What it Means

Font choice and typesetting choices greatly impact the readability of the page. A number of factors impact the readability of the page including: legibility and familiarity of the font, font style (italics, bold, all capital letters, etc.), the number of fonts and styles used, font size, line-height (the space between lines of text), line-length (the number of characters in a single line of text), chunking (how related content is visually grouped together), and color contrast. These are all choices that are made when digital content is created and shared.

Why it Matters

Improving the readability of the page allows users to stay more focused and improves a user's ability to scan the content for the most relevant information to them. Developing content with readability in mind can improve comprehension and the usefulness of the material.

Using these principles will improve the experiences of people with low vision and color blindness, individuals using mobile devices, individuals in distracting environments or situations, screens in direct sunlight, etc.

How to Implement

When possible, use the style features in the software you are using to apply font choices and typesetting options consistently throughout your document. Generally these styles can be reused in other documents.

Font Choice and styles

Legibility, the ability to distinguish individual characters, is an important factor to consider when choosing a typeface. These are the details in the letter forms that make a zero and the letter "O" different from one another or the details that distinguish the letters b, d, p and q from each other (ideally the forms should be different and not just reflected or rotated).

Typefaces wider character widths (not condensed) and taller x-heights (or how tall lowercase letters like x and e are in relationship to the capital letters) are more legible. Although, they don't always meet the legibility features described, fonts that are familiar (like Arial and Calibri) designed specifically for the screen like Verdana and Georgia are generally considered the most readable by users.

- Avoid using decorative fonts for key content, including paragraph text. Limit how many fonts are used in a document. Using one font for the main copy and up to one additional font/style for headings is often a successful approach.
- Use bold or italic styles only to emphasize terms or limited content and never use for full sentences or paragraphs of text.
- Do not directly type content in all capital letters, as screen readers will often read these out letter by letter rather than by the word.

Typesetting

Appropriate font-sizes depends on context. In contexts where the text is to be digested by a reader on their own device (like a laptop or computer), set paragraph or body text (in some software it called “normal” text) to 12pt or larger. When creating a presentation to be viewed on a projector or large screen, the font size should be set to 24pt or larger.

The line-height or space between lines of text is equally important to readability. It is recommended that the line-height be set to 1.3 to 1.5 times the font size. The space between paragraphs should be larger than this value. The space between paragraphs in software is usually referred to as “space after” and can be set as part of the styles set for paragraph or normal text.

Line length, or the number of characters in a single line of text should be kept between 45–80 characters. Line-length can be measured using built in tools like software word counters or free online websites (just search character counter).

Color Contrast

Text (or the foreground color) should have good tonal contrast with the background it is on. The contrast ratio between the foreground color and background color should be 4.5:1. Larger text, like headings can have a slightly lower contrast ratio of 3:1.

How to Test

Most automated accessibility checkers do not test typography or color settings in a document, so they need to be checked manually using a word counter.

Most typography settings can be checked by looking to see if styles are used throughout the document and if the values for the styles meet the guidelines outlined above.

Color contrast can be checked with a free tool such as [WebAIM's color contrast checker](#).

It is recommended that color palettes and styles be set up to meet these guidelines from the very start of a project.

Data Tables

Table header rows and columns are assigned

Required

What it Means

When creating accessible data tables it is important to designate row and column headers. It is also important to ensure the header cells are never empty.

Why it Matters

Screen readers read simple tables efficiently when the column or row headers are clearly defined. Header rows and columns help identify the content of a particular row or column. If the table spans over multiple pages the header row will typically repeat itself at the beginning of the row on each page. This way, a screen reader or text-to-speech technology user can access the information on every page instead of needing to scroll up to remember what the column or row header information represents.

How to Implement

Designate which row will be identified as a header row by selecting the row, navigating to table properties, and choosing the row tab options.

When possible, information is displayed in a linear format instead of as a table

Strongly Recommended

What it Means

Tables should have an alternate explanation to the reader so that they are able to understand the visual complexity of the information layout.

Why it Matters

Tables organize and present information that provides visual clarity to the reader. However, when tables have complicated cell structure, screen readers have difficulty verbalizing the feedback as it is unable to decipher the column or row headings for merged heading cells. Providing a linear text based information helps the reader receive the information without being confused about the heading under which the information is placed.

How to Implement

Create simple tables without merged cells. Designate header row/column for each table. If the table is complicated, either refer to the explanation of the information in the textbook/article it has been obtained from or write an explanation of the interpretation of the information presented in the table format.

