



# Teaching Accessibility:

Case studies of courses that include  
accessibility topics in their curricula

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# Teach Access

Teach Access is a unique collaboration between academia, industry, and advocates for people with disabilities, formed to address the urgent need to enhance the skills of higher education students as they learn to design and develop mobile and desktop technologies. The goal is to ensure that future technologies are “born accessible,” by proliferating fundamental skills and concepts of accessible technology design and development in mainstream design, computer science, and other related disciplines.

The project was founded in 2015 by companies including Adobe, Facebook, Google, HP, Intuit, LinkedIn, Microsoft, The Paciello Group, and Verizon Media (originally Yahoo), in partnership with several universities.

<https://teachaccess.org>

# “Who Teaches Accessibility?: A Survey of U.S. Computing Faculty”

RIT: Kristen Shinohara,

UW: Saba Kawas,

Amy Ko

Richard Ladner

*2018 Proceedings of the 49<sup>th</sup> ACM Technical Symposium on Computer Science Education*, pp. 197-202.

[faculty.washington.edu/ajko/papers/Shinohara2018AccessComputingSurvey.pdf](https://faculty.washington.edu/ajko/papers/Shinohara2018AccessComputingSurvey.pdf)

# Research questions

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1. Who is teaching accessibility?
  2. What barriers do faculty see to teaching accessibility?
  3. What factors predict who is teaching accessibility?
- + What resources do you need?



# Survey sample

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- Faculty at 4-year universities & colleges
  - > Computer Science
  - > Information Science
  - > Other interdisciplinary computing departments
- Major accredited programs identified:
  - > Wikipedia
  - > Computing Research Association
  - > iSchool Caucus charter list for Information Schools

# Survey launches & response rate

SurveyGizmo, 3 launches

Emails with link to survey to

> 14,176 faculty

> from 352 institutions

Response rate: 13%

## Teaching Accessibility

Welcome

### A Research Survey

Data from this survey will help tech-industry and higher-education institutions to create resources to lower barriers to teaching accessibility in computing and information sciences.

Thank you for participating in this 3-minute survey!

This survey is sponsored by the National Science Foundation (CNS-1042260 and CNS-1539179), the University of Washington's AccessComputing, and industry partners: Facebook, Google, Adobe and Microsoft.

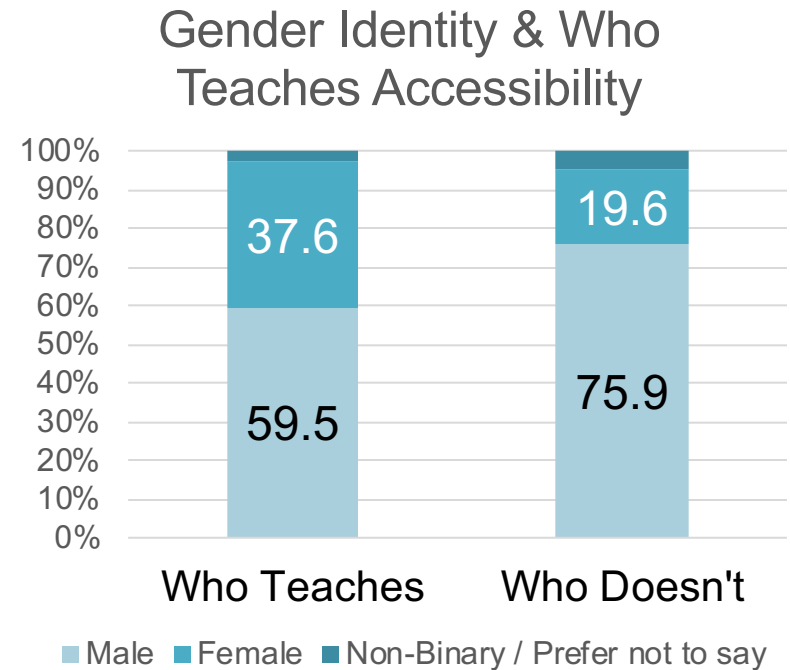


Next

0%

# 1: Who is teaching accessibility?

- 20% of respondents
- More females
- More likely to know someone with a disability
- More likely to think it is part of computing
- Most common area of expertise: Human-Computer Interaction
- 17% have a disability



# 1: Learning objectives

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- Understand technology barriers
- Understand design concepts
- Engage diverse populations
- Evaluate web accessibility standards & heuristics
- Develop accessible web technologies
- Employ design techniques
- Understand Legal regulations (Section 508, ADA)
- Understand Models of disability
- Employ accessibility-focused technical languages & tools

