Accessibility (A11y) & Universal Design
• Understand
  • Principles of universal design
  • Application of universal design to technology and to accessibility
  • CSU Accessible Technology Initiative
  • Accessibility best practices

• Be able to
  • Conduct a four-point accessibility evaluation
Americans with Disabilities Act (ADA)

Section 508
Accessibility compliance

State of California Government Code Section 11135

CSU E.O. 926
"It is the policy of the CSU to make information technology resources and services accessible to all CSU students, faculty, staff and the general public regardless of disability."

Accessible Technology Initiative
• Instructional Materials
• Web
• Procurement
Need for Accessibility

• 20% of the U.S. population has at least one disability (U.S. Census Bureau: Disability [2010])

• 11% of college students report a disability (U.S. Department of Education, National Center for Education Statistics. [2016])

• Nearly 1 in 5 people have disability in the U.S. (U.S. Census Bureau Reports [2010])
What is Accessibility and Universal Design?

ACCESSIBILITY
Accessibility ensures everyone can perceive, understand, engage, navigate, and interact with technology regardless of device, software, or product without barriers.

UNIVERSAL DESIGN
The design that is simple, useful and accommodates a wide range of individual preferences and abilities.

EVERYONE!
Accessibility is not about disability; it’s actually about ability. It’s about making it easy for everyone.
Understanding Accessibility (2 of 2)

**VISION**
- Low vision, blind, colorblind, etc.
- Screen readers
- Braille display
- High contrast settings
- Magnifiers

**HEARING**
- Deaf, hard of hearing, noisy environment
- Sign language
- Captions/Subtitles
- Transcripts

**MOBILITY**
- Muscular dystrophy, arthritis, injury, etc.
- Keyboard only
- Speech to text

**COGNITIVE**
- Learning disability, dyslexia, ADHD, etc.
- Digital content layout
- Information organization

**LEARNING**
- Learning styles, preferences, etc.
- Visual learners
- English as a Second Language (ESL)
- Accents
What is Assistive Technology?

Assistive Technology (AT) are “products, equipment, and systems that enhance learning, working, and daily living for persons with disabilities.”
What are Screen Readers

Screen readers are a form of assistive technology (AT) software that enables access to a computer, and all the things a computer does, by attempting to identify and interpret what is being displayed on the computer screen using text-to-speech. Screen readers can only access and process live text.

Normally used by someone who is visually impaired.
Types of screen readers

**JAWS**
Job Access With Speech

Screen reader program for Microsoft Windows that allows blind and visually impaired users to read the screen either with a text-to-speech output or by a refreshable Braille display.

**VoiceOver (Apple)**

Provides auditory descriptions of each onscreen element using gestures, a keyboard, or a braille display.

**TalkBack**
Screen Reader

Adds spoken, audible, and vibration feedback to your device.

**ZoomText**

Screen magnifier for Microsoft Windows that allows you to see and hear everything on the computer.
Benefits of using a screen reader

• **provides access** to someone who does not have useful vision, mobility or has a learning disability to access text on the screen

• offers same level of **independence** and privacy as anyone else
Principles for Information and Communication Technology (ICT)

- **Perceivable**: so that individuals with visual impairments can understand the information being conveyed
- **Operable**: navigate to information in multiple methods (not only the mouse)
- **Understandable**: understandable enough so that all different learning styles can engage
- **Robust**: IT products should be compatible with a user’s desired technologies or system preferences
Universal Design Principles

1. **Equitable use.** The design is useful and marketable to people with diverse abilities. For example, a website that is designed to be accessible to everyone, including people who are blind and use screen reader technology, employs this principle.

2. **Flexibility in Use.** The design accommodates a wide range of individual preferences and abilities. An example is a museum that allows visitors to choose to read or listen to the description of the contents of a display case.

3. **Simple and intuitive.** Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level. Science lab equipment with clear and intuitive control buttons is an example of an application of this principle.

4. **Perceptible information.** The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities. An example of this principle is captioned television programming projected in a noisy sports bar.

5. **Tolerance for error.** The design minimizes hazards and the adverse consequences of accidental or unintended actions. An example of a product applying this principle is software applications that provide guidance when the user makes an inappropriate selection.

6. **Low physical effort.** The design can be used efficiently, comfortably, and with a minimum of fatigue. Doors that open automatically for people with a wide variety of physical characteristics demonstrate the application of this principle.

7. **Size and space for approach and use.** Appropriate size and space is provided for approach, reach, manipulation, and use regardless of the user's body size, posture, or mobility. A flexible work area designed for use by employees who are left- or right-handed and have a variety of other physical characteristics and abilities is an example of applying this principle.

**Universal Design: Process, Principles, and Applications (UW)**
Universal Design
Universal Design Example
Mobile Universal Design

- Siri, Genie, etc.
- Dictation
- Predictive text
- Vibrating/flashing alerts
- Safari Reader
- Screen Reader
Is Captioning Universal Design?
Multimedia Captioning

• CSUN is committed to ensuring that all content utilized by the campus is accessible to all users. This means that all videos, audio, captured lectures, recorded presentations— instructional media—must have closed captions. (This is a federal law, state law, and CSU policy.)

• All students who are enrolled in a course must be able to access the content in the course.

• Visit the Request Services webpage to request media captioning through NCOD: Deaf and Hard of Hearing Services.
Inspired by Universal Design

Universal Design for LEARNING

A research-based set of principles to guide the design of learning environments that are accessible and effective for all.

Expression
providing several ways to demonstrate learning

Representation
presenting the same instruction in multiple ways

give all learners equal opportunities to learn including

- vision
- hearing
- mobility
- learning
- talk

Engagement
extending a variety of opportunities for connection and interaction

Learning Opportunities for All

every LEARNER is unique
Universal Design for Learning (UDL)

UDL applies these concepts in the education context, with the goal of minimizing barriers and maximizing learning for all students.