Avoid split cells, empty cells, merged cells, and embedded tables

Strongly Recommended

What it Means

Tables should be simple; the first cell in each column is the column header and should be coded as such. The cells under a column header should not be divided to form smaller cells or

combined to form larger cells. To add, a smaller table should not be placed within a cell. Each cell within a table should contain information.

Why it Matters

Headers within a table have a navigational function in that they identify rows and columns to a screen reader user.

Split cells, empty cells, merged cells, and embedded tables can impede assistive technology from moving forward to read subsequent information within a table; thus, important information can be missed by someone who is visually impaired and dependent on assistive technology.

How to Test

In addition to running an accessibility checker, a person should visually check to ensure cells are not split, empty, or merged, and visually check to ensure tables are not embedded within a cell. Accessibility checkers do not catch all of these table errors.

Images

Provide meaningful alt text for all images, except in the cases described below

Required

What it Means

Alternative text (alt text) provides a textual alternative to non-text content on web pages and in documents. Alt text needs to provide meaningful information, especially the context in which the image is being used.

Why it Matters

If a document or web page includes images, the content of those images will be inaccessible to people who are unable to see. Alternative text presents the content or function of an image to screen reader users or in other situations where images cannot be seen or are unavailable.

How to Implement

Writing good alt text can be a challenge to implement correctly. It requires understanding the purpose and context of the image. Refer to the alternative text section above for more details. For more information, review [WebAIM's Alternative Text](#).

How to Test

Automated testing tools can locate images that do not have alt text. However, automated tools cannot evaluate if the alt text is meaningful. For example, many images contain the file name as the alt text by default which in most instances is not meaningful. In addition to automated tools, manually check images when creating and editing documents.

- In Microsoft Office, [conduct an accessibility check](#).

- In Adobe Acrobat Pro DC, conduct a full accessibility check [using the Full Check option in the Accessibility Tool](#).
- In Learning Management Systems or on linked websites, try reading the screen through NVDA screen reader software.

Use null alt text for decorative images (alt= "")

Required

What it Means

Decorative images are images that don't provide any function or new information to a page. They provide no function or information beyond aesthetics except when thinking about multimodal learning or UDL. For example, images that demonstrate or illustrate something that is fully described in the text can be valuable to the user in understanding the content. Any image that is decorative should include an alt attribute with a blank value.

Why it Matters

Every image is required to have alt text. Using a null alt text is a standard technique that communicates to screen readers that the image can be ignored. Without the blank alt attribute, a screen reader will typically read the full file name.

How to Implement

alt="" (no space between the quotation marks)

In addition, some assistive technologies support the WAI-ARIA role = "presentation". See [W3C Decorative Images](#) for additional information.

How to Test

This can be tested using automated tools. That being said, what defines a decorative image is open to interpretation. Decisions on defining decorative images should be based on usability and user experience for people using assistive technology.

- In Microsoft Office, [conduct an accessibility check](#).
- In Adobe Acrobat Pro DC, conduct a full accessibility check [using the Full Check option in the Accessibility Tool](#).
- In Learning Management Systems or on linked websites, try listening to what is read aloud on the screen using the [NVDA screen reader](#).

Images used as links (without accompanying text description) have alt text indicating link target

Required

What it Means

When an image is used for a hyperlink, the alt-text describes the link destination.

Why it Matters

If an image describes where its associated hyperlink goes, a screen reader will not serve the same meaningful information about the link without the alt attribute.

How to Implement

The WCAG [Link Purpose \(In Context\)](#) guide provides examples of best link text practices.

How to Test

While some automated tools have the capability to test to see if an image link is missing alternative text, manual testing will be required in most instances.

If the same visual presentation can be made using text alone, an image is not used to present that text

Strongly Recommended

What it Means

Do not provide text-based information in images, unless the presentation of the text is essential to the information being conveyed, such as in a logo.

Why it Matters

Providing text instead of an image of text allows users to adjust the size, spacing, color and other formatting to suit their needs. Not all of this is possible with an image of text.

How to Implement

Train content creators on the value of separating text and images. In sections where text and images are commonly combined, such as a carousel slider, use a framework that supports accessible text coupled with the images.

