UNIVERSAL DESIGN AND INCLUSION: FACILITATING SUCCESS IN THE CLASSROOM

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While courses, technology, and student services are typically designed for the narrow range of characteristics of the average student, the practice of universal design in education (UDE) considers people with a wide range of characteristics in the design of all educational products and environments. UDE goes beyond accessible design for people with disabilities to make all aspects of the educational experience more inclusive for students, parents, staff, instructors, administrators, and visitors with a great variety of characteristics. These characteristics include those related to gender, race and ethnicity, age, stature, disability, and learning style.

Originally applied in the field of architecture and later to commercial products and information technology, UDE applications are relatively new. UDE provides a philosophical framework for the design of a broad range of educational products and environments. These include

- computer and science labs,
- curriculum,
- educational software,
- instruction,
- libraries,
- professional organizations,
- registration options,
- student housing and residential life,
- websites, and
- other student services.

Definition and Principles of UD

The term universal design (UD) was coined by the architect Ronald Mace, who challenged the conventional approach of designing for the average user and provided a design foundation for more accessible and usable products and environments. Mace and other visionaries developed the definition of UD used by the Center for Universal Design (CUD) at North Carolina State University: “the design of products and environments to be usable to the greatest extent possible by people of all ages and abilities” (Story, Mueller, & Mace, 1998). Universal design puts high value on both diversity and inclusiveness.

A group of architects, product designers, engineers, and environmental design researchers at the CUD established seven principles for the universal design of products and environments (The Center for Universal Design, 1997). These principles of UD are listed below. Each is followed by an example of its application.

1. Equitable use. The design is useful and marketable to people with diverse abilities. Career services example: Job postings in formats accessible to people with a broad range of abilities, disabilities, ages, racial, and ethnic backgrounds.

2. Flexibility in use. The design accommodates a wide range of individual preferences and abilities. Campus museum example: A design that allows a visitor to choose to read or listen to the description of the contents of display cases.

3. Simple and intuitive use. Use of the design is easy to understand, regardless of the user’s experience, knowledge, language skills, or current concentration level. Assessment example: Testing in a predictable, straightforward manner.

4. Perceptible information. The design communicates necessary information effectively to the user, regardless of ambient conditions or the user’s sensory abilities. Dormitory example: An emergency alarm system with visual, aural, and kinesthetic characteristics.

5. Tolerance for error. The design minimizes hazards and the adverse consequences of accidental or unintended actions. Instructional software example: A program that provides
guidance when the student makes an inappropriate selection.

6. **Low physical effort.** The design can be used efficiently and comfortably and with a minimum of fatigue. Curriculum example: Software with on-screen control buttons that are large enough for students with limited fine motor skills to select easily.

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. Science lab example: An adjustable table and work area that is usable by students who are right- or left-handed and have a wide range of physical characteristics and abilities.

**Universal Design in Education**

UD has been applied to many educational products (computers, websites, software, textbooks, and lab equipment) and environments (dormitories, classrooms, student union buildings, libraries, and distance learning courses). Unlike an accommodation for a specific person with a disability, the practice of UDE benefits all students, including those who are not receiving disability-related accommodations from the school. The following sections show examples of universal design applications in educational settings: physical spaces, information technology (IT), instruction, and student services.

**UD of Physical Spaces**

UD can be applied to physical spaces to ensure that they are welcoming, comfortable, accessible, attractive, and functional. Specific considerations should be made for climate, entrances and routes of travel, furniture and fixtures, information resources and technology, and safety.

When UD is applied, individuals with and without disabilities can use the same entrances and of travel routes. The climate is welcoming and accessible for everyone.

For example, in a universally designed classroom furniture is adjustable in height and can be easily arranged for different learning activities and groupings. A universally designed facility includes clear directional signs in large, high-contrast print.

Another example of UD of physical spaces is doors with sensors that automatically open for individuals carrying packages, those using wheelchairs, the elderly who experience weakness, parents pushing baby strollers, and workers using rolling carts to deliver products.

UD guidelines can be tailored to specific environments. For example, Universal Smart Home Design is “the process of designing products and housing environments that can be used to the greatest extent possible for people of all ages, abilities, and physical disabilities” (Schwab, 2004, p. 24).


**UD of Information Technology**

IT has the potential to level the playing field or widen the gaps in educational and career attainment between individuals who have disabilities (or are from other minority groups) and members of the majority. Design guidelines to assist computer manufacturers and software developers in creating products that are usable by a broad audience were developed by a group of professionals representing different stakeholder groups. Each
guideline, listed below, is phrased as an objective followed by examples of how the objective might be achieved.

1. **Output and Displays.** Includes all means of presenting information to the user. The design should maximize the number of people who can
   - hear auditory output clearly enough.
   - not miss important information if they can’t hear.
   - have a line of sight to visual output and reach printed output.
   - see visual output clearly enough.
   - not miss important information if they can’t see.
   - understand the output (visual, auditory, other).
   - view the output display without triggering a seizure.

2. **Input and Controls.** Includes keyboards and all other means of communicating to the device. The design should maximize the number of people who can
   - reach the controls.
   - find the individual controls or keys if they can’t see them.
   - read the labels on the controls or keys.
   - determine the status or setting of the controls if they can’t see them.
   - physically operate controls and other input mechanisms.
   - understand how to operate controls and other input mechanisms.
   - connect special alternative input devices.

3. **Manipulations.** Includes all actions that must be directly performed by a person in concert with the product or for routine maintenance (e.g., inserting disk, loading tape, changing ink cartridge). The design should maximize the number of people who can
   - physically insert and remove objects as required to operate a device.
   - physically handle and open the product.
   - remove, replace, or reposition often-used detachable parts.
   - understand how to carry out the manipulations necessary to use the product.

4. **Documentation.** Focuses on operating instructions. The design should maximize the number of people who can
   - access the documentation.
   - understand the documentation.

5. **Safety.** Includes alarms and other protections from harm. The design should maximize the number of people who can
   - perceive hazard warnings.
   - use the product without injury due to unperceived hazards or the user’s lack of motor control. (Vanderheiden & Vanderheiden, 1992)

Applications of these guidelines to IT have demonstrated that it is possible to create products that are simultaneously accessible to people with a wide range of abilities, disabilities, and other characteristics.

The World Wide Web Consortium (W3C), which develops and maintains protocols used on the web to ensure interoperability, is committed to universal design. As expressed by its director, “The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect” (Web Accessibility Initiative, n.d.). W3C’s Web Accessibility Initiative (WAI) has developed guidelines and checkpoints for the accessible design of websites. In 2001, the U.S. Access Board adopted much of the earlier work of the WAI when it developed minimum accessibility standards for IT designed, procured, and used by federal agencies as mandated by the 1998 amendments to Section 508 of the Rehabilitation Act of 1973. The Section 508 standards are used as guidelines by many states, educational institutions, and other organizations not directly covered by the legislation.
Many IT companies do not take the full spectrum of user diversity into account when they develop products, unintentionally erecting barriers to their use by people with disabilities and others. Nevertheless, during their procurement process, institutions can express the desire to purchase accessible IT and inquire about the accessibility features of specific products. Once purchased, staff can place computers for students in accessible locations and provide some adjustable tables and commonly used assistive technology.

**UD of Instruction**

The Center for Applied Special Technology (CAST) focuses its efforts on universal design for learning (UDL), especially as it applies to technology-based curriculum. It defines UDL as “a research-based set of principles that together form a practical framework for using technology to maximize learning opportunities for every student” (Rose & Meyer, 2002, Preface). When UDL is applied, curriculum designers create products to meet the needs of students with a wide range of abilities, learning styles, and preferences. The UDL curriculum “reflects an awareness of the unique nature of each learner and the need to address differences” by offering:

- **Multiple means of representation**, to give learners various ways of acquiring information and knowledge;
- **Multiple means of action and expression**, to provide learners alternatives for demonstrating what they know; and
- **Multiple means of action and engagement**, to tap into learners’ interests, offer appropriate challenges, and increase motivation. (CAST)

In 1997, a meeting of researchers and product developers on universal design was convened by ERIC/OSEP Special Project funded by the U.S. Department of Education. Participants stated, “Publishers should prepare and teachers should select instructional materials that are supportive and inclusive of students who have wide disparities in their abilities to see, hear, speak, read, etc.” (Orkwis & McLane, 1998, p. 13). The group recommended the following first steps for curriculum developers and teachers:

1. Provide all text in digital format.
2. Provide captions for all audio.
3. Provide educationally relevant descriptions for images and graphical layouts.
4. Provide captions and educationally relevant descriptions for video.
5. Provide cognitive supports for content and activities:
   - Summarize big ideas.
   - Provide scaffolding for learning and generalization.
   - Build fluency through practice.
   - Provide assessments for background knowledge.
   - Include explicit strategies to make clear the goals and methods of instruction. (Orkwis & McLane, 1998, pp. 14-15)

Unfortunately, most instructional software available today does not apply these recommendations. Instead of including flexible features that provide access to students with disabilities, they continue to unintentionally erect barriers to the curriculum.

Universal design can be applied to all aspects of instruction—teaching techniques, curricula, assessment—as indicated in the following guidelines. (For details, see the publication and video *Equal Access: Universal Design of Instruction* at [www.uw.edu/doit/Video/ea_udi.html].)