## 2: Challenges to incorporating accessibility

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- Not core part of curriculum
- Don't know enough to teach it
- No appropriate textbook
- Lack of students & administrator awareness
- Lack of support for topics addressing real challenges for disabled
- Difficulty engaging students
- Lack of demand in industry
- Difficult to recruit people with disabilities

## 2: What do faculty need?



- Help with connections to people with disabilities to interact with 1-1 &/or bring into classroom
- Tools, technologies, guidelines, problem examples
- Curricular samples for specific courses
- Training & other opportunities to gain expertise

## 2: We need...

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“Appropriate lesson plans for different classes (algorithms, theory, intro programming). This should be taught across the CS curriculum, not just in a specialty topics course. But, I feel that students & faculty feel that “it is not directly related to the curriculum” & so they don’t incorporate it.”

-Survey comment

# Case Studies



# Example 1

# Web Design & Development I Course Curriculum (WebD2)

**Web Design & Development I****Student Version**

[Home](#) [Lessons](#) [Resources](#) [<<< Previous](#) [Next >>>](#)

UNIT 1

**Module 3: Web Standards and Accessible Design**

**Overview**

The purpose of this module is to assure that your web projects are accessible to all possible users. Computer users are incredibly diverse. They access the Web using a wide variety of browsers on different operating systems. They have different screen resolutions, font sizes, and color schemes. Many users access the Web on tablet computers with touch screens, or on mobile phones. Many users have disabilities and access the web with custom configurations or using assistive technologies. Web standards are the rules that govern how web pages are built so they work for all these different users. In this module you will learn about standard web coding languages, HTML and CSS, and will learn about the different versions of HTML that are available. You will also learn how web pages can erect barriers for users with disabilities if they aren't designed and coded properly, and will learn about accessibility standards that help you to create web pages that are fully accessible to everyone.

**Lessons**

- Lesson 1: [Web Standards](#)
- Lesson 2: [How People with Disabilities Access the Web](#)

[uw.edu/accesscomputing/webd2](http://uw.edu/accesscomputing/webd2)

# Teaching Respect for Diversity while Teaching Coding

- There is no technology without *users*
- Each user is different
- When learning to code, students should actively consider their *users*, including user differences
- All this diversity provides technology teachers with a great opportunity!

# WebD2 Features

- Teaches standards-based & accessible web design
- Is platform & vendor-neutral  
(teaches concepts, not specific tools)
- Standards-based, accessible design is taught early as a core design principle, & reinforced throughout the course
- For assignments students must use valid code & conform to accessibility standards

# Course Outline

1. Designing & Planning Web Pages
2. Creating Content & Structure with HTML
3. Formatting Web Pages with Style Sheets
4. Graphics
5. Scripting
6. Quality Control
7. Website Management & Authoring Tools
8. Client Website / Final Project

## Example 2

<https://info343-au16.github.io/>



“Hey guys, interested in incorporating accessibility into INFO 343?”



“Sure!”



“Hey Terrill, can you teach these three about web accessibility basics?”



“Sure!”





“Here are the most critical parts  
of the most critical standards”



“We could redesign our  
overview of markup to  
cover these...”



“Who wants to commit to  
doing this?”  
Testing?



“I will! I’m teaching a  
summer course  
where I can test it out.”



“How’s the summer course planning going?”



“Good! I was just about to revise the lesson this week.”



“How did the lesson go?”



“It was much better than the last version; more engagement, especially with screen readers.”



“Have you guys seen Joel’s new accessibility lesson?”