Formulas

For web pages, use an equation editor that outputs MathML. (e.g., MathType, MathJax, EquatIO, Microsoft Equation Editor)

Required

What it Means

Mathematical Markup Language (MathML) puts math into a format that allows the utilization of adaptive technology to read math out loud or converted to additional formats. Mathematical notation should be created using MathML equation editors such as MathType, EquatIO, or Microsoft Equations Editor. While the content creators may be writing their equations in different syntaxes and languages (eg. handwritten, AsciiMath, LaTeX), the content creators need to utilize equation editors and workflows that can embed the Assistive MathML into documents for users of assistive technology.

Note: Assistive technology users may use specific browsers or applications that help transform accessible STEM content. Math accessibility is nuanced and may be differently accessible in each operating system, application and browser.

Why it Matters

MathML's XML markup has the potential to make mathematics accessible to those with print disabilities with the most alternative formats including creating high resolution for zooming and conversion to audio and braille.

How to Implement: Websites

Implementing accessible mathematical notations within a web page or in web-based content requires the use of other add-ons and software. MathJax and KaTeX are examples of converters installed on websites that translate math entered as LaTeX to MathML. A Platform's ability to display accessible math equations should be considered during the solicitation or use of Learning Management System and other learning platforms where students will be required to read math notation online. The most used website extensions are MathJax or KaTeX because this displays content entered as LaTeX with Assistive MathML embedded in the background.

How to Implement: Content Creators

Equation Editors can be extremely helpful for converting documents from various input formats (handwritten, LaTeX, MathML, AsciiMath) to an accessible output (SVG + hidden MathML markup, LaTeX + hidden MathML Markup). MathType and EquatIO both have features to convert multiple input types or handwritten math and convert it to accessible MathML.

LaTeX and Accessibility

LaTeX is a typesetting language commonly used by mathematicians and scientists. LaTeX has multiple packages and extensions. Packages and extensions add notation and layout options. For example adding the "fitch" package for LaTeX will allow someone to typeset Fitch style proofs, a notation style that displays a proof in a table. Not all packages support programmatic

conversion to accessible alternatives. Without using an additional program like MathType, ChemType, Equatio, or web conversion by programs like MathJax or KaTeX, equations made in LaTeX alone will not pass accessibility standards because the equations or formulas are rendered as image only without any meaningful text or alt text.

For example:

- Lumen Learning’s Online Homework Manager (OHM) is a web-based homework system especially for math. In Lumen’s system, AsciiMath is converted to MathML by the KaTeX platform. KaTeX was originally developed by Khan Academy and is what Wikipedia and other popular websites use.
- OpenStax textbooks use native MathML rendered through the MathJax plugin. MathJax provides multiple output formats including HTML + CSS and SVG images of each equation for cross browser compatibility, but most importantly also embeds the assistive MathML for users of assistive technology.
- Pearson’s MyMathLab was cited specifically in a lawsuit in 2019 because its math renderer does not meet accessibility standards and cannot be read by a screen reader. When requested, the college did not provide students with timely equivalent assessments. For more information, read [Federal Court Rules in Favor of Blind Students](#).
- For equations or notations that cannot be systematically made accessible through embedded MathML or styles that must be made using LaTeX alone, use the guidance on Alt text to create a meaningful description of the equation.

1	$\forall x(Fx \rightarrow Gx)$													
2	$\exists xFx$													
3	<table style="border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding-right: 5px;">c</td> <td style="padding-left: 5px;">Fc</td> <td></td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 5px;"></td> <td style="padding-left: 5px;">$Fc \rightarrow Gc$</td> <td style="padding-left: 10px;">$\forall E, 1$</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 5px;"></td> <td style="padding-left: 5px;">Gc</td> <td style="padding-left: 10px;">$\Rightarrow E, 3, 4$</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 5px;"></td> <td style="padding-left: 5px;">$\exists xGx$</td> <td style="padding-left: 10px;">$\exists I, 5$</td> </tr> </table>	c	Fc			$Fc \rightarrow Gc$	$\forall E, 1$		Gc	$\Rightarrow E, 3, 4$		$\exists xGx$	$\exists I, 5$	
c	Fc													
	$Fc \rightarrow Gc$	$\forall E, 1$												
	Gc	$\Rightarrow E, 3, 4$												
	$\exists xGx$	$\exists I, 5$												
4														
5														
6														
7	$\exists xGx$	$\exists I, 2, 3-6$												
8	$\exists xFx \rightarrow \exists xGx$	$\Rightarrow I, 2-7$												

In the proof above, LaTeX libraries were used that cannot be converted or made accessible programmatically by plugins like KaTeX or MathJax. The best option may be to do an alt text and long description.