- **Class Climate.** Adopt practices that reflect high values with respect to both diversity and inclusiveness.
- **Interaction.** Encourage regular and effective interactions between students and the instructor and ensure that communication methods are accessible to all participants.
- **Physical Environments and Products.** Ensure that facilities, activities, materials, and equipment
are physically accessible to and usable by all students and that all potential student characteristics are addressed in safety considerations.

- **Delivery Methods.** Use multiple, accessible instructional methods that are accessible to all learners.
- **Information Resources and Technology.** Ensure that course materials, notes, and other information resources are engaging, flexible, and accessible for all students.
- **Feedback.** Provide specific feedback on a regular basis.
- **Assessment.** Regularly assess student progress using multiple, accessible methods and tools and adjust instruction accordingly.
- **Accommodation.** Plan for accommodations for students whose needs are not met by the instructional design. (Burgstahler, 2007a)

**UD of Student Services**

UD can be applied to student services to make them accessible to and usable by all students. These services include computer labs, libraries, admissions, registration, financial aid, advising, career services, housing, tutoring and learning centers, and student organizations. When universal design is applied, everyone feels welcome, is able to get to the facility and maneuver within it, access materials and electronic resources, and participate in events and other activities. Efforts should be made in the following areas. (For details, see Equal Access: Universal Design of Student Services at www.uw.edu/doit/Brochures/Academics/equal_access_ss.html.)

- **Planning, Policies, and Evaluation.** Consider diversity issues as you plan and evaluate services.
- **Physical Environments and Products.** Ensure physical access, comfort, and safety within an environment that is welcoming to visitors with a variety of abilities, racial and ethnic backgrounds, genders, and ages.
- **Staff.** Make sure staff are prepared to work with all students.
- **Information Resources and Technology.** Ensure that publications and websites welcome a diverse group and content is accessible to everyone.
- **Events.** Ensure that everyone can participate in events sponsored by the organization. (Burgstahler, 2007c)

**Further Information About UDE**

For more information about applications of universal design consult www.uw.edu/doit/Resources/udesign.html or The Center for Universal Design in Education at www.uw.edu/doit/CUDE/. The book Universal Design in Higher Education: From Principles to Practice published by Harvard Education Press shares perspectives of UD leaders nationwide. To receive a 20% discount visit the DO-IT website.

**Resources**


Center for Applied Special Technology (CAST). www.cast.org/udl/
The Center for Universal Design in Education. www.uw.edu/doit/CUDE/

Electronic and Information Technology Accessibility Standards (Section 508). [www.accessboard.gov/508.htm](http://www.accessboard.gov/508.htm)


Vanderheiden, G. C., & Vanderheiden, K. R. (1992). *Guidelines for the design of consumer products to increase their accessibility to people with disabilities or who are aging (Working Draft 1.7).* University of Wisconsin–Madison, Trace Research and Development Center. [www.trace.wisc.edu/docs/consumer_product_guidelines/toc.htm](http://www.trace.wisc.edu/docs/consumer_product_guidelines/toc.htm)


About DO-IT

DO-IT (Disabilities, Opportunities, Internetworking, and Technology) serves to increase the successful participation of individuals with disabilities in challenging academic programs and careers such as those in science, engineering, mathematics, and technology. Primary funding for DO-IT is provided by the National Science Foundation, the State of Washington, and the U.S. Department of Education.

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College of Education
Precollege and college students come from a variety of ethnic and racial backgrounds. For some, English is not their first language. Also represented in most classes are students with a diversity of ages and learning styles, including visual and auditory. In addition, increasing numbers of students with disabilities are included in regular precollege and postsecondary courses. Their disabilities include blindness, low vision, hearing impairments, mobility impairments, learning disabilities, and health impairments.

Students are in school to learn and instructors share this goal. How can educators design instruction to maximize the learning of all students? The field of universal design (UD) can provide a starting point for developing a framework for instruction. You can apply this body of knowledge to create courses that ensure lectures, discussions, visual aids, videos, printed materials, labs, and fieldwork are accessible to all students.

**Universal Design**

Designing any product or environment involves the consideration of many factors, including aesthetics, engineering options, environmental issues, industry standards, safety concerns, and cost. Often, products and environments are designed for the average user. In contrast, UD is “the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design” (www.ncsu.edu/project/design-projects/udi/center-for-universal-design/the-principles-of-universal-design). For example, a standard door is not accessible to everyone. If a large switch is installed, the door becomes accessible to more people, including some wheelchair users. Applying UD principles could lead to the installation of sensors that signal the door to open when anyone approaches, making the building accessible to everyone—a small child, a man carrying a large box, an elderly woman, a person using a walker or wheelchair.

When designers apply UD principles, their products and environments meet the needs of potential users with a variety of characteristics. Disability is just one of many characteristics that an individual might possess. For example, one person could be five feet four inches tall, female, forty years old, a poor reader, and deaf. All of these characteristics, including her deafness, should be considered when developing a product or environment she and others might use.

Making a product or environment accessible to people with disabilities often benefits others. For example, sidewalk curb cuts, designed to make sidewalks and streets accessible to those using wheelchairs, are today often used by kids on skateboards, parents with baby strollers, and delivery staff with rolling carts. When television displays in noisy areas of airports and restaurants are captioned, they are more accessible to people who are deaf and everyone else.

**UD Goal**

The goal of UDI is to maximise the learning of students with a wide range of characteristics by applying UD principles to all aspects of instruction (e.g., delivery methods, physical spaces, information resources, technology, personal interactions, assessments).

**UD Principles**

At the Center for Universal Design (CUD) at North Carolina State University, a group of architects, product designers, engineers, and environmental design researchers established seven principles of UD to provide guidance in the design of products and environments (Connell, et al., 1997). The CUD’s principles of UD are listed below. They are followed by an example of application in instruction.

1. **Equitable use.** The design is useful and marketable to people with diverse abilities. Example: A professor’s website is designed
so that it is accessible to everyone, including students who are blind and using text-to-speech software.

2. **Flexibility in use.** The design accommodates a wide range of individual preferences and abilities. Example: A museum, visited as a field trip for a course, allows each student to choose to read or listen to a description of the contents of display cases.

3. **Simple and intuitive use.** Use of the design is easy to understand, regardless of the user’s experience, knowledge, language skills, or current concentration level. Example: Control buttons on science equipment are labeled with text and symbols that are simple and intuitive to understand.

4. **Perceptible information.** The design communicates necessary information effectively to the user, regardless of ambient conditions or the user’s sensory abilities. Example: A video presentation projected in a course includes captions.

5. **Tolerance for error.** The design minimizes hazards and the adverse consequences of accidental or unintended actions. Example: Educational software provides guidance and background information when the student makes an inappropriate response.

6. **Low physical effort.** The design can be used efficiently, comfortably, and with a minimum of fatigue. Example: Doors to a lecture hall open automatically for people with a wide variety of physical characteristics.

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. Example: A flexible science lab work area has adequate workspace for students who are left- or right-handed and for those who need to work from a standing or seated position.

**UDI Definition, Guidelines and Examples**

Universal design principles can be applied to the overall design of instruction as well as to specific instructional materials, facilities, and strategies (such as lectures, classroom discussions, group work, web-based instruction, labs, field work, and demonstrations). Universally designed curriculum provides students with a wide range of abilities, disabilities, ethnic backgrounds, language skills, and learning styles multiple means of representation, action and expression, and engagement (called Universal Design for Learning by the Center for Applied Special Technology (CAST), [www.cast.org](http://www.cast.org)). Listed below are examples of instruction that employ principles of UD. They are organized under eight performance indicator categories, with a general guideline for each (Burgstahler, 2007).

1. **Class climate.** Adopt practices that reflect high values with respect to both diversity and inclusiveness. Example: Put a statement on your syllabus inviting students to meet with you to discuss disability-related accommodations and other special learning needs.

2. **Interaction.** Encourage regular and effective interactions between students and the instructor and ensure that communication methods are accessible to all participants. Example: Assign group work for which learners must support each other and that places a high value on different skills and roles.

3. **Physical environments and products.** Ensure that facilities, activities, materials, and equipment are physically accessible to and usable by all students, and that all potential student characteristics are addressed in safety considerations. Example: Develop safety procedures for all students, including those who are blind, deaf, or wheelchair users.

4. **Delivery methods.** Use multiple, accessible instructional methods that are accessible to all learners. Example: Use multiple modes to deliver content; when possible allow students to choose from multiple options for learning; and motivate and engage students—consider lectures, collaborative learning options, hands-
CAST has focused specifically on the application of UD to curriculum. Specifically, CAST defines Universal Design for Learning (UDL) as “a framework for designing curricula that enable all individuals to gain knowledge, skills, and enthusiasm for learning. UDL provides rich supports for learning and reduces barriers to the curriculum while maintaining high achievement standards for all.” UDL calls for the integration of multiple means of representation, action and expression, and engagement into course curriculum.

Employing UD principles does not eliminate the need for specific accommodations for students with disabilities. For example, you may need to provide a sign language interpreter for a student who is deaf. However, applying universal design concepts in course planning ensures full access to the content for most students and minimizes the need for special accommodations. For example, designing web resources in accessible formats as they are developed means that no redevelopment is necessary if a blind student enrolls in the class.