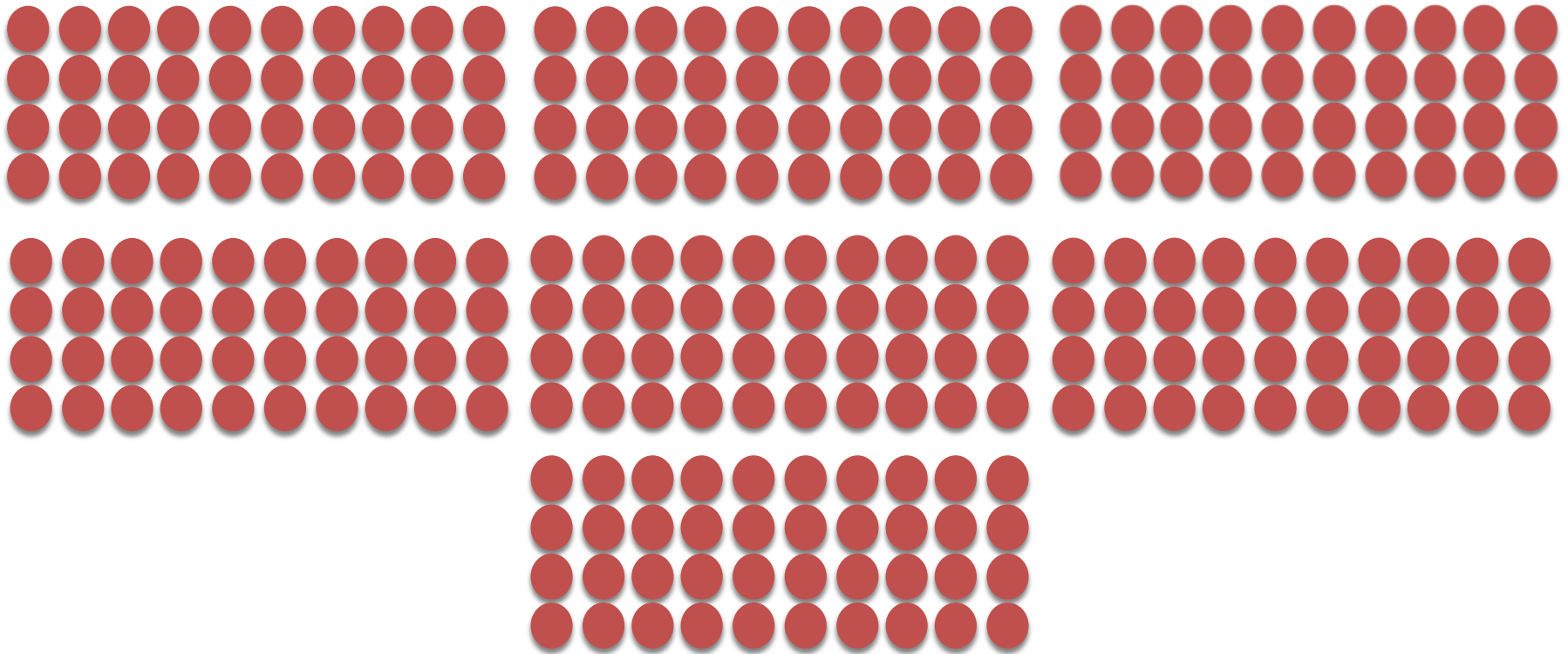


“No. How’d it go Joel? Can I use it?”



“Sure, here’s the link.”

280 web developers per year now  
know accessibility basics.



# From the INFO 343 Course Description:

“This course will teach you the skills and techniques necessary for creating **sophisticated and accessible interactive web applications**. It focuses on the client-side languages, tools, and libraries that professionals use to build the web sites you use every day. We will learn not only the basic syntax and mechanics of web development, but also the **best practices that separate professional developers from amateurs**.”





## EDIT 526: WEB ACCESSIBILITY AND DESIGN

*AHG 2019 – Teaching Accessibility: Case studies of courses that include accessibility topics in their curricula*

**Assistive Technology Initiative (ATI)**  
**Korey Singleton, ATI Manager**





# EDIT 526: Web Accessibility & Design

- *2 or 3-credit, 7-week summer course (8-weeks in previous years)*
- **Session Description:**
  - Develops understanding of principles of universal web design. Students apply this understanding by designing and developing accessible web site using web authoring tools.
- **Course Description on Web:** <https://cehd.gmu.edu/courses/EDIT-526/>
- **Target Audience:**
  - Course is geared towards students enrolled in CEHD's graduate e-learning certificate and Masters programs;
  - Undergrads starting in Summer 2020 as part of new Learning Design program

# EDIT 526

## Course Schedule

- Course built around 8 asynchronous modules. Each incorporates readings, video (lecture/demo), discussion, and assessments).
- 3 synchronous sessions to support hands-on activities and discussion
- 6 assignments and final project (Build an accessible website using HTML & CSS)
- *60+ knowledge checks*

