Is your digital communication accessible?

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Digital Communication

- Nearly 3 billion Internet users
- Nearly 1 billion websites
- Over 96 billion emails sent today
- Nearly 2 billion Google searches today
- Over 3 billion videos viewed today on YouTube
- Over 1.2 billion active Facebook users

http://internetlivestats.com
The Typical Computer User
<table>
<thead>
<tr>
<th>Resolutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>640 x 480</td>
</tr>
<tr>
<td>640 x 480 (stretched)</td>
</tr>
<tr>
<td>720 x 480</td>
</tr>
<tr>
<td>720 x 480 (stretched)</td>
</tr>
<tr>
<td>800 x 500</td>
</tr>
<tr>
<td>800 x 600</td>
</tr>
<tr>
<td>800 x 600 (stretched)</td>
</tr>
<tr>
<td>1024 x 640</td>
</tr>
<tr>
<td>1024 x 768</td>
</tr>
<tr>
<td>1024 x 768 (stretched)</td>
</tr>
<tr>
<td>1152 x 720</td>
</tr>
<tr>
<td>1280 x 800</td>
</tr>
<tr>
<td>1280 x 1024</td>
</tr>
<tr>
<td>1280 x 1024 (stretched)</td>
</tr>
<tr>
<td>1440 x 852</td>
</tr>
<tr>
<td>1440 x 852 (stretched)</td>
</tr>
<tr>
<td>1680 x 1050</td>
</tr>
</tbody>
</table>
Ability on a continuum

- See
- Hear
- Walk
- Read print
- Write with pen or pencil
- Communicate verbally
- Tune out distraction
- etc.
Examples of "assistive technologies"
Building An Accessible Digital Environment
Can I access it without sound?
Can I access it without a mouse?
Take the #nomouse challenge!
nomouse.org
Can I access it without seeing it?

Introduction to Physics Course Syllabus Textbook Our sole text for this course will be Introduction to Physics, Second Edition, authored by the instructor. Course Objectives to offer students exposure to basic principles of Physics to provide students with rich, thought-provoking discussions during lecture sessions to provide students with experiential learning opportunities during laboratory sessions. Class Schedule Week Topic Reading Assignment 1 Course Introduction Chapter 1 2 Inertia, equilibrium, kinematics Chapters 2-3 3 Newton’s laws, vectors, momentum, energy Chapters 4-7 4 Matter, elasticity, scaling Chapters 8-10 5 Wave kinematics, sound, electricity, magnetism, induction Chapter 11-15 6 Light, reflection and refraction, emission Chapters 15-18 7 Review, final exam Grades Grades will be assigned on a ten point scale (90 to 100 is an A, 80 to 89 is a B, etc.). Homework, exams, and projects will be weighted as follows: Homework Exams Projects 1 2 Final 1 2 Final 15% 15% 15% 20% 10% 10% 15% Ce programme es également disponible en français sur demande.
Example: Syllabus with structure

Introduction to Physics
Course Syllabus

Textbook
Our sole text for this course will be Introduction to Physics, Second Edition, authored by the instructor.

Course Objectives
- To offer students exposure to basic principles of Physics
- To provide students with rich, though-provoking discussions during lecture sessions.
- To provide students with experiential learning opportunities during laboratory sessions.

Class Schedule

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<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Reading Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Course Introduction</td>
<td>Chapter 1</td>
</tr>
<tr>
<td>2</td>
<td>Kinetics, equilibrium, kinematics</td>
<td>Chapters 2-3</td>
</tr>
<tr>
<td>3</td>
<td>Newton's Laws, vectors, momentum, energy</td>
<td>Chapters 4-7</td>
</tr>
<tr>
<td>4</td>
<td>Matter, elasticity, scaling</td>
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</tr>
<tr>
<td>5</td>
<td>Wave kinematics, sound, electricity, magnetism, induction</td>
<td>Chapter 11-15</td>
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<tr>
<td>6</td>
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Grades
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<tr>
<td>15%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>10%</td>
<td>10%</td>
<td>15%</td>
</tr>
</tbody>
</table>

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Who's Responsible?

- Assistive Technologies
- Web Authoring & Development Tools
- Software & Operating Systems
- Web Developers & Content Authors
- Accessibility Standards
Example #1:
HTML Web Pages
The heading elements are

\(<H1>\), \(<H2>\), \(<H3>\), \(<H4>\), \(<H5>\), \(<H6>\)

It is not normal practice to jump from one header to a header level more than one below, for example for follow an \(H1\) with an \(H3\). Although this is legal, it is discouraged, as it may produce strange results for example when generating other representations from the HTML.
The IMG element is empty: it has no closing tag. It has two attributes:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRC</td>
<td>The value of this attribute is the URL of the document to be embedded. Its syntax is the same as that of the HREF attribute of the A tag. SRC is mandatory.</td>
</tr>
<tr>
<td>ALIGN</td>
<td>Take values TOP or MIDDLE or BOTTOM, defining whether the tops or middles of bottoms of the graphics and text should be aligned vertically.</td>
</tr>
<tr>
<td>ALT</td>
<td>Optional alternative text as an alternative to the graphics for display in text-only environments.</td>
</tr>
</tbody>
</table>

http://www.w3.org/MarkUp/draft-ietf-iiir-html-01.txt
World Wide Consortium Standards