UD benefits students with disabilities but also benefits others. For example, captioning course videos, which provides access to deaf students, is also a benefit to students for whom English is a second language, to some students with learning disabilities, and to those watching the tape in a noisy environment. Delivering content in redundant ways can improve instruction for students with a variety of learning styles and cultural backgrounds. Letting all students have access to your class notes and assignments on a website benefits students with disabilities and everyone else. Planning ahead saves time in the long run.

Employing UD principles in everything we do makes a more accessible world for all of us. It minimizes the need to alter it for anyone. For a complete UDI application checklist, consult Equal Access: Universal Design of Instruction at www.uw.edu/doit/equal-access-universal-design-instruction.

Resources
Consult the following resources for further information on UDI.

*Applications of Universal Design*
www.uw.edu/doit/resources/popular-resource-collections/applications-universal-design


Center for Applied Special Technology (CAST)  
www.cast.org/our-work/about-udl.html

The Center for Universal Design  
www.ncsu.edu/ncsu/design/cud/

The Center for Universal Design in Education  
www.uw.edu/doit/programs/center-universal-design-education/overview


National Center for Accessible Media (NCAM)  
ncam.wgbh.org

Orkwis, R., & McLane, K. (1998). A curriculum every student can use: Design principles for student access. eric.ed.gov/?id=ED423654


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Universal Design for Learning Guidelines

Provide Multiple Means of Engagement
- Purposeful, motivated learners
  - Provide options for self-regulation
    + Promote expectations and beliefs that optimize motivation
    + Facilitate personal coping skills and strategies
    + Develop self-assessment and reflection
  - Provide options for sustaining effort and persistence
    + Heighten salience of goals and objectives
    + Vary demands and resources to optimize challenge
    + Foster collaboration and community
    + Increase mastery-oriented feedback
  - Provide options for recruiting interest
    + Optimize individual choice and autonomy
    + Optimize relevance, value, and authenticity
    + Minimize threats and distractions

Provide Multiple Means of Representation
- Resourceful, knowledgeable learners
  - Provide options for comprehension
    + Activate or supply background knowledge
    + Highlight patterns, critical features, big ideas, and relationships
    + Guide information processing, visualization, and manipulation
    + Maximize transfer and generalization
  - Provide options for language, mathematical expressions, and symbols
    + Clarify vocabulary and symbols
    + Clarify syntax and structure
    + Support decoding of text, mathematical notation, and symbols
    + Promote understanding across languages
    + Illustrate through multiple media

Provide Multiple Means of Action & Expression
- Strategic, goal-directed learners
  - Provide options for executive functions
    + Guide appropriate goal-setting
    + Support planning and strategy development
    + Enhance capacity for monitoring progress
  - Provide options for expression and communication
    + Use multiple media for communication
    + Use multiple tools for construction and composition
    + Build fluencies with graduated levels of support for practice and performance
  - Provide options for perception
    + Offer ways of customizing the display of information
    + Offer alternatives for auditory information
    + Offer alternatives for visual information
  - Provide options for physical action
    + Vary the methods for response and navigation
    + Optimize access to tools and assistive technologies
As greater numbers of individuals with disabilities take advantage of the opportunities open to them in business, industry and travel, it becomes increasingly important to promote an environment that is positive for persons with disabilities. One of the best and easiest ways to show respect is through appropriate language use. The recommended manner is known as “person first” language. This means that the person is emphasized first, the disability second. The disability is only part of the whole person.

<table>
<thead>
<tr>
<th>Positive Phrases</th>
<th>Negative Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>person with a disability</td>
<td>disabled, handicapped</td>
</tr>
<tr>
<td>person without a disability</td>
<td>normal person</td>
</tr>
<tr>
<td>individual who is unable to speak</td>
<td>mute, dumb</td>
</tr>
<tr>
<td>woman who is blind or has a visual disability</td>
<td>blind woman or “the blind”</td>
</tr>
<tr>
<td>person who uses a wheelchair</td>
<td>confined or restricted to a wheelchair</td>
</tr>
<tr>
<td>person who is deaf; person who is hard of hearing</td>
<td>suffers a hearing loss, the deaf</td>
</tr>
<tr>
<td>man with paraplegia</td>
<td>paraplegic</td>
</tr>
<tr>
<td>individual with epilepsy</td>
<td>epileptic</td>
</tr>
<tr>
<td>person who has a learning disability</td>
<td>slow learner, retarded, learning disabled</td>
</tr>
<tr>
<td>person with a mental or cognitive disability</td>
<td>crazy, demented, insane, nuts</td>
</tr>
<tr>
<td>person with a developmental disability</td>
<td>mentally retarded</td>
</tr>
<tr>
<td>person with a congenital disability</td>
<td>has a birth defect</td>
</tr>
<tr>
<td>person who has muscular dystrophy</td>
<td>stricken by MD, physically disabled, crippled, lame, deformed</td>
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</tbody>
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Karen A. Myers, PhD
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Accessibility Etiquette

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Synopsis

Language Basics

1. **Person First Language** is recommended when referring to a person with a disability. Example: Do say, “a person with a disability” and do NOT say, “a disabled person.”
2. **Euphemism or Patronizing language** is overly politically correct or nice language and should be avoided. Example: Do NOT say, “differently abled” or “he/she is challenged.”
3. **Open dialogue** is a discourse between two people and the first step to effectively communicating needs between those two people.
4. **Public dialogue** is an informal or formal group dialogue with the goal of resolving issues, and developing empathy and understanding.
5. **Group Internal use of Stigmatized Terms** refers to the idea of “reclaiming” terms with which were previously considered negative. (e.g. a support group for women with disabilities called Gimp Girl, founded by a woman with a disabilities). You should NOT use such language unless you are a member of that community or are invited to.

Assisting a person with a disability
1. **Questions** to ask before helping someone with a disability? Consider the accessibility of an environment or helping someone without physical contact and accessible materials for those with various disabilities.

2. **Tips** to helping some with a disability can be specific to the person with disability. Check out the **tips below** and put yourself in their shoes.

In the Classroom/Hybrid/Online

1. **Teachers communicating with students with disabilities** can be difficult depending on the specific kind of disability. Starting an “open dialogue” and reviewing the **tips below** are a great start.

2. **Persons with disability communicating with their teachers** should begin on the first day of class and contacting the **Office of Disability Services** will allow for class content to be universally design for all the students' needs. All students can benefit from this.

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**Language Basics**

**Person First language**

In order to provide focus on the person versus his or her disability, it is recommended that “person-first” language be used to refer to someone who may have a particular disability. Thus, the expression “a person with a disability” is preferred to “disabled person.” Similarly, the expression “person who uses a wheelchair” is generally preferred to “wheelchair bound”. The use of “person first” language has become a practice of etiquette and more importantly respect for people with disabilities.

NEVER use a disability as an adjective. Calling a person “disabled,” “handicapped,” or identifying them solely by their disability, such as “the deaf guy” or “a blind person” associates them with ONLY their disability and not as a person. Another example, wheelchair bound or confined to a wheelchair is a negative verbalization of a wheelchair. The wheelchair enables them to be mobile and gives a person access to the environment, so the person is a person that uses a wheelchair and not a wheelchair user.

**Euphemism or Patronizing language**

A euphemism is patronizing or overly politically correct language, such as saying, “He/she is challenged.” The use of the word “challenged” is the euphemism. This is sometimes referred to as “Nice” language. Other examples of this are saying someone is “differently abled.” When using patronizing language, there is emphasis placed on the disability with a connotation of
inferiority as person. Every person is capable of achieving a goal and uses various tools to do so. People with disabilities use tools to achieve those goals, such tools as wheel chairs, canes, various technologies and other assistive devices or technologies.

Open dialogue

Open dialogue is an open discourse between two people to meet a consensual and mutual understanding between each other. This discourse should allow for freedom to ask questions, bring forth requests freely, and be mutually receptive and non-judgmental about the topic of the dialogue.

Initiating “open dialogue” with students, friends, coworkers or anyone for that matter is the first step to building communication. This allows for needs and concessions to be arranged for everyone to follow.

Students should approach teachers and clarify if the teacher understands any needs or concessions. A student should understand the perspective of the teacher. The teacher has a large number of students to attend to. So, the student needs to make a teacher aware of their needs.

Also, teachers should take the initiative and check with their students, especially if a student is identified with a disabilities. Each student has a differing set of abilities and differing concessions are necessary based on those abilities. Exploring these concessions should be done privately between the teacher and student and both should feel free to initiate discourse to achieve a mutual goal.

Public dialogue

Initiating “open dialogue” and engaging in “public dialogue” are very different. Public dialogue usually takes place in a formal or informal setting discussing the topic in a group or social group. The goal here is to gain understanding and develop solutions to communicating and understanding each other's needs. Understanding each other's perspectives on the subject of disabilities can be hard for those with a disability and without. No one wants to be mean, make someone feel bad for not understanding how to respect each other's feelings and needs. So, those persons with a disability and those interacting with persons with disabilities should be careful not to have judgmental behavior. A “public dialogue” can be an opportunity to learn from each other and gain empathy for each other's feelings and perspectives and develop solutions to help everyone feel comfortable.

Group Internal Use of Stigmatized Terms
You may find people with disabilities using or “reclaiming” terms which were previously considered negative. For example, there is a support group for women with disabilities called Gimp Girl (http://www.gimpgirl.com/). Another example is the use of Deaf with a capital D to describe the community of sign language speakers.

