CTL Basic (HTML) Website Accessibility
Recommendations for Faculty & Students

Based off WebAIM’s (webaim.org) WCAG 2.0 checklist (© WebAIM) and the WCAG 2.0 W3C Recommendation (© W3C)

Some best practices for basic website authoring/editing are presented here. While **this list is not exhaustive**, you should keep these in mind when you work in all web platforms. As you do, recall the four principles of accessibility when working with website content. The content should be:

- **Perceivable** – Web content is made available to the senses - sight, hearing, and/or touch
- **Operable** – Interface forms, controls, and navigation are operable
- **Understandable** – Content and interface are understandable
- **Robust** – Content can be used reliably by a wide variety of user agents, including assistive technologies

The accessible website is designed in a way so that it can be used by all individuals, considering as many diversities as possible. The design should consider sensory, physical, cognition and neurological experiences, as well as how the content translates to assistive technologies such as screen readers, speech recognition software, and alternative input devices (e.g., head pointers, puff switches).

### IMAGES: Alternative Text

- **Provide alternative text** (in the HTML alt attribute) that relays the same information purpose as the graphic.

  WHY? Text can be “changed into other forms people need, such as large print, braille, speech, symbols or simpler language.” ([http://www.w3.org/TR/WCAG20](http://www.w3.org/TR/WCAG20))

- **Exceptions are as follows:**
  - **Decorative or “invisible” images** (often used for formatting): If the graphic is not conveying any content, **give the empty (null) alternative text**, e.g. alt = ""

    `<img src="http://mywebsite.com/scroll.png" alt=""/>`

  - **Image content is already conveyed in text**: If the graphic is not providing any new information (the meaning is already understood in the web page text), **give the empty (null) HTML alt attribute** value.

    `<img src="http://mywebsite.com/scroll.png" alt=""/>`

  - **Complex images**: If the graphic displays more content than what would be provided by a short descriptor, then its information should be conveyed in the web page’s text or explained as a long description in a page linked through the **HTML longdesc attribute**. That link could be to a bookmarked spot on another webpage or a simple text file.

    `<img src="myVeryBigChart.png" alt="Chart showing health factors related to various environmental factors" longdesc="http://mywebsite.com/descriptors#healthchartexplained">`

    or

    `<img src="myVeryBigChart.png" alt="Chart showing health factors related to various environmental factors" longdesc="http://mywebsite.com/healthchartexplained.txt">`

For more information, see the CTL Teaching Toolkit’s website: [http://tinyurl.com/JHSPHtoolkit](http://tinyurl.com/JHSPHtoolkit)
IMAGES: Images Containing Text

✓ Avoid images of text except if the text in the graphic is essential to the information (including text that is part of a logo or part of a screenshot or graph). An image of text can also be used if it can be visually customizable (e.g. resizable and/or can be recolored).

ℹ️ If using an image of text that conveys information (e.g., the graphic is not a logo nor simply decorative), it must have a color contrast ratio of at least 4.5:1. Several online tools are available that use WCAG 2.0's luminosity contrast algorithm to assist in this accessibility design feature.

EMBEDDED MULTIMEDIA

✓ Identify embedded multimedia with accessible (text) alternatives. This can be done through the text content on the page where it is embedded, or linked to the embedded object or using the alt and longdesc HTML attributes.

AUDIO & VIDEO (Prerecorded MULTIMEDIA)

✓ All prerecorded audio & video files on a website should have “a descriptive text transcript (including all relevant visual and auditory clues and indicators).”

ℹ️ For videos without audio, a text or audio description must be provided.

ℹ️ For videos with audio, make sure there are synchronized captions.

AUDIO & VIDEO (Live MULTIMEDIA)

✓ All live (streaming) audio-only and video-with-audio must have synchronized captions.

PAGE LAYOUT: Order

✓ The webpage content should be presented in order (coded) so that if the page were read aloud (e.g., by a machine reader) as it is presented in its code, the translated information would have the same sequence, meaning and context as it does to and individual who can see the original layout. The reading and navigation order of the content should be able to be programatically determined. The layout of a webpage should not be complex.

WHY? The webpage content should “available in a form that can be perceived by all users, for example, spoken aloud, or presented in a simpler visual layout. If all of the information is available in a form that can be determined by software, then it can be presented to users in different ways (visually, audibly, tactively etc.).”