- Hypertext Markup Language (HTML)
- Cascading Style Sheets (CSS)
- Web Content Accessibility Guidelines (WCAG) 2.0
- Accessible Rich Internet Applications (ARIA) 1.0
WCAG 2.0

• Became an official "W3C recommendation" in 2008 (WCAG 1.0 was published in 1999)
• Four principles:
  – Perceivable
  – Operable
  – Understandable
  – Robust
• 62 specific success criteria
  – Level A — 26 success criteria
  – Level AA — 13 success criteria
  – Level AAA — 23 success criteria
Example WCAG 2.0
Success Criteria at Level A/AA

- Alt text on images
- Captions on videos
- Color not the sole means of communicating information
- Proper heading structure
- Labels on form fields
- Visible indication of keyboard focus
U.S. Section 508 Standards

- Section 508 (law) requires accessibility of electronic & information technology developed, procured, maintained or used by federal agencies
- Standards published in 2000
- Technical Standards cover six categories of IT (web, software, hardware, media, telecom, & standalone)
- Refresh in progress, latest draft (Feb 2015) adopted WCAG 2.0 AA
Communicates roles, states, and properties of interface elements for the benefit of AT users. Answers questions like:

- What is this?
- How do I use it?
- Is it on/selected/expanded/collapsed?
- What just happened?

```html
<div role="alert">
  The email you entered is not valid. Please try again.
</div>
```
Adding these simple tags to sections of any web page will *greatly* improve the page navigability for screen reader users:

- role="banner"
- role="main"
- role="navigation"
- role="search"
- role="complementary" (sidebar)
- role="contentinfo" (footer)
- role="application"
Web accessibility: Who's Responsible?
For content authors:
Use headings appropriately
For content authors:
Add alt text to images
Example #2: Adobe PDF
Introduction to Physics Course Syllabus

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</tr>
<tr>
<td>20%</td>
<td>10%</td>
<td>15%</td>
</tr>
</tbody>
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Three general types:
- Image
- Document with no underlying structure
- Tagged, well-structured document
Tagged PDF

• Was introduced in Acrobat 5.0 (2001)
• Makes it possible to communicate document structure to AT users (e.g., headings, lists, alt text)
• Must use an authoring tool that supports it
  – Microsoft Word for Windows does
  – Microsoft Word for Mac does **not**
  – Google Docs does **not**
  – Adobe InDesign does, but it's complicated
• You can *fix* accessibility of any PDF using Adobe Acrobat Pro
PDF Accessibility: Who's Responsible?
Example #3: Videos
<video>
  <source src="myvideo.mp4"/>
  <source src="myvideo.webm"/>
  <track kind="captions" src="mycaps.vtt"/>
  <track kind="descriptions" src="mydesc.vtt"/>
</video>
Different *kinds* of `<track>`

- captions
- subtitles
- descriptions
- chapters
- metadata
Standard track format: WebVTT

• Stands for "Web Video Text Tracks"
• [https://w3c.github.io/webvtt/](https://w3c.github.io/webvtt/)

WEBVTT

00:00:09.165 --> 00:00:10.792
You want these people.

00:00:10.792 --> 00:00:13.759
They order your products, sign up for your services,

00:00:13.759 --> 00:00:16.627
enroll in your classes, read your opinions,

00:00:16.627 --> 00:00:18.561
and watch your videos.
Example accessible media player:
Able Player

http://ableplayer.github.io/ableplayer

[Words appear in a white box: World Wide Access.]

[Narrator] You want these people. They order your products, sign up for your services, enroll in your classes, read your opinions, and watch your videos. You'll never see them, but they know you—through your website. Or maybe not. **Your website's visitors aren't a faceless mass of identical mouse-clickers** but a vibrant community of individuals with varying tastes, styles, and abilities. This includes people with disabilities.

Terrill Thompson, Technology Accessibility Specialist

[Terrill] It's important for web designers and developers...
Captions benefit everyone!
And have many applications
Video Accessibility: Who's Responsible?
The road to better accessibility...
Seattle #a11ycamp
http://tinyurl.com/a11ysea2017
Resources

• AccessComputing
  http://uw.edu/accesscomputing
• Accessible Technology at the UW:
  http://uw.edu/accessibility
• 30 Web Accessibility Tips:
  http://uw.edu/accesscomputing/tips
• Able Player (open source accessible media player)
  http://ableplayer.github.io/ableplayer
• Terrill's blog
  http://terrillthompson.com
• These slides:
  http://staff.washington.edu/tft