In many cases though, a person NOT belonging to that community may want to be cautious about using the term until advised to by a member that community.

Assisting a person with a disability

Questions you should ask yourself before helping those with disabilities:

- Is the environment accessible? Assessing the surroundings from a perspective of the person with the disability is difficult. You are not he or she and may never understand their perspective completely. But, there are tips to help offer some foresight to the situation.
- Are you able to give help without physically touching the person or entering their space or comfort zone?
- Are classroom materials accessible for the students' needs?

Assessing the needs is done both by the person with the disability and the faculty or staff providing the concessions. This leads to being sensitive about the environment, physical contact or how content is provided.

Here are some tips:

- Do not pat someone on the head or touch a cane, wheelchair or other tools that they use. As in the previous example, having a table in the classroom available for the student and not desks with attached chairs may be an issue.
- If you are going to offer assistance, ask them how they would like that assistance to be given.
- Also, be mindful about moving furniture and providing a pathway. Keep in mind clearance and consistency of furniture placement. This allows access for those with who need mobility access due to the use of a wheelchair or a person with vision impairment.
- Think before speaking and use “Person-First” language as explained in the Language Basics.
- Do not grab someone's arm or touch someone at all without permission, this may startle them. Is this normally done to you? If you would like to gain someone’s attention, tap on a surface near them or make your presence known verbally and without touching their persons. Remember, for those who are vision impaired/blind verbally identifying yourself is the best practice.
• Offer and only push a wheelchair when requested. If possible, try to sit at eye level with a person in a wheelchair. This removes any perception of speaking down to a person in a wheelchair and this action reduces the kink in the neck of a person who uses a wheelchair.

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In the Classroom/Hybrid/Online

Teachers communicating with students with disabilities

• Behave naturally as if you would with any other person.
• Always talk to a person directly even if an assistant or interpreter is present.
• Speaking at their physical level, if in a wheelchair sit and hold a conversation at eye level.
• Avoid making assumptions to students' needs or abilities. This goes for all students. There are students with hidden disabilities.
• Respond to the requests when made in a reasonable amount of time.

For further information, please visit the Office of Disability Services web site: http://equity.psu.edu/ods/dcl

• In the classroom the environment and the class activities play a big role. For example, the user of a wheelchair may need the classroom arranged to sit and participate with other students. This may be an issue if the classroom is full of desks with tables attached to the chairs. A student who is blind/vision impaired/deaf may need to sit near the front or be guided to a seat. Furthermore, breaking out into a group project and shifting chairs may cause unforeseen issues for some. If there are any doubts initiate an “open dialogue” with your student.

Persons with disability communicating with teachers

Students with disabilities should start an “open dialogue” with teachers at the beginning of the course. Not to seek special attention, but to allow the teacher to make the curriculum universally accessible for all students and allow teachers to actively engage in best practices for online, hybrid or in class teaching. These alternative resources may benefit the other students in the class, also.

Students are also advised to contact the Office of Disability Services at their local campus. The Office of Disability Services has been established to help students who need accommodations, particularly extended times for assignments or exams, receive them in the most efficient and timely manner possible.
## Tips for Effective Communication

**Karen A. Myers, PhD**  
Saint Louis University

### When you meet a person with a **VISUAL** disability

- It is always appropriate to offer your help; just do not be surprised if the individual would “rather do it myself.”
- If you are helping and not sure what to do, ask the person.
- A gentle touch on the elbow will indicate to a person with a visual disability that you are speaking to him/her.
- If you are walking with a person who is blind, do not take that person’s arm; rather let that person take your arm.
- Do not shout. “Blind” does not mean hard of hearing.
- If you have a question for the person with a visual disability, ask him/her, not his/her companion. “Blind” does not mean one cannot speak.
- Never pet a guide dog, except when the dog is “off-duty”. Even then you should ask the dog’s master first.
- Do not worry about substituting words for “see”, “look”, or even “blind”. Do not avoid them where these words fit. You can talk about blindness itself, when you both feel comfortable about it.
- When you meet a person you know with a visual disability, mention your name. It is difficult to recognize voices unless you happen to have a very distinctive one.

### When you meet a person with a **HEARING** disability

- Speak clearly and distinctly, but do not exaggerate. Use normal speed unless asked to slow down.
- Provide a clear view of your mouth. Waving your hands or holding something in front of your lips, thus hiding them, makes lip reading impossible. Do not chew gum.
- Use a normal tone unless you are asked to raise your voice. Shouting will be of no help.
- Speak directly to the person, rather than from the side or back of the person.
- Speak expressively. Because persons who are deaf cannot hear subtle changes in tone, which may indicate sarcasm or seriousness, many will rely on your facial expressions, gestures and body language to understand you.
- If you are having trouble understanding the speech of a person who is deaf, feel free to ask him/her to repeat. If that does not work, then use a paper and pen.
- If a person who is deaf is with an interpreter, speak directly to the person who is deaf – not to the interpreter.
## Tips for Effective Communication

Karen A. Myers, PhD
Saint Louis University

### When you meet a person with a MOBILITY disability

- Offer help, but wait until it is accepted before giving it. Giving help before it is accepted is rude and sometimes can be unsafe.
- Accept the fact that a disability exists. Not acknowledging a disability is similar to ignoring someone's gender or height. But to ask personal questions regarding the disability would be inappropriate until a closer relationship develops in which personal questions are more naturally asked.
- Talk directly to a person with a disability. Because an individual has a functional limitation, it does not mean the individual cannot communicate for himself/herself.
- Do not park your car in a parking place that is specially designed for use by a person with a disability. These are reserved out of necessity, not convenience.
- Treat a person with a disability as a healthy person. Because an individual has a functional limitation, it does not mean the individual is sick.
- Keep in mind that persons with disabilities have the same activities of daily living as you do.

### When you meet a person with a COGNITIVE disability

- Use very clear, specific language.
- Condense lengthy directions into steps.
- Use short, concise instructions.
- Present verbal information at a relatively slow pace, with appropriate pauses for processing time and with repetition if necessary.
- Provide cues to help with transitions: “In five minutes we’ll be going to lunch.”
- Reinforce information with pictures or other visual images.
- Use modeling, rehearsing, and role-playing.
- Use concrete rather than abstract language.
- Limit the use of sarcasm or subtle humor.
- If you are not sure what to do or say, just ask the person what he/she needs.
UNIVERSALLY DESIGNED DOCUMENTS
About Accessible Documents

Content that is created in Blackboard using the content editor is automatically formatted in HTML following accessibility standards. You can link to or pull in content from other sources using the content editor or other Learn tools. Content that you add as an attachment or a linked file is not formatted automatically. Make sure all your students can read and interact with your attachments and linked files by making them accessible. When your document is formatted using styles and tags, it will be accessible to your users who rely on assistive technology such as screen reading applications (screen readers).

Accessible documents have a structure that is based on styling elements or tags. This structure provides a hierarchy of information. The most important information is identified as the top-level in the document, and supporting information is identified as lower levels. Illustrations, graphs, and tables that appear in a document have specific tags based on what type of information they convey.

Screen readers use tags to convey an information hierarchy of a document to users so that they can understand the organization of the material. Tags are also used to provide other information to users such as descriptions of visual content and the organization of data arranged in tables.

Adding a structure to documents using styles and tags during the writing process is the fastest, more reliable way to create accessible documents. In almost every case, styles and tags added in an application such as Microsoft Word transfer when you save the document to another format such as Adobe PDF or HTML.

Using Documents in Learn
Many areas in Learn allow you to add documents, including content pages, assignments, and tests. Format any files that you distribute in your class using styles and tags. This will ensure that all of your students can participate fully no matter what technology they use to read documents.

Encourage your students to format documents that they exchange in groups and for group assignments and group presentations using styles and tags. Promoting accessibility among your students raises awareness and increases student achievement, retention, and satisfaction.

How to Make Microsoft® Word Documents Accessible

Use Headings

Create a consistent heading structure in Word using styles. This is different from just changing the font size or making the font bold. Set up your document styles or use one of the templates that Microsoft includes with Word. In Word 2007 and 2010, to change a block of text, select it and then click on the appropriate style from the tool bar. Different versions of Word have slightly different ways of accessing and setting styles, so use the help in your version for specific instructions.

As a general rule, use no more than one Heading 1 <H1> on a page. The <H1> tag identifies the highest level of information in the document structure. Heading 1 is used for chapter titles, main section headings, and other divisions that represent the top level of information. Use Heading 2 <H2> and lower number headings to identify the sub-levels of information in your document.

When adding heading tags, be consistent and include each level in the hierarchy where appropriate to reflect the organization of the document. Be sure that H1 is followed by H2, then H3, and H4. Don't go from H1 to H4 just for formatting purposes. Instead, change your styles for each heading to change the way it looks.

Alternative Text for Images

Screen readers use alternative text (alt text) to provide users with information about images. In most versions of Word, right-click an image and select Format Picture... In the dialog box, select the option for Alt Text, and then type in your alt text. Be specific and succinct so that users will quickly understand what is being described. Different versions of Word have slightly different ways of entering alt text, so use the help in your version for specific instructions.
Data Tables

In accessible documents, tables are never used for formatting layout on a page because it is difficult for screen readers to understand the information architecture and what is being presented. Tables are only used to present data. For screen readers to interpret data in a table so that users can understand how the data is organized, the screen reader needs to be able to identify which cells are part of the header row and which cells contain data. You can indicate that a row repeats on the top of each page in the Table Properties menu in Word. When saved as a PDF, the first row is detected as a table header. If the Word file is saved as HTML, the table headers are not maintained. Instead, the cells are tagged as <thead>. Data cells are tagged as <tbody>.