How to Test

Test using MathPlayer, Voiceover, another screen reader (e.g. JAWS, NVDA) or text to speech software (e.g., Read + Write with Equatio).

The [Central Access Reader](#) is an open source text-to-speech application for students with print disabilities. It can read math aloud, but may not be accessible to screen reader users.

Resources for testing math accessibility:

- [MathPlayer Speech Instructions](#)
- [MathPlayer and MathML Technology](#)

Glossary:

MathML - a text-based XML markup language designed for math equations on the web and in documents. Despite being part of the HTML5 standard, MathML is not cross browser compatible at this time. Because of Google Chrome and Microsoft Edge's lack of support for MathML, specialized converters need to be installed and used that will ensure cross browser compatibility and meta-data for assistive technology.

MathJax- A Javascript library that is frequently used for website accessibility. The MathJax plugin converts equations that are entered in MathML, AsciiMath, or LaTeX and displays them for all browsers with MathML Markup. The rendering of equations is done in the viewer's browser which may influence performance and page load times.

KaTeX- Developed by Khan Academy, KaTeX is an alternative to MathJax. Much like MathJax, KaTeX renders math for multiple browsers and embeds the Assistive MathML. Unlike MathJax, KaTeX renders equations on the server side, however it uses less LaTeX libraries than MathJax.

Alt Tag - When using MathML is not possible, an alternative is to create an image of an equation (or export it from an equation editor) and then insert the image into a document with [an ALT tag](#).

LaTeX - a math markup language familiar to many in the science and math community. The default behavior of LaTeX is that the equations are converted into an image. Without additional markup with an equation editor or manually entered, LaTeX equations will not pass an accessibility checker.

For documents and presentations, use an equation editor that supports accessibility (e.g., MathType, MathJax, EquatIO, Microsoft Equation Editor)

Required

What it Means

When documents are created with accessible mathematical content, screen readers are able to read the content.

Why it Matters

Accessible math content provides users with access to content that is verbalized in mathematical language which is more complicated than reading straight text.

How to Implement

Implementing accessible mathematical notations within documents and presentations may require using alternative formats of documents or the use of other add-ons and software (i.g., MathType or EquatIO). Instructors should use an equation editor and be encouraged to keep

editable versions of course documents because users of assistive technology may need the original documents instead of PDFs.

If using Equation Editor enabled within MS Word the text box inserted should be “in-line”. The built-in check accessibility feature in MS Office will provide guidance for steps required to make your document accessible.

MathML, a text-based XML markup language is the technical standard for creating accessible math content if the content is exported into multiple formats.

For Example:

- Equations created in Microsoft Word’s equation editor can be read by some assistive technology and screen readers.
- If creating documents that need to be exported to PDF

How to Test

The best way to test if math content is accessible is through manual testing using a screen reader (e.g., JAWS), refreshable Braille displays or other assistive technologies for users with visual impairments. For other users with print disabilities, there are numerous software that are being developed for use. EquatIO by TextHelp is one such example.

Structure and Navigation

Fillable documents (forms) are labeled appropriately

Required

What it Means

As users tab through the fillable fields, the labels are verbalized by screen readers and provided as a visual feedback in the status bar of the productivity software as a hint.

Why it Matters

Labels provide individuals using assistive software the feedback necessary to know the field they are in and the information they need to provide to fill out the form.

How to Implement

Depending on the software used to create fillable forms, all fields inserted within a document should contain "Help Text" or "tags" that identify the information required of the field.

How to Test

To test if all fields are labeled appropriately, the help text or tag should appear in the status bar of the document when the keyboard focus is within the field. When using a mouse, the label should be displayed when hovering over the field.

[WAVE](#) is an automated tool that can be used for testing web forms.

Machine readable (ensure document is not an image and the text is renderable)

Required

What it Means

Images and scanned documents that are in image format (JPEG, GIF, PIF etc.) do not provide access to the text within the document or image. Text-to-speech software only reads text that is renderable.

Why it Matters

When documents are in image format, text-to-speech software are unable to provide access to the content within. User may hear "blank page" or "image", and not know that there is text within that image. If the goal of the image is to provide the user access to the text within, it should be made available in a format that is accessible to all screen readers.