(http://www.w3.org/TR/UNDERSTANDING-WCAG20/content-structure-separation.html)

PAGE LAYOUT: Relationships & Emphasis

✓ HTML tags (the semantic markup language) should be used to emphasize and distinguish relations between the webpage text elements. This includes headings (<h1>, <h2>, etc.); lists (<ol>, <ul>, <dl>, <li>, etc.); emphasized or otherwise special text (<strong>, <blockquote>, etc.); and tables, captions, and headings (<table>, <caption>, <tr>, <th>, etc.).

```html
<h1>My Very Impressive Title</h1>
<h2>and its subtitle with a bit of <strong><em>emphasis</em></strong></h2>
```

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PAGE LAYOUT: Directives

✓ No instructions (directives) on the webpage should require nor expect the visitor to see or hear something on the page. The visitor should be able to navigate, interact and understand the webpage without knowing the appearance (placement, size, color, orientation) nor responding to any audio feedback of an element.

PAGE APPEARANCE: Color & Contrast

✓ Color cannot be the only way to express meaning of the webpage content nor to distinguish an element from the rest of the webpage. When hyperlinks are colored differently from their surrounding text, the luminance contrast must be at least 3:1 and something besides color (e.g., underlining text) distinguishes the link on the hover and focus actions.

WebAIM has a color contrast checker at http://webaim.org/resources/contrastchecker/.

PAGE TEXT: Contrast & Size

✓ The contrast ratio of text (including images of text) to its background must be at least 4.5:1. Exceptions to this rule are as follows:

- Logos or brand name images that contain text have no minimum contrast requirement.
- Images with text that are purely decorative or otherwise unnecessary to understanding the webpage content are considered incidental and have no contrast requirement.
- Large scale text (at least 18 pt or 14 pt bold font) must have a contrast ratio of at least 3:1.

✓ If the page is zoomed to 200%, the text on the page (doubled from the programmed size) must still be readable and functional. Exceptions include captions and images with text.

USER INTERFACE: PAGE NAVIGATION

✓ The navigation and all page functionality (e.g., menu selection) should be accessible by the keyboard.

When navigating the page using the keyboard, no object nor element should retain (lock) focus; the next and/or previous element in the navigation should always be accessible.

✓ The page should be designed in such a way so that users are given options to assist in navigation, searching, and knowing where they are on a page and website. The design should include the following:

- “Skip” Links (Bypass Blocks) – users should be able to navigate a page so they can jump over content that is repeated on multiple pages across a website, such as navigation menus or disclaimers.
- The page should have a title that is informative, giving insight as to the page topic or purpose.
- Page navigation, as accessed through a keyboard, should be logically sequential where the focus order maintains “meaning and operability” of the page.
- Page navigation, as accessed through a keyboard, should provide visual feedback so that the element receiving focus is apparent to the user. This could be by changing the appearance of an element when it receives focus or by some sort of marker appearing (for example, a carat) next to the focused element.
- Hyperlinks (including text, buttons, and image map hotspots) must each have a purpose that can be determined by the link text or its context, i.e. its programmed proximity to other content on the page such as a table header.

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Within a website with multiple pages, there must be more than one way to access an individual page. The methods of finding a page on a site could be including a table of contents, a site map or navigation menu, a site search, or a list of all available web pages.

Headings and labels (e.g. on forms) must describe the topic or purpose of the page section to which they’re (programmatically) attached. There should not be any ambiguous headings nor labels. There also should not be any duplicate headings (e.g., “In Conclusion”) nor labels (e.g., “phone”) unless their context, as programmed, lends itself to differentiating the multiplicity.

The page navigation and behavior should be predictable. A user with assistive technologies or cognitive limitations should not have to put forth extra effort to move around nor work within a webpage nor website. The experiences from page to page on a site, or even section to section on a page, should be routine on that website.

When an element receives focus through keyboard navigation, this focus should not change the context (the meaning of the webpage; the place of navigation – i.e., the selected focused object; nor anything in the technology such as commanding a video to start playing). Navigation can, however, trigger an event such as expanding a menu as long as focus & context remain intact.

Links that are repeated across multiple pages on a website should have the same behavior both in navigation sequence and operation.

Components that appear across multiple pages or in more than one place on a single page should be consistent. This might include appearance and identification for menu options, alt text attributes for components, semantics (i.e., “find” vs. “search”).