When you convert to HTML from Word, you can edit your HTML document using a text editor or other application such as Adobe Dreamweaver to add specific table tags. Use <th> to tag table headers, <tr> to identify the beginning of each new row, and <td> to tag cells that contain data. See the following example. Unfortunately, there is no way to tag these individual elements in Word.

Links

It is easy to create links in Word by pasting the full URL into a page. When you press space or Enter, Word automatically creates a link. Change the link text to something descriptive because the URL that is automatically created may not make sense to a screen reader. If you are creating a Word document that may be printed as well as read electronically, consider including both the URL and the descriptive link in the text. For example: Getting Started with Creating Accessible Course Content
Windows Word 2010 Accessibility Checker

If you are using Windows, Word 2010 has a built-in Accessibility Checker. This is a good resource to help you identify and repair accessibility issues. Access the Accessibility Checker from Files > Info > Check for Issues > Check Accessibility.

How to Make PDF Documents Accessible

PDF (portable document format) is an open standard for formatting documents. PDF creates files that look the same when printed as when exchanged electronically. When you share a PDF file, almost everyone can read it using free Adobe Reader® software or the Adobe Reader mobile app.

Most PDF files are converted from an application such as Microsoft Word. Many programs and plug-ins can create PDF files, but very few create tagged PDF files. PDF tags provide a hidden structure and textual representation of the PDF content so that it can be read by a screen reader. PDF tags are similar to HTML tags and Word styles.

Adobe Acrobat is the original application for creating PDF documents and converting other documents into PDF. Too many different combinations of authoring software and PDF converters exist to describe each one in this topic. If you are converting a Word file to PDF and you have created an accessible Word file using heading tags, alt text for graphics, and so on, Office 2010 can create tagged PDFs natively. You can also download and install the Adobe add-in, called PDFMaker, to create PDF files from Word. If you are using earlier versions of Office, you must have the add-in to create tagged PDF files.

If you are using the Adobe add-in, click Save as Adobe PDF from the File menu. In the PDFMaker dialog box, click Enable Accessibility and Reflow with tagged Adobe PDF from the Settings tab. If you are using the native save, click Save as PDF. Before you save the file, click Options, and then select Document structure tags for accessibility.

Adobe Acrobat X and later has an accessibility checker that scans your PDF and alerts you to any problems. The accessibility checker will help you correct any issues. You can also correct table coding using Acrobat's TouchUp Reading Order Table Editor. To learn more about using Adobe Acrobat to create accessible files, visit Adobe.com and search for "accessibility."
Creating Alt Text for Microsoft Office Software

**Excel**

1. Do one of the following:
   - For a shape, picture, chart, SmartArt graphic, or other object, right-click it, click **Format object**, and then click the **Alt Text** pane.
   
   To add Alt Text to the entire SmartArt graphic or chart, click the border of the SmartArt graphic or chart, and not an individual shape or piece.
   - For a table, right-click the table, click **Table**, and then click **Alternative Text**.
   - For a PivotTable, right-click it, point to **PivotTable Options**, and then click **Alt Text**.

2. In the **Description** box, enter an explanation of the shape, picture, chart, table, PivotTable, SmartArt graphic, or other object. This box should always be filled in.

3. If you want, in the **Title** box, enter a brief summary. This box should only be filled in if you are entering a detailed or long explanation in the **Description** box.

**NOTE:** Unless you have a complex chart or table, you will usually want to enter text in just the **Description** box. When you have complex content to describe, then filling in the **Title** field is useful so reading the full description is not necessary unless desired.

**Outlook**

1. Do one of the following:
   - For a shape, picture, chart, SmartArt graphic, or other object, right-click it, click **Format object**, and then click the **Alt Text** pane.
   
   To add Alt Text to the entire SmartArt graphic or chart, click the border of the SmartArt graphic or chart, and not an individual shape or piece.
For a table, right-click the table, click **Table Properties**, and then click the **Alt Text** tab.

2. In the **Description** box, enter an explanation of the shape, picture, chart, table, SmartArt graphic, or other object. This box should always be filled in.

3. If you want, in the **Title** box, enter a brief summary. This box should only be filled in if you are entering a detailed or long explanation in the **Description** box.

**NOTE:** Unless you have a complex chart or table, you will usually want to enter text in just the **Description** box. When you have complex content to describe, then filling in the **Title** field is useful so reading the full description is not necessary unless desired.

**PowerPoint**

1. Do one of the following:
   
   - For a shape, picture, chart, table, SmartArt graphic, or other object, right-click it, click **Format object**, and then click the **Alt Text** pane.

To add Alt Text to the entire SmartArt graphic or chart, click the border of the SmartArt graphic or chart, and not an individual shape or piece.

2. In the **Description** box, enter an explanation of the shape, picture, chart, table, SmartArt graphic, or other object. This box should always be filled in.

3. If you want, in the **Title** box, enter a brief summary. This box should only be filled in if you are entering a detailed or long explanation in the **Description** box.

**NOTE:** Unless you have a complex chart or table, you will usually want to enter text in just the **Description** box. When you have complex content to describe, then filling in the **Title** field is useful so reading the full description is not necessary unless desired.

**Word**
1. Do one of the following:
   - For a shape, picture, chart, SmartArt graphic, or other object, right-click it, click **Format object**, and then click the **Alt Text** pane.

To add Alt Text to the entire SmartArt graphic or chart, click the border of the SmartArt graphic or chart, and not an individual shape or piece.
   - For a table, right-click the table, click **Table Properties**, and then click the **Alt Text** tab.

2. In the **Description** box, enter an explanation of the shape, picture, chart, table, SmartArt graphic, or other object. This box should always be filled in.

3. If you want, in the **Title** box, enter a brief summary. This box should only be filled in if you are entering a detailed or long explanation in the **Description** box.

**NOTE:** Unless you have a complex chart or table, you will usually want to enter text in just the **Description** box. When you have complex content to describe, then filling in the **Title** field is useful so reading the full description is not necessary unless desired.

### Make the Alt Text command readily available

If you frequently add alternative text to shapes, pictures, charts, tables, SmartArt graphics, or other objects, you can add the **Alt Text** command to the Quick Access Toolbar to create a shortcut to it.

1. In the upper-left corner above the Ribbon, click **Customize Quick Access Toolbar**.

2. Click **More Commands**, and then under **Choose commands from** click **Commands Not in the Ribbon**.

3. Click **Alt Text** and then click **Add**.

To use the **Alt Text** command on the **Quick Access Toolbar**, select the shape, picture, chart, table, SmartArt graphic, or other object, before you click the toolbar button, and then add your alternative text.
Creating a

Text-only version of Powerpoint Presentations

A text document of your PowerPoint presentation can be modified quickly and easily, can be read by a screen reader, modified for large print, or used to make a Braille version. This will require four simple steps:

- Convert the Power Point to text only
  - Open the PowerPoint in the create and edit mode
  - Go to File > Save As
  - You will get a dialog box
  - At the bottom of this box, change the file type from Presentation (*.ppt) to Outline (*.rtf)
  - Once saved as rich text format, compare the converted document to your original slides to ensure all text was converted properly

- Include Image or Graph information
  - Insert text descriptions of each image or graph

- Add Notes
  - Cut and paste your notes into the text document
  - These notes should have explanations for your bullets and descriptions and explanations of your images, charts and graphs

- Resizing Fonts
  - The converted document will have vastly varied font sizes depending on the choices in your original PowerPoint Presentation
  - To make all text the same size select all the text by using Ctrl + A, then choose your desired font and size
Acrobat DC tools make it easy to create accessible PDFs and check the accessibility of existing PDFs. You can create PDFs to meet common accessibility standards, such as Web Content Accessibility Guidelines (WCAG) 2.0 and PDF/UA (Universal Access, or ISO 14289). The simple, guided workflow lets you do the following:

**Make PDFs accessible:** A predefined action automates many tasks, checks accessibility, and provides instructions for items that require manual fixes. Quickly find and fix problem areas.

**Check accessibility:** The Full Check tool verifies whether the document conforms to accessibility standards, such as PDF/UA and WCAG 2.0.

**Report accessibility status:** The Accessibility Report summarizes the findings of the accessibility check. It contains links to tools and documentation that assist in fixing problems.

### Make PDFs accessible (Acrobat Pro DC)

The Make Accessible action walks you through the steps required to make a PDF accessible. It prompts to address accessibility issues, such as a missing document description or title. It looks for common elements that need further action, such as scanned text, form fields, tables, and images. You can run this action on all PDFs except dynamic forms (XFA documents) or portfolios.

1. Choose **Tools > Action Wizard**.
   The Action Wizard toolset is displayed in the secondary toolbar.

   **Note:** *A list of available actions is displayed under the Action List in the right-hand pane.*

2. From the Action List, click **Make Accessible**.
   The right-hand pane changes to display each task included in the Make Accessible action, as well as the instructions to execute the action.