Week	Topic	Assessment
1	<ul style="list-style-type: none"> <li>• Overview of web accessibility, usability, disability, and AT</li> <li>• AT Simulation Activities</li> </ul>	Simulation Lab Report
2	<ul style="list-style-type: none"> <li>• Disability Laws &amp; Guidelines</li> <li>• Document Accessibility (Word, PPT, PDF/3cr)</li> </ul>	Creating an Accessible Word, PPT, & PDF document
3	Testing Websites & Software Apps	
4	Testing Websites & Software Apps	Testing a Website for Accessibility
5	<ul style="list-style-type: none"> <li>• Designing Websites</li> <li>• HTML Basics</li> </ul>	Create a Practice Web Page
6	Complex HTML Elements and CSS	Complex Images, Tables, Forms, Basic CSS
7	<ul style="list-style-type: none"> <li>• Complex HTML Elements and CSS cont.</li> <li>• ARIA</li> <li>• Accessible Video</li> </ul>	
8	Final Project	Create an accessible instructional product using HTML & CSS

# Sample Resources – Intro to Web Accessibility

## Intro to Web Accessibility

- WebAIM – [Intro to Web Accessibility](#)
- W3C – [Intro to Web Accessibility](#)
- UW – [Accessible Web Design](#) (Video)

## How Individuals with Disabilities are Impacted on the Web

- WebAIM – [Visual](#), [Auditory](#), [Motor](#), [Cognitive](#)
- W3C – [Web Accessibility Perspectives](#) (Video)

# Sample Resources – Hands-On

## **Web Accessibility Testing**

- [Easy Checks – A First Review of Accessibility](#)
- Colour Contrast Analyser
- WAVE, ANDI

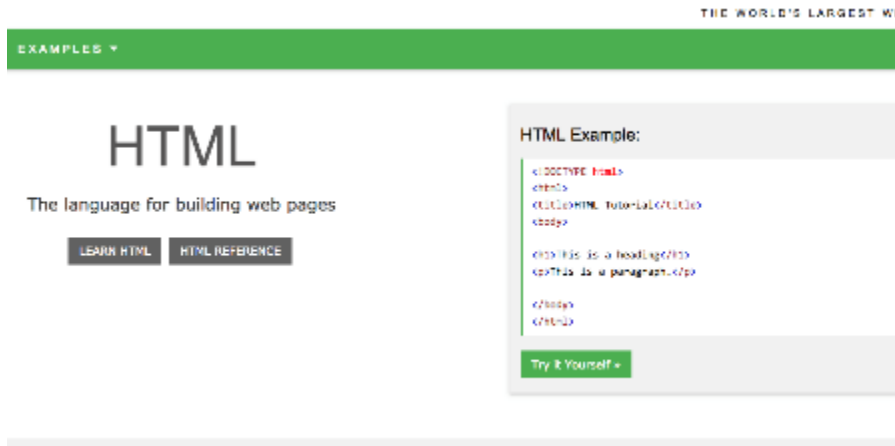
## **Technology Supports (AT, video, etc.)**

- Jaws/NVDA, Built-in accessibility tools, YouTube

# Sample Resources – Hands-On cont...

## Web Design & Accessibility (Coding)

- jsfiddle.net ([HTML & CSS](#))
- Textbook – Recommended, not required
- W3Schools.com – [HTML5](#), [CSS](#)



# Impact (*since 2016*)

**Course has served as an incubator of sorts...**

## **Student Training – 94 students, 5 faculty**

- Instructional Technology Masters & eLearning Certificate Programs (*Elective*)
- Assistive Technology Masters & Certificate Programs (*Elective*)
- Modules shared with faculty
  - CEHD/AT (2)
  - CHSS/Digital History
  - Volgenau/Systems Analysis & Design
  - Volgenau/Intro to Computing

## **Faculty/Staff Training – 50+ faculty**

- Office of Digital Learning (modules used for accessibility training)
  - SOUPR – 8-week faculty cohort (voluntary)
  - OCDI – 1-yr ID supported development (funded)



# Impact (*since 2016*) cont.

## ***Staff (Testing)***

- *Office of Digital Learning*
  - LMS tools (e.g., Padlet, Supplemental applications, H5P)
- *Learning Spaces Design Team*
  - GUI Interface for instructor workstations



# Contact Us

## Assistive Technology Initiative

- Aquia Building, Rm. 238
- Mail Stop: 6A11
- Phone: 703-993-4329
- Email: [ati@gmu.edu](mailto:ati@gmu.edu)
- ATI Website: <http://ati.gmu.edu>