How to Implement

Converting scanned or image documents to an accessible format first requires the use of Optical Character Recognition (OCR) software. Some examples of these are: Adobe Acrobat DC or Pro, ABBYY FineReader, Kurzweil 1000, Kurzweil 3000, Read&Write, Premier, etc.

Note: Machine-readable format means the document is searchable, but not fully accessible.

How to Test

When converted to an accessible format using an OCR software, most text within the documents are made accessible.

Note: At this time, most OCR programs are unable to convert handwritten text to readable formats. Images within the documents need to be provided with Alt Tags after the conversion.

Keyboard navigable

Required

What it Means

A computer mouse is not needed to navigate a web page. Navigating through a web page or digital content can be accomplished through the use of a keyboard.

Why it Matters

Some computer users do not have the ability to use a mouse.

How to Implement

Keyboard navigation within a document is most relevant when creating forms. The content creator has to provide form field labels or alt text to enable screen readers to read the help text. The tab order should be checked to make sure it is in the right order.

All of the content should have access through the arrow keys, tab and enter key (to activate a link) without the need for a mouse. The order that these items are selected should make logical sense no matter what the visual presentation might indicate.

How to Test

WebAIM provides an extensive list on how to check for [keyboard accessibility](#).

Reading order is logical and intuitive (verify reading order using tab key)

Required

What it Means

When using a keyboard to navigate through a page, the order in which items receive keyboard focus should be logical, meaning it follows the visual flow of the page: left to right, top to bottom - header followed by the global navigation, then page navigation, then content body, then footer. In presentations, the content creator can check the order in which the information on a slide will be read, to ensure the content is read in the way it is intended.

The same considerations must be made with other digital formats, such as PDF.

Why it Matters

Content that is not in a logical reading order may confuse or disorient users.

How to Implement

Structure the underlying source code so that the reading order is correct.

For additional information, refer to the W3C [Meaningful Sequence](#) standard webpage.

How to Test

Reading order can be tested using keyboard keys such as tab, and arrow keys. Navigation panes also display the order in which titles and headings appear within a document.

For PowerPoint, manage objects through the Selection Pane. Refer to the [MicroAssist PowerPoint Accessibility](#) tips.

The document contains a descriptive page title that makes sense

Required

What it Means

The title of the document is different from the H1 heading in that it is not a part of the navigational structure of a document. The title should be descriptive of the content of the document or webpage.

Why it Matters

For screen reader users, once a document is opened or a web page is loaded into a browser, the first piece of information the screen reader will read is the title.

How to Implement

In Microsoft Office, click the File menu and under Properties, type in a title within the title field.

In Adobe Acrobat, click the File menu and under Properties, type in a title within the title field.

In web pages, use the <title> element.

How to Test

In Microsoft Office, this is done manually. The accessibility checker does not scan the properties section of a document. Click the File menu and under Properties, check to see if a title has been added.

In Adobe Acrobat, click the File menu and under Properties, check to see if the title has been added, or use the accessibility checker.

In web pages, view the HTML code. To view the HTML code, right-click on the web page. From the pop-up menu, click View Page Source. The <title> element is usually the top of the web page.

Use source (original) document when possible - apply accessibility features within source document

Strongly Recommended

What it Means

When it is not possible or practical to disseminate content as HTML, use source (original) document. When creating documents in applications like MS Office, Google Docs, etc., all accessibility options present within these applications should be applied. Built in accessibility

checkers should be utilized. This will create an original “accessible” file that can then be converted to other formats like PDF.

Why it Matters

This practice will help document creators develop accessible versions of a document and when converted to other formats, accessibility features will already be applied.

How to Implement

Use all accessibility features available within the application to create the document. Check for and fix errors before converting to another format for publication or sharing.

Heading structure includes an H1 tag and does not skip levels (is sequential)

Strongly Recommended

What it Means

Include an H1 heading on a page whenever possible, and do not skip levels between headings. Microsoft Office tools (e.g., Word, PowerPoint) features a customizable Styles bar (gallery) to help content creators maintain accessible formatting. This will also enable the creation of a table of contents.

Why it Matters

The use of headings structure in a document is important for proper navigation of a document. Skipping heading levels can be confusing to people using screen readers. These users depend on sequential heading level order to navigate content.

How to Implement

Instruct content creators to include an H1 heading to define their content, or leverage a content management system to add the title of the content on the page as an H1 heading. Instruct content creators on the proper use of headings, including not skipping levels. Ensure that the styles for headings are not problematic in a way that would discourage their use.