3. Select the files that you want to apply the **Make Accessible** action to. By default, the action runs on the document that's currently open. Select **Add Files** to select additional files or a folder to run the action on.
Select Add Files to run the report on additional files or folders.

4. Click **Start**.

5. Follow the prompts to complete the Make Accessible action.

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**Check accessibility of PDFs (Acrobat Pro DC)**

A good way to check the accessibility of a document is to use tools that your readers will use. Even if you do not have access to those tools, Adobe Acrobat DC provides an automated way to check the accessibility of a PDF file. The Full Check feature in Acrobat DC checks a PDF for many of the characteristics of accessible PDFs. You can choose which accessibility problems to look for and how you want the results reported.

1. Choose **Tools > Accessibility**.
   
   The Accessibility toolset is displayed in the secondary toolbar.

2. In the secondary toolbar, click **Full Check**.

   The Accessibility Checker Options dialog box is displayed.

3. In the **Report Options** section, select options for how you want to view the results. You can save the results as an HTML file on your system, or attach the results file to the document itself.

4. Select a page range if you prefer to check individual pages of a document.

   *When you have a large document, running a full check one page at a time can be more efficient.*

5. Select one or more of the **Checking Options**.

6. Click **Start Checking**. The results are displayed in the Accessibility Checker panel on the left, which also has helpful links and hints for repairing issues. If you created a report in step 2, the results are available in the selected folder.

Because the Full Check feature cannot distinguish between essential and
nonessential content types, some issues it reports don’t affect readability. It's a good idea to review all issues to determine which ones require correction.

The report displays one of the following statuses for each rule check:

- **Passed**: The item is accessible.
- **Skipped By User**: Rule was not checked because it wasn’t selected in the Accessibility Checker Options dialog box.
- **Needs Manual Check**: The Full Check feature couldn't check the item automatically. Verify the item manually.
- **Failed**: The item didn't pass the accessibility check.

![Accessibility Checker rules statuses](image)

In addition to Full Check, Acrobat DC provides other methods to check PDF accessibility:

- **Use Reflow view** to quickly check the reading order.
- **Use Read Out Loud** to experience the document as readers who use the text-to-speech conversion tool experience it.
- **Save the document as accessible text and then read the saved text file in a word-processing application. This exercise enables you to emulate the end-user experience of readers who use a braille printer to read the document.**
- **Use the Touch Up Reading Order tool, Order, Tags, and Content panels** to examine the structure, reading order, and contents of a PDF.

See also
- Reading PDFs with reflow and accessibility features
- Accessibility preferences
- Creating accessible PDFs
- Standard PDF tags (Acrobat Pro)
Fix accessibility issues (Acrobat Pro DC)

To fix a failed check after running Full Check, right-click (Windows) or Ctrl-click (Mac OS) the item in the Accessibility Checker panel. Choose one of the following options from the context menu:

**Fix:** Acrobat either fixes the item automatically, or displays a dialog box prompting you to fix the item manually.

**Skip Rule:** Deselects this option in the Accessibility Checker Options dialog box for future checks of this document, and changes the item status to Skipped.

**Explain:** Opens the online Help where you can get more details about the accessibility issue.

**Check Again:** Runs the checker again on all items. Choose this option after modifying one or more items.

**Show Report:** Displays a report with links to tips on how to repair failed checks.

**Options:** Opens the Accessibility Checker Options dialog box, so you can select which checks are performed.

Accessibility issues

**Document**

**Prevent security settings from interfering with screen readers**

A document author can specify that no part of an accessible PDF is to be copied, printed, extracted, commented on, or edited. This setting could interfere with a screen reader's ability to read the document, because screen readers must be able to copy or extract the document's text to convert it to speech.

This flag reports whether it's necessary to turn on the security settings that
allow accessibility.

To fix the rule automatically, select Accessibility Permission Flag on the Accessibility Checker panel. Then, choose Fix from the Options menu. Or, fix accessibility permissions manually:

1. Choose **File > Properties > Security**.
2. Choose **No Security** from the **Security Method** drop-down list.
3. Click **OK** and close the **Document Properties** dialog box.

If your assistive technology product is registered with Adobe as a Trusted Agent, you can read PDFs that might be inaccessible to another assistive technology product. Acrobat recognizes when a screen reader or other product is a Trusted Agent and overrides security settings that would typically limit access to the content for accessibility purposes. However, the security settings remain in effect for all other purposes, such as to prevent printing, copying, extracting, commenting, or editing text.

**Note:** See the related WCAG section: 1.1.1 Non-text Content. (A), 4.1.2 Name, role, value

**Image-only PDF**

Reports whether the document contains non-text content that is not accessible. If the document appears to contain text, but doesn't contain fonts, it could be an image-only PDF file.

To fix this rule check automatically, select Image-only PDF on the Accessibility Checker panel, and choose Fix from the Options menu. Or, to fix this rule check manually, use OCR to recognize text in scanned images:

1. Choose **Tools > Enhance Scans**. The Enhance Scans toolset is displayed in the secondary toolbar.
2. In the secondary toolbar, choose **Recognize Text > In This File**.
3. Select the pages you want to process, the document language, and then click **Recognize Text**.

**Note:** See the related WCAG section: 1.1.1. Non-text content (A)

**Tagged PDF**

If this rule check fails, the document isn't tagged to specify the correct reading
order.
To fix this item automatically, select Tagged PDF on the Accessibility Checker panel, and then choose Fix from the Options menu. Acrobat automatically adds tags to the PDF.

To specify tags manually, do one of the following:

- Enable tagging in the application in which the PDF was authored, and recreate the PDF.
- Choose Tools > Accessibility > Autotag Document in Acrobat DC. The Add Tags Report appears in the navigation pane if there are any issues. The report lists potential problems by page, provides a navigational link to each problem, and provides suggestions for fixing them.
- Choose Tools > Accessibility > Reading Order in Acrobat DC, and create the tags tree. For more information, see Touch Up Reading Order tool overview.
- Open the Tags panel and create the tags tree manually. To display the Tags panel, choose View > Show/Hide > Navigation Panes > Tags. For more information, see Edit document structure with the Content and Tags panel.

**Note:** See the related WCAG section: 1.3.1 Info and Relationships, 1.3.2, 2.4.1, 2.4.4, 2.4.5, 2.4.6, 3.1.2, 3.3.2, 4.1.2 Name, role, value

### Logical reading order

Verify this rule check manually. Make sure that the reading order displayed in the Tags panel coincides with the logical reading order of the document.

### Document language

Setting the document language in a PDF enables some screen readers to switch to the appropriate language. This check determines whether the primary text language for the PDF is specified. If the check fails, set the language.

To set the language automatically, select Primary Language in the Accessibility Checker tab, and then choose Fix from the Options menu. Choose a language in the Set Reading Language dialog box, and then click OK.

To set the language manually, do one of the following:

- Choose File > Properties > Advanced and then select a language from the drop-down list in the Reading Options section. (If the language doesn't appear in the drop-down list, you can enter the ISO 639 code for the language in the Language field.) This setting applies the primary language for the entire PDF.
Set the language for all text in a subtree of the tags tree. Open the Tags panel. Expand the Tags root and select an element. Then choose Properties from the Options menu. Choose a language from the Language drop-down list. (To display the Tags panel, choose View > Show/Hide > Navigation Panes > Tags.)

- Set the language for a block of text by selecting the text element or container element in the Content panel. Then, right-click (Windows) or Ctrl-click (Mac OS) the text and choose Properties from the context menu and choose a language from the Language drop-down list. (To display the Content panel, choose View > Show/Hide > Navigation Panes > Content.)

**Note:** See the related WCAG section: Language of Page (Level A)

**Title**

Reports whether there is a title in the Acrobat application title bar.

To fix the title automatically, select Title in the Accessibility Checker tab, and choose Fix from the Options menu. Enter the document title in the Description dialog box (deselect Leave As Is, if necessary).

Or, fix the title manually:

1. Choose **File > Properties > Description**.
2. Enter a title in the **Title** text box.
3. Click **Initial View**, and then choose **Document Title** from the **Show** drop-down list.
4. Click **OK** to close the **Description** dialog box.

**Note:** See the related WCAG section: 2.4 Page Titled (Level A)

**Bookmarks**

This check fails when the document has 21 or more pages, but doesn’t have bookmarks that parallel the document structure.

To add bookmarks to the document, select Bookmarks on the Accessibility Checker panel, and choose Fix from the Options menu. In the Structure Elements dialog box, select the elements that you want to use as bookmarks, and click OK. (You can also access the Structure Elements dialog box by clicking the Options menu on the Bookmark tab and selecting the New Bookmarks From Structure command.)

**Note:** See the related WCAG sections: 2.4.1 Bypass Blocks (Level A), 2.4.5 Multiple Ways (Level AA)
**Color contrast**

When this check fails, it's possible that the document contains content that isn't accessible to people who are color-blind.

To fix this issue, make sure that the document's content adheres to the guidelines outlined in WCAG section 1.4.3. Or, include a recommendation that the PDF viewer use high-contrast colors:

1. Choose Edit > Preferences (Windows) or Acrobat > Preferences (Mac OS).
2. Click Accessibility.
3. Select Replace Document Colors, and then select Use High-Contrast Colors. Choose the color combination that you want from the drop-down list, and then click OK.