# Teaching Accessibility with Resources from WAI

**Shadi Abou-Zahra, World Wide Web Consortium (W3C)  
W3C Accessibility Strategy and Technology Specialist  
@sabouzah**

## **W3C Web Accessibility Initiative (WAI) works on:**

- Ensuring accessibility support in W3C technologies
- Creating guidelines for web and digital accessibility
- Developing methods for conformance evaluation
- Providing resources for education and training
- Ensuring harmonized and coordinated standards

# WAI Website



w3.org/WAI

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*Strategies, standards, resources to make  
the Web accessible to people with  
disabilities*

[Get Involved](#) | [About W3C WAI](#)



[Accessibility Fundamentals](#)

[Planning & Policies](#)

[Design & Develop](#)

[Test & Evaluate](#)

[Teach & Advocate](#)

[Standards/Guidelines](#)

## Making the Web Accessible

[Hide Section](#)

Strategies, standards, and supporting resources to help you make the Web more accessible to people with disabilities.



W3C

The World Wide Web Consortium (W3C) develops international standards for the Web: HTML, CSS, and many more.



WAI

The W3C Web Accessibility Initiative (WAI) develops standards and support materials to help you understand and implement accessibility.



You

You can use W3C WAI resources to make your websites, applications, and other digital creations more accessible and usable to everyone.

## News

[ACT Rules Format is a Web Standard "W3C Recommendation"](#)

See what we have for you:

## Get Resources for...

• [Content Writers](#)

• [Designers](#)

• [Trainers,  
Educators](#)

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## **Web Accessibility Perspectives short videos:**

- Series of 10 videos, each of less than 1 minute
- Each video shows one “feature” of accessibility
- Describes the broader benefits for everyone
- Provides further reading and guideline references

# Getting Started Tips



## Tips for Getting Started with Web Accessibility:

### ■ Tips for Writing

- Titles, Heading, link text, instructions, text, ...

### ■ Tips for Designing

- Colors, navigation, feedback, viewports, ...

### ■ Tips for Developing

- Form controls, markup structure, coding, ...

## Web Accessibility Tutorials:

- Page Structure
- Menus
- Images
- Tables
- Forms
- Carousels

# Before & After Demo



## Accessible Home Page Before and After Demonstration



Improving a Web site using Web Content Accessibility Guidelines (WCAG) 2.0

Overview

Home

News

Tickets

Survey

Template

Inaccessible:

[Home Page](#)

[Report](#)



Show

Accessible:

▶ [Home Page](#) ◀

[Report](#)

Annotations



CITYLIGHTS

*your access to the city*



Quick Menu

Go

**Traffic:** Construction work on Main Road

**Today:** Tuesday 19 November 2019, Sunny Spells, 23°C



HOME



NEWS

## Welcome to CityLights

Citylights is the new portal for visitors and residents. Find out what's on, book tickets, and get the latest news.

Citylights Concert



## Easy Checks – A First Review of Web Accessibility:

- Page titles
- Text alternatives
- Headings
- Contrast ratio
- Resize text
- Keyboard
- ...



# Several More...



w3.org/WAI

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**W3C** Web Accessibility  
Initiative WAI

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# New: WAI Curricula



## **Role-based and modular curricula to support:**

- Integrating accessibility into mainstream courses
- Developing courses specifically on accessibility
- Comparing and selecting from course offerings
- Creating contracts and request for proposal (RFP)

# Curricula Outline



	Developer	Designer	Author	Tester	Manager
Level 1	Introduction to Web Accessibility				
Level 2	TBD	TBD	TBD	TBD	TBD
Level 3	TBD	TBD	TBD	TBD	TBD

## Curriculum “Introduction to Web Accessibility”:

- What is Web Accessibility
- People and Digital Technology
- Business Case and Benefits
- Principles, Standards, and Checks
- Getting Started with Accessibility

# Soon: Free Course



## **W3Cx Course “Introduction to Web Accessibility”:**

- Free online course built on WAI Curriculum
- Developed in cooperation with the UNESCO
- Featuring a selection of international experts
- Approximately 20 hours effort over 5 weeks
- All course materials will be freely available
- Expected to launch first run in early 2020

# Get Involved



## Several ways to get involved with WAI:

- Explore, use, and promote the materials
- Send us your feedback and comments
  - Information provided on each page
- Actively participate in working groups
  - May require W3C membership (depends)
  - Usually start with lighter involvement form

# Thank You



## w3.org/WAI

**Shadi Abou-Zahra**

- [w3.org/people/shadi](https://w3.org/people/shadi)
- [shadi@w3.org](mailto:shadi@w3.org)
- [@sabouzah](#)