How to Test

- In Microsoft Office, [conduct an accessibility check](#).
- In Adobe Acrobat Pro DC, conduct a full accessibility check [using the Full Check option in the Accessibility Tool](#).
- In Learning Management Systems or on linked websites, try reading the screen through NVDA screen reader software.

Use the built-in features, styles, and templates (including predefined slides) of software to align spacing and designate lists

Strongly Recommended

What it Means

When developing documents it is best to use existing styles as these features are equivalent to inserting codes that designate the items as titles, headings, sub-headings etc.

Why it Matters

Using predefined styles within a productivity software makes it easier for screen readers to navigate through lengthy text. It also allows users to understand the structure of the document.

How to Implement

Use styles, templates and features that already exist within applications used to develop content. There are options to change the visual presentation while maintaining the important accessibility features within each software system.

Use different titles for each presentation slide

Strongly Recommended

What it Means

Each presentation slide should have a unique title.

Why it Matters

The title of a slide conveys its content. For people who use screen readers, slide titles have a navigational function. The titles allow these users to scan through a presentation to locate specific information much more quickly. If each slide has the same title, this could be confusing and disorienting to those who use screen readers.

How to Implement

Give each slide a unique and descriptive title. Instead of cramming a list of items or a large paragraph of text into a single slide, use additional slides in the following manner:

“Title of the slide (1 of 2)”

“Title of the slide (2 of 2)”

How to Test

In PowerPoint, use the accessibility checker. Otherwise, manually check each slide for a unique and descriptive title.

Multimedia

Establish a timely process for requesting synchronized captions for multimedia

Required

What it Means

Every effort should be made to provide closed caption videos. There may be instances which, for a controlled (private) audience, videos may not need closed captions. At minimum, a process to request the addition of captions should be in place to help streamline access and accuracy of the captioning should be evaluated.

Why it Matters

Video producers and content managers may not be able to anticipate the need for captions on content that was not made public. If the process to request captions is unclear or difficult, viewers who need captions will either have to go through a frustrating request process or will simply not have equally effective access to the content.

How to Implement

A process to request captioning should be established using in-house resources, or request captioning through a third party vendor.

Provide synchronized captions for newly created or adopted audio-video content

Required

What it Means

When audio and video are synchronized together, captions should be available to display all meaningful audio content. Captions convey not only the content of spoken dialogue, but also equivalents for non-dialogue audio information needed to understand the program content, including sound effects, music, laughter, speaker identification and location.

Why it Matters

Many people including but not limited to those who are deaf or have hearing loss, non-native speakers, people with ADHD, elderly, or parents of young children, etc. can access the auditory information in the content through captions.

How to Implement

Captions should be synchronized with the video so that the caption text appears on-screen while the corresponding audio is playing. Captions should be easily readable, and should not obscure or obstruct relevant information in the video.

Captions can be created or obtained in many ways:

- Third-party Captioning services may be used to outsource the creation of captions.

- Speech-recognition software or services offer captioning at a lower cost, but typically at the loss of accuracy. Captions created in this way can be a useful baseline for in-house caption creation.
- Captions can be created or edited in many software-based platforms. In-house caption creators should be trained in best practices for closed captions.
- The content creator/owner may be able to provide a caption file.

How to Test

To test if content has synchronized captions, play the content in its normal player with the closed captions (cc) option turned on. Check several short spans throughout the content to ensure that captions are easily readable and accurately represent the auditory information being played at that time.

Note on Testing

Captions may not be adequate if they omit or misrepresent important auditory information. The success of captions cannot be evaluated automatically or by using an accuracy percentage. To evaluate success or failure, it is necessary to view the material with captioning turned on and check that *all* important sounds and dialogue are accompanied by accurate captions.

If confirming the accuracy of all captions is not reasonably achievable, it is advised to have a mechanism in place for viewers to easily report errors in captions and receive timely corrections. Additionally, closed captioning workflows should be evaluated to confirm that the captions being created are typically accurate.

Resource:

- [Quality Captioning Guide](#), by the Described and Captioned Media Program (DCMP).

Provide transcripts for audio-only content

Required

What it Means

Audio content that is not synchronized with other content should be supplemented with a text transcript.

Why it Matters

A text transcript provides an accessible alternative for people that cannot adequately perceive the auditory information. It also provides a readable alternative in environments where audio is not available.