**Page content**

**Tagged content**

This check reports whether all content in the document is tagged. Make sure that all content in the document is either included in the Tags tree, or marked as an artifact.

Do one of the following to fix this rule check:

- Open the Content panel and right-click (Windows) or Ctrl-click (Mac OS) the content that you want to mark as an artifact. Then, select Create Artifact from the context menu. (To display the Content tab, choose View > Show/Hide > Navigation Panes > Content.)
- Tag the content by choosing Tools > Accessibility > Reading Order. Select the content, and then apply tags as necessary.
- Assign tags using the Tags panel. Right-click (Windows) or Ctrl-click (Mac OS) the element in the Tags tree, and choose Create Tag From Selection. Items such as comments, links, and annotations don't always appear in the Tags tree. To find these items, choose Find from the Options menu. (To display the Tags panel, choose View > Show/Hide > Navigation Panes > Tags.)

**Note:** See the related WCAG sections: 1.1.1 Non-text content (A), 1.3.1 Info and Relationships (Level A), 1.3.2 Meaningful Sequence (Level A), 2.4.4 Link Purpose (In Context) (Level A), 3.1.2 Language of Parts (Level AA), 4.1.2 Name, role, value
Tagged annotations

This rule checks whether all annotations are tagged. Make sure that annotations such as comments and editorial marks (such as insert and highlight) are either included in the Tags tree or marked as artifacts.

- Open the Content panel, and right-click (Windows) or Ctrl-click (Mac OS) the content that you want to mark as an artifact. Then, select Create Artifact from the context menu. (To display the Content panel, choose View > Show/Hide > Navigation Panes > Content.)
- Tag the content by choosing Tools > Accessibility > Reading Order. Select the content, and then apply tags as necessary.
- Assign tags using the Tags panel. (To display the Tags panel, choose View > Show/Hide > Navigation Panes > Tags.)

To have Acrobat DC assign tags automatically to annotations as they’re created, choose Tag Annotations from the Options menu on the Tags panel.

Note: See the related WCAG section: 1.3.1 Info and Relationships (Level A), 4.1.2 Name, role, value

Tab order

Because tabs are often used to navigate a PDF, it’s necessary that the tab order parallels the document structure.

To fix the tab order automatically, select Tab Order on the Accessibility Checker panel, and choose Fix from the Options menu.

To manually fix the tab order for links, form fields, comments, and other annotations:

1. Click the Page Thumbnails panel on the navigation pane.
2. Click a page thumbnail, and then choose Page Properties from the Options menu.
3. In the Page Properties dialog box, choose Tab Order. Then, select Use Document Structure, and click OK.
4. Repeat these steps for all thumbnails in the document.

Note: See the related WCAG section: 2.4.3, Focus Order (Level A)

Character encoding

Specifying the encoding helps PDF viewers' present users with readable text. However, some character-encoding issues aren't repairable within Acrobat DC.
To ensure proper encoding, do the following:

- Verify that the necessary fonts are installed on your system.
- Use a different font (preferably OpenType) in the original document, and then re-create the PDF.
- Re-create the PDF file with a newer version of Acrobat Distiller.
- Use the latest Adobe Postscript driver to create the PostScript file, and then re-create the PDF.

*Note:* The WCAG doesn't address Unicode character mapping.

**Tagged multimedia**

This rule checks whether all multimedia objects are tagged. Make sure that content is either included in the Tags tree or marked as an artifact.

Open the Content panel and right-click (Windows) or Ctrl-click (Mac OS) the content that you want to mark as an artifact. Then, select Create Artifact from the context menu. (To display the Content panel, choose View > Show/Hide > Navigation Panes > Content.)

Tag the content by choosing Tools > Accessibility > Reading Order. Select the content, and then apply tags as necessary.

Assign tags using the Tags panel. Right-click (Windows) or Ctrl-click (Mac OS) the element in the Tags tree, and choose Create Tag From Selection. (To display the Tags panel, choose View > Show/Hide > Navigation Panes > Tags.)

*Note:* See the related WCAG sections: 1.1.1 Non-text Content. (A), 1.2.1 Audio-only and Video-only (Prerecorded). (A), 1.2.2 Captions (Prerecorded). (A), 1.2.3 Audio Description or Media Alternative (Prerecorded). (A), 1.2.5 Audio Description (Prerecorded). (AA)

**Screen flicker**

Elements that make the screen flicker, such as animations and scripts, can cause seizures in individuals who have photosensitive epilepsy. These elements can also be difficult to see when the screen is magnified.

If the Screen Flicker rule fails, manually remove or modify the script or content that causes screen flicker.

*Note:* See these related WCAG sections: 1.1.1 Non-text Content. (A), 1.2.1 Audio-only and Video-only (Prerecorded). (A), 1.2.2 Captions (Prerecorded). (A), 1.2.3 Audio Description or Media Alternative (Prerecorded). (A), 2.3.1 Three Flashes or Below Threshold. (Level A)

**Scripts**
Content cannot be script-dependent unless both content and functionality are accessible to assistive technologies. Make sure that scripting doesn't interfere with keyboard navigation or prevent the use of any input device.

Check the scripts manually. Remove or modify any script or content that compromises accessibility.

Note: See these related WCAG sections: 1.1.1 Non-text Content. (A), 2.2.2 Pause, Stop, Hide. (Level A), 4.1.2 Name, role, value

Timed responses

This rule check applies to documents that contain forms with JavaScript. If the rule check fails, make sure that the page does not require timed responses. Edit or remove scripts that impose timely user response so that users have enough time to read and use the content.

Note: See the related WCAG section: 2.2.1 Timing Adjustable. (Level A)

Accessible links

For URLs to be accessible to screen readers, they must be active links that are correctly tagged in the PDF. (The best way to create accessible links is with the Create Link command, which adds all three links that screen readers require to recognize a link.) Make sure that navigation links are not repetitive and that there is a way for users to skip over repetitive links.

If this rule check fails, check navigation links manually and verify that the content does not have too many identical links. Also, provide a way for users to skip over items that appear multiple times. For example, if the same links appear on each page of the document, also include a "Skip navigation" link.

Note: See the related WCAG section: 2.4.1 Bypass Blocks. (Level A)

Forms

Tagged form fields

In an accessible PDF, all form fields are tagged and are a part of the document structure. In addition, you can use the tool tip form filed property to provide the user with information or to provide instructions.

To tag form fields, choose Tools > Accessibility > Autotag Form Fields.

Note: See the related WCAG sections: 1.3.1 Info and Relationships. (Level A), 4.1.2 Name, role, value
Field descriptions

For accessibility, all form fields need a text description (tool tip).

To add a text description to a form field:

1. Select one of the Form tools, and then right-click (Windows) or Ctrl-click (Mac OS) the form field.
2. Choose Properties from the context menu.
3. Click the General properties tab.
4. Enter a description of the form field in the Tooltip field.

*Note:* See the related WCAG sections: 1.3.1 Info and Relationships (Level A), 3.3.2 Labels or Instructions (Level A), 4.1.2 Name, role, value

Alternate text

Figures alternate text

Make sure that images in the document either have alternate text or are marked as artifacts.

If this rule check fails, do one of the following:

- Select Figures Alternate Text in the Accessibility Checker panel, and choose Fix from the Options menu. Add alternate text as prompted in the Set Alternate Text dialog box.
- Use the Tags panel to add alternate text for images in the PDF.
- Open the Content panel and right-click (Windows) or Ctrl-click (Mac OS) the content that you want to mark as an artifact. Then, select Create Artifact from the context menu. (To display the Content panel, choose View > Show/Hide > Navigation Panes > Content.)

*Note:* See the related WCAG section: 1.1.1 Non-text Content. (A)

Nested alternate text

Screen readers don't read the alternate text for nested elements. Therefore, don't apply alternate text to nested elements.

To remove alternate text from nested elements, do the following:

2. Right-click (Windows) or Ctrl-click (Mac OS) a nested element in the...
Create and verify PDF accessibility, Acrobat Pro DC

**Tags** panel and choose **Properties** from the context menu.

3. Remove both the **Alternate Text** and the text to which it's applied from the **Object Properties** dialog box, and then click **Close**.

**Note:** See the related **WCAG section: #1.1.1 Non-text Content. (A)**

**Associated with content**

Make sure that alternate text is always an alternate representation for content on the page. If an element has alternate text, but does not contain any page content, there is no way to determine which page it is on. If the Screen Reader Option in the Reading preferences is not set to read the entire document, then screen readers never read the alternate text.

1. Right-click (Windows) or Ctrl-click (Mac OS) an item to check.

2. Open it in the **Tags** panel. (To display the **Tags** panel, choose **View > Show/Hide > Navigation Panes > Tags**.)

3. Remove the **Alternate Text** from the **Tags** panel for any nested item that has no page content.

**Note:** See the related **WCAG section: 1.1.1 Non-text Content. (A)**

**Hides annotation**

Alternate text can't hide an annotation. If an annotation is nested under a parent element with alternate text, then screen readers don't see it.

To remove alternate text from nested elements:

1. Choose **View > Show/Hide > Navigation Panes > Tags**.

2. Right-click (Windows) or Ctrl-click (Mac OS) a nested element in the **Tags** panel and choose **Properties** from the context menu.