**USER INTERFACE: TIMED & BLINKING CONTENT**

Any content on the page that is presented in a timed manner must allow for the user to control its presentation. The content should match the user’s preference so there is enough time to read and use the content.

If the content is only available for a limited time (for example, a temporary message box), at least one of the following must be true: the user has the option of turning off the time limit; the user is warned at least 20 seconds before the time expires and has the option to extend the time limit (at least ten opportunities); or the user has the option of adjusting the time to at least ten times the length of the programmed default. Exceptions include:

- Real-time content: If the timed content is synchronized to a real-time event (for example, an auction), there is no alternative and no time control is necessary.
- Essential timed content: If the timed content is essential to the page (for example, a timed quiz), then no time control is necessary.
- Twenty hour exception: If the timed content is available for longer than 20 hours, no time control is necessary.

Any content that auto-updates or is moving, blinking, or scrolling for more than five seconds (e.g., a news ticker or a

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Banner scrolling message bar) must allow the user to stop, pause, hide or otherwise control the content. An exception to this would be if the auto-update is essential to the content/activity.

- **If there is blinking content** (e.g., flashing text), **the element can blink no more than three times per second**. Blinking content that flashes more than this threshold has been known to cause seizures.

### FORMS

- **Text labels must be associated with form input elements.**
- **Related form elements must be grouped with fieldset/legend.**
- **Navigation and control of forms should be sequential and accessible by the keyboard.**

### CONTENT: Understandable & Assistive

- **The content of a page must be clear (“readable”) and understandable by visitors and assistive technology.**
  - This begins by **programmatically specifying the language of the page and its parts using the HTML lang attribute.**

  ```html
  <html lang="en-US"><body><h1 lang="fr">C'est la guerre</h1><h2>That's war</h2> ....</body></html>
  ```

  - **Identifying and clarifying unusual words (e.g., idioms and jargon) and abbreviations the first time they are used** on a page is good practice and helps toward making the page understandable. This can be achieved through adjacent text, a linked glossary entry, or – in the case of expanding abbreviations – the **HTML abbr tag.**

    ```html
    The <abbr title="Johns Hopkins School of Public Health">JHSPH</abbr> celebrates its centennial in 2016.
    ```

- **The content of a page should help users avoid and correct mistakes.** Visitors to a page should not be penalized for making errors in their input and interaction with a page due to circumstances beyond their control.

  - **Input errors that can be programmatically determined (e.g., something other than a valid email address in a form field) should be identified along with giving text feedback to the user.** In addition to the alert, the page should be programmed so that there is less opportunity for input error (e.g., selecting input from a limited set of acceptable values in a drop-down menu instead of answering an open-ended question). If an input error does occur, the page should be programmed so that the mistake can be easily corrected without penalty, including expedient refocus to the element in question.

  - **Feedback for any input error should include suggestions for fixing the error**, unless such a suggestion is counter-productive to the page’s purpose.

  - **Labels and instructions should be used inside forms or other interactive elements to clearly guide and inform the user.** They should also be properly positioned in the programmed context of the page.

  - **Websites that provide legal and financial transactions, edit data beyond the website, or submit test responses must have one of the following qualities:** actions resulting from form submissions are reversible; data is verified (checked for input errors along with the chance for the user to correct them); or there is an opportunity to review, confirm and correct the information before any final submission.

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COMPATIBILITY

✓ The page should be composed so that its meaning and experience is retained and/or interpreted across software (browsers, plugins, and applications), platforms and assistive technologies. The webpage content and programming should be robust.

WHY? Since technologies change quickly, and AT [Assistive Technologies] developers have much trouble keeping up with rapidly changing technologies, it is important that content follow conventions and be compatible with APIs [Application Program Interfaces] so that AT can more easily work with new technologies as they evolve. (http://www.w3.org/TR/UNDERSTANDING-WCAG20/ensure-compat.html)

Make certain to avoid markup language (HTML/XHTML) errors by validating the programming. Check nesting, complete start and end tags, unique IDs, etc.

For any elements that are built to interact with the user (hyperlinks, forms, etc.), make certain these are built with accessibility in mind, thinking of technology enhancements such as screen magnifiers, screen readers, and speech recognition software. Make sure to check the following:

- the name and role can be programmatically determined;
- states, properties, and values that can be set by the user can be programmatically set;
- notification of changes to these items is available to user agents (software and assistive technologies).