**RECOGNITION NETWORKS:**
THE **WHAT** OF LEARNING

**REPRESENTATION**
Present information and content in different ways

**Example:** Captions and transcripts to accompany audiovisual materials

**STRATEGIC NETWORKS:**
THE **HOW** OF LEARNING

**ACTION & EXPRESSION**
Provide multiple ways for students to interact with material and express their knowledge

**Example:** Tests that include different question types such as long answer and multiple choice

**AFFECTIVE NETWORKS:**
THE **WHY** OF LEARNING

**ENGAGEMENT**
Look for different ways to motivate and inspire students

**Example:** Interactive skill-building exercises
POUR
Best Practices

Alternative Text
Images
Shapes

Navigation/Links
Link requirements

Structure
Headings
Lists, etc.

User Interface
Keyboard accessibility

Color
Color contrast
Meaning without color
Web Accessibility Perspectives: Understand Content
Organize content with headings, subheadings, images, videos, and footer are important for **usability** and **accessibility**.
Headings Structure Example

Example 1: Reading long, dense text documents can be a daunting task for learners

As part of our commitment to excellence through diversity and inclusion, California State University, Northridge (CSUN) strives to ensure that campus communication and information technology is accessible to everyone. The California State University system statement on accessibility is articulated in California State University - Executive Order 1111, in accordance with both federal and state laws including the Americans with Disabilities Act of 1990 (ADA) and Section 508 of the U.S. Rehabilitation Act.

Need assistance or have a question not answered here? Please contact the Universal Design Center (UDC) at UDC@csun.edu or, during business hours (Monday through Friday, 8am to 5pm Pacific time), at (818) 677-5898.

In this context, “accessibility” means that people with disabilities have access – to facilities, to information and to technology.

“Universal design” takes this concept one step further, to ensure that everyone can perceive, understand, engage, navigate and interact regardless of ability or preference.

The UDC supports the campus community in their efforts to make it possible for individuals to learn, communicate, and share via information and communication technology. One way we do this is by assisting the campus community to ensure their information and communication technology is interoperable, usable and accessible, so that individual learning and processing styles and/or physical characteristics are not barriers to access.

The role of the UDC is to help CSUN implement business practices which enable the campus to meet policy standards under the Accessible Technology Initiative Coded Memoranda.

What does this mean to me?

Everyone has a part in creating accessible and usable information. The responsibility of creating and maintaining accessible content falls to the entire campus community.

Example 2: Well-structured documents help students organize and process texts

Universal Design Center

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Universal Design Center Mission

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Shared Campus Responsibility

Everyone has a part in creating accessible and usable information. The responsibility of creating and maintaining accessible content falls to the entire campus community.
Screen readers rely on **headings structure** to navigate a page quickly.

**Website**

```html
<h1> Main Heading </h1>
<h2> Sub Heading </h2>
  <h3> Sub sub heading </h3>
<h2> Sub Heading </h2>
  <h3> Sub sub heading </h3>
```

**Canvas**

**Header 2** - This is the Title

**Header 3** - This is the sub title

**Header 4** - This is a category

**Paragraph** - This is the body of the content
How might this image appear to a person who has a visual challenge?

Normal vision

Low vision

Color blindness

Blind or deaf-blind

Solution?
Alternative or Alt Text

• A written description of images and/or objects that can be read by a blind or low vision using screen reader technology.

• Screen readers and other assistive technologies can’t convert images into words/texts.

• Captions are universal and accessible for everyone.

• “Image of…”, “photo of…” is not needed.

• Be brief and descriptive text within 8 to 80 characters long

Tiny turtle eating a ripe strawberry.

Best practices for accessible images.
Can a screen reader read color contrast?
Meaning without Color

Fill Out the form below to register now

All field in red are required information

Contact Information

First Name: __________________________

Last Name: __________________________

City: ________________________________

Can a screen reader read color?

Submit Query
Color

Web Accessibility Perspectives: Colors with Good Contrast
Keyboard Navigation or Touch

• Users should be able to get to content without using a mouse
  • Keyboard
  • Hearing
  • Touch

• Users should be able to access content on different screens (phone, tablet, etc.)
Keyboard or Touch

Web Accessibility Perspectives: Keyboard Compatibility
Navigation and links

• Link text should clearly identify the target of each link. Good link text should not be overly general.
  • Do not use click here or read more or continue.
  • Do not use different link text to refer to the same resource.
  • Do not use the same link text to refer to different resources.

• Tab order should read from the upper left to the lower right, and make sense to both sighted and visually impaired users.

• Pages with links to files that require a special reader or plug-in should contain a link to obtain the reader or plug-in.
Microsoft Office Accessibility Checker

- Protect Document: Control what types of changes people can make to this document.
- Inspect Document: Before publishing this file, be aware that it contains:
  - Document properties and author's name
- Check Accessibility: Check the document for content that people with disabilities might find difficult to read.
- Check Compatibility: Check for features not supported by earlier versions of Word.
Four-point Accessibility Evaluation

**FONT**
Is the font styling easy to read?

**COLOR**
Is the font color easy to read?

**TAB**
Can a user “tab” through the functions?

**ENLARGE**
Can a user make the font bigger? (ctrl +)
You **CAN** make a big difference

Best education and resources available to **EVERYONE** providing **ACCESSIBLE**

Make one design that fits everyone

- **Documents**
- **Website**
- **Media with captioning**
The POWER of CONNECTION

Accessibility

Universal Design

Barrier-Free
access & student success
Reflection

- Creating accessible digital content can’t happen overnight.
- Accessibility and Universal Design is for everyone.