How to Implement

Provide a fully descriptive text transcript adjacent to all audio-only content. Typically, this is added immediately following the audio-only content.

How to Test

Confirm that audio-only content is supplemented with a text alternative. Check that the dialogue in the transcript matches the dialogue and information presented in the audio-only presentation. If the audio includes multiple voices, check that the transcript identifies who is speaking for all dialogue. Check that the text alternative is made available in a way that it can be easily accessed from the location of the audio content.

Provide descriptive audio for prerecorded audio-video and video-only content, when needed

Required

What it Means

Any time meaningful or important information is included in the video, it should be included in the audio track, or available in an optional descriptive audio track. Assess the impact of the video to determine if it is essential to audio describe. For example, if the video is a marketing video or compliance training video, it could be considered high impact. As such, it is essential to audio describe the video. See SUNY Cortland's [Welcome Back SUNY Cortland Students 2019](#) (descriptive audio) video.

Why it Matters

Viewers who cannot adequately perceive visual information in a video typically cannot utilize captions. Including the visual information in audio present an accessible alternative.

How to Implement

When producing content, include all visual information in audio narration, or produce an alternative descriptive audio track if an alternative audio track is supported in the video playback environment. For existing content, it may be necessary to add pauses to the content to allow time for the addition of descriptive audio.

If the audio and video tracks in a presentation are not synchronized in a meaningful way (e.g. a video supplemented by background music with no important time-based element), a descriptive text transcript may be used in place of descriptive audio.

How to Test

Check that any meaningful visual information in a video is also provided in the synchronized audio track.

Ensure video player controls are available and accessible via keyboard

Required

What it Means

Users should be able to stop/pause, play, rewind and forward using controls displayed when playing a video. These controls should be accessible by keyboard commands.

Why it Matters

Computer users with motor, visual, and physical disabilities are able to navigate a computer using a keyboard.

How to Implement

When adopting a video player make sure to inquire about the accessibility of the players controls.

How to Test

The player controls should be accessible using keyboard commands or navigation keys such as tab, shift tab and arrows. Use the tab key to confirm [keyboard accessibility](#).

Ensure audio and video does not begin playing on page load

Required

What it Means

Any audio or video content does not automatically start. Instead, the user is given control to start, pause and stop audio and video content.

Why it Matters

People using screen readers navigate by listening, so any sound playing when the page loads will interfere because the audio that automatically starts playing will obscure the speech of the screen reader. As a result, users will not be able to navigate to the controls to stop the sound. In addition, video and flash animations that start automatically can be challenging for people with cognitive disabilities.

How to Implement

Do not configure video or audio to play automatically or as a result of an user action that was not clearly described as an option to start playback.

How to Test

Confirm that video or audio does not start when a page loads, or at any time when the user has not intentionally started the playback.

Provide synchronized captions for live audio-video content

Strongly Recommended

What it Means

For live video that includes audio, provide captions.

Why it Matters

Without captions, live audio-video content is not equally effective or accessible to people who have a hearing impairment.

How to Implement

If the live streaming platform supports live captions, investigate the cost and resources of making it happen. If it does not, start evaluating other options. It is important to include live captioning costs in budget planning for high impact events, such as commencement.

How to Test

Play the content in its normal player with the closed captions (cc) option turned on. Ensure that captions are easily readable and accurately represent the auditory information being played.

Accessibility Awareness & Verification

Course syllabi contain an accessibility statement to inform students of available campus resources

Required

What it Means

An accessibility statement supports the integrity of earning credit. It provides notice to learners with disabilities who may wish to seek academic adjustments and affirms the commitment to inclusive pedagogy.

Why it Matters

Both Middle States and the NYS Education Department reference syllabi in standards and guidance on ethics and integrity. MSCHE expects institutions of higher education to have in place and promote accessibility services or programs, and NYSED expects syllabi to include course policies related to integrity of credit.

There is a need to improve access to information about services and supports for college students with disabilities. Including an accessibility statement will help inform students about available resources and campus procedures.

College students with disabilities have the right to disclose their disability, but should not be required to. Students are encouraged to self-identify with the college disability services office to receive academic adjustments.

How to Implement

It is strongly advised to develop an accessible institutional syllabus template that can be personalized by professors.

Student Disability/Accessibility Services offices typically have a statement professors may copy and paste into their syllabus. Faculty should include this statement in their syllabus.

Examples:

- Academic Adjustments for Students with Disabilities: All individuals who are diagnosed with a disability are protected under the Americans with Disabilities Act, and Section 504 of the Rehabilitation Act of 1973. Academic Adjustments will be provided to qualified students with documented disabilities. If you have a disability requiring academic adjustments in any class, please make an appointment to meet with the Campus Disability/Accessibility Services Office.
- It is my goal to create a learning experience that is as accessible as possible. If you anticipate any issues related to the format, materials, or requirements of this course, please meet with me outside of class so we can explore potential options.
- I am committed to creating a course that is inclusive in its design. If you encounter barriers, please let me know immediately so we can determine if there is a design

adjustment that can be made. I am happy to consider creative solutions as long as they do not compromise the intent of the assessment or learning activity.

Sources: SUNY Delhi and [Campus Syllabus Accessibility Statements, Bates College](#)

Use built-in accessibility checkers in various software tools (e.g., Microsoft Office, Adobe Acrobat, Blackboard Ally)

Strongly Recommended

What it Means

Software products such as Microsoft Office and Adobe Acrobat include built-in accessibility features to assist in the development of accessible documents.

Why it Matters

The built-in features will allow content creators to check documents for accessibility before sharing.

How to Implement

Use “Check Accessibility” to identify errors within the document and follow provided instructions to make the necessary changes.

How to Test

All productivity software has this feature in different locations. These options should be explored when creating an accessible document.

Newly developed courses undergo accessibility review

Strongly Recommended

What it Means

All newly developed online courses (including hybrid and flex courses) should undergo accessibility review. This can be achieved independently by using an accessibility checklist or through the utilization of a course quality rubric that incorporates accessibility, such as the [OSCQR- Open SUNY Course Quality Review Rubric](#)).

Why it Matters

Providing access proactively allows students the ability to retrieve, use or benefit from learning environments independently. Students with and without disabilities benefit from inclusive pedagogy. Students may or may not disclose their disability at the beginning of each semester. They may not even know they have a disability, or acquire one or more in college. As such, it is important to design accessible courses - from the beginning - in order to enable students full participation. Use the relevant SUNY EIT Accessibility Policy Standards to inform accessibility benchmarks of digital content and courseware.

Course quality rubrics set standards for instructional design and can include benchmarks for accessibility standards to comply with relevant technical standards.

How to Implement

Before a course is live to students, it should be reviewed for accessibility. An accessibility review should be completed regardless of a quality course review (e.g., OSCQR rubric). The review can be completed by the individual instructor using a combination of automated tools (e.g., Blackboard Ally) and manual review (e.g., check use of color). Additionally, campuses may designate individuals or offices such as instructional design, online learning or accessibility services to answer accessibility-related questions. Ideally, a course should be fully developed and accessible well in advance of the start of the semester. This will also be helpful for Student Disability/Accessibility Services to provide advanced accommodations in a timely manner.

Recurring existing courses undergo accessibility review

Strongly Recommended

What it Means

Existing online courses (including hybrid and flex courses) that are offered continuously should be reviewed for accessibility. This can be achieved independently by using an accessibility checklist or through the utilization of a course quality rubric that incorporates accessibility, such as the [OSCQR- Open SUNY Course Quality Review Rubric](#).

Why it Matters

Providing access proactively allows students the ability to retrieve, use or benefit from learning environments independently. Students with and without disabilities benefit from inclusive pedagogy. Students may or may not disclose their disability at the beginning of each semester. They may not even know they have a disability, or acquire one or more in college. As such, it is critical to revisit course design to ensure students can fully participate in recurring courses, to avoid delay of taking part in the course. Use the relevant SUNY EIT Accessibility Policy Standards to inform accessibility benchmarks of digital content and courseware. Course quality rubrics set standards for instructional design and can include benchmarks for accessibility standards to comply with relevant technical standards.

How to Implement

Before a course is run again, it should be reviewed for accessibility. An accessibility review should be completed regardless of a quality course review (e.g., OSCQR rubric). The review can be completed by the individual instructor using a combination of automated tools (e.g., Blackboard Ally) and manual review (e.g., check use of color). Additionally, campuses may designate individuals or offices such as instructional design, online learning or accessibility services to answer accessibility-related questions. Ideally, a course should be fully developed and accessible well in advance of the start of the semester. This will also be helpful for Student Disability/Accessibility Services to provide advanced accommodations in a timely manner.