3. Remove the alternate text from the **Object Properties** dialog box, and then click **OK**.

**Note:** See the related **WCAG sections: 1.3.1 Info and Relationships. (Level A), 4.1.2 Name, role, value**

**Other elements alternate text**

This report checks for content, other than figures, that requires alternate text (such as multimedia, annotation, or 3D model). Make sure that alternate text is always an alternate representation for content on the page. If an element has alternate text but does not contain any page content, there is no way to determine which page it is on. If the Screen Reader Options in the Reading preferences is not set to read the entire document, then screen readers don't read the alternate text.
1. Choose **View > Show/Hide > Navigation Panes > Tags**.
2. Right-click (Windows) or Ctrl-click (Mac OS) a nested element in the **Tags panel** and choose **Properties** from the context menu.
3. Remove the alternate text from the **Object Properties** dialog box, and then click **OK**.

**Note:** See the related **WCAG section**: 1.1.1 Non-text Content. (A)

### Tables

Because table structure can be complex, it is best practice to check them for accessibility manually.

#### Rows

This rule checks whether each **TR** in a table is a child of **Table**, **THead**, **TBody**, or **TFoot**.

See **Correct table tags with the Tags panel**.

**Note:** **Related WCAG section**: 1.3.1 Info and Relationships. **(Level A)**

#### TH and TD

In a proper table structure, **TH** and **TD** are children of **TR**.

See **Correct table tags with the Tags panel**.

**Note:** See related **WCAG section**: #1.3.1 Info and Relationships. **(Level A)**

#### Headers

For accessibility, it's necessary that all tables in the PDF have a header.

See **Correct table tags with the Tags panel**.

**Note:** **See the related WCAG section**: 1.3.1 Info and Relationships. **(Level A)**

#### Regularity

To be accessible, tables must contain the same number of columns in each row, and rows in each column.
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See Correct table tags with the Tags panel.

Note: See the related WCAG section: 1.3.1 Info and Relationships. (Level A)

Summary

Table summaries are optional, but can improve accessibility.

1. Choose Tools > Accessibility > Reading Order.
2. Select the table by drawing a rectangle around it.
3. In the Touch UP Reading Order dialog box, click Table.
4. Right-click (Windows) or Ctrl-click (Mac OS) Table.
5. Click Edit Table Summary.
6. Enter a summary and click OK.

Note: See the related WCAG section: 1.3.1 Info and Relationships. (Level A)

Lists

List items

The check reports whether each List Item (LI) is a child of List (L). When this rule check fails, the structure of this list is incorrect. Lists must have the following structure: A List element must contain List Item Elements. And, List Item Elements can only contain Label Elements and List Item Body Elements.

To fix the list structure:

1. Find the list in the Accessibility Checker panel by right-clicking (Windows) or Ctrl-clicking (Mac OS) the failed element and choosing Show In Tags Panel.
2. Create elements, change the types of elements, or rearrange existing elements by dragging them.

Note: See the related WCAG section: 1.3.1 Info and Relationships. (Level A)

Lbl and LBody

Lists must have the following structure: A List element must contain List Item Elements. And, List Item Elements can only contain Label Elements and List Item Body Elements. When this rule check fails, the structure of this list is incorrect.

To fix the list structure:

1. Find the list in the Accessibility Checker panel by right-clicking
Create and verify PDF accessibility, Acrobat Pro DC

(Windows) or Ctrl-clicking (Mac OS) the failed element and choosing Show In Tags Panel.

2. Create elements, change the types of elements, or rearrange existing elements by dragging them.

**Note:** See the related WCAG section: 1.3.1 Info and Relationships. (Level A)

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### Headings

#### Appropriate nesting

This rule checks nested headings. When this check fails, headings are not nested properly.

To fix the list structure:

1. Find the list in the Accessibility Checker panel by right-clicking (Windows) or Ctrl-clicking (Mac OS) the failed element and choosing Show in Tags Panel.

2. Create elements, change the types of elements, or rearrange existing elements by dragging them.

**Note:** See the related WCAG section: 2.4.6 Headings and Labels. (Level AA). The order of headings is not required under WCAG, and is only an advisory technique.
UNIVERSALLY DESIGNED WEBSITES & BLACKBOARD SHELLS
Distance learning has been around for a long time. For years instructors have taught students across great distances via correspondence courses using printed materials. The early days of television witnessed the introduction of televised courses. Today, an instructor can videoconference with several classrooms full of students. Early online courses using email were rapidly followed by web-based instruction. Today, the lines are blurred between different types of distance learning courses as multiple modes of delivery are employed in a single course. For example, a class “library” could be a website; class discussions could take place using a message board; some course content could be delivered using online materials and videos.

Access to more students is a common reason given for providing instruction in a distance learning format. However, these access arguments usually focus on people separated by distance and time and often do not include consideration of the needs of people with disabilities. In fact, the design of many distance learning courses erects barriers to the full participation of students and instructors with some types of disabilities.

Ensuring that individuals with disabilities can participate in distance learning courses can be argued on ethical grounds. Many people simply consider it to be the right thing to do. Others are more responsive to legal mandates. The Americans with Disabilities Act (ADA) of 1990 and its 2008 amendments mandate that no otherwise qualified individuals shall, solely by reason of their disabilities, be excluded from participation in, be denied the benefits of, or be subjected to discrimination in public programs. The ADA applies to Internet-based programs and services. Clearly, distance learning programs must make their offerings available to people with disabilities who are eligible to take a class.

The following paragraphs discuss access issues and present design considerations for ensuring that a course is accessible to potential instructors and students with a range of abilities and disabilities. The field of universal design provides a framework for this discussion.

Access Barriers
Thousands of specialized hardware and software products available today allow individuals with a wide range of abilities and disabilities to productively use computing and networking technologies. If a prerequisite to a course is Internet access, administrators and instructors can assume that any student enrolled will have access to the assistive technology they require. However, assistive technology alone does not remove all access barriers. Described below are examples of access challenges in distance learning courses faced by students and instructors who have access to assistive technology.

Blindness
A student or instructor who is blind may use a computer equipped with text-to-speech software. Basically, this system reads, with a synthesized voice, whatever text appears on the screen. He cannot interpret graphics (including photographs, drawings, and image maps) unless text descriptions are provided. Printed materials, videos, presentations, and other visual materials also create access challenges for him. These barriers can be
overcome with alternate media such as accessible electronic text, and text-based descriptions.

**Other Visual Impairments**
A student or instructor who has limited vision can use special software to enlarge screen images. He may see only a small portion of a web page at a time. Consequently, he can easily become confused when web pages are cluttered and when layouts change from page to page. Standard printed materials may also be inaccessible to him; he may require large print or electronic text that his system can enlarge for him. Individuals who are colorblind cannot successfully navigate web pages that require the user to distinguish some color combinations.

**Specific Learning Disabilities**
Some specific learning disabilities impact the ability to read, write, or process information. A student with a learning disability may use a speech output or screen enlargement system similar to those used by people with visual impairments. She may have difficulty understanding websites when the information is cluttered and when the screen layout changes from one page to the next.

**Mobility Impairments**
A student or instructor with a mobility impairment who cannot move his hands may use an alternative keyboard or speech input to gain access to online course materials and communication tools. Another student or instructor may be able to use standard input devices, but lack the fine motor skills required to select small buttons on the screen. If his input method is slow, a person with a mobility impairment may not be able to effectively participate in synchronous (real-time) communications. If any place-bound meetings are required in a distance learning course, a participant with a mobility impairment may require that the location be wheelchair-accessible.

**Hearing Impairments**
Most Internet resources are accessible to people with hearing impairments because these resources do not require the ability to hear. However, when websites include audio output without providing text captioning or transcription, a student who is deaf is denied access to the information. Course videos that are not captioned are inaccessible to this student. He may also be unable to participate in a telephone conference or videoconference unless accommodations (e.g., sign language interpreters) are provided for that part of a distance learning course.

**Speech Impairments**
A student with a speech impairment may not be able to effectively participate in interactive telephone conferences or videoconferences. However, modes of participation that do not require the ability to speak, such as email, are fully accessible.

**Seizure Disorders**
Attention-grabbing flickers, at certain rates (typically between 2 to 55 hertz), can induce seizures for people who are susceptible to them. They should be avoided.

**Universal Design**
The design of a distance learning class can impact the participation of students and instructors with visual, hearing, mobility, speech, and learning disabilities. Planning for access as the course is being developed is much easier than creating accommodation strategies once a person with a disability enrolls in the course or applies to teach it.
Universal design (UD) is defined by the Center for Universal Design (CUD) at North Carolina State University as “the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design” (http://www.ncsu.edu/ncsu/design/cud/). At the CUD, a group of product developers, architects, environmental designers, and engineers established a set of principles of universal design to apply in the design of products, environments, and communication and other electronic systems. General principles include the following: the design is useful to people with diverse abilities; and the design accommodates a wide range of individual preferences and abilities; the design communicates necessary information effectively to the user, regardless of ambient conditions or the user’s sensory abilities.

UD principles and strategies have been applied to libraries and other educational products and environments. Consult The Center of Universal Design in Education (CUDE) at the University of Washington (www.uw.edu/doit/CUDE/) for detailed information about UD.

When UD principles are applied, products meet the needs of potential users with a variety of characteristics. Disability is just one of many characteristics that an individual might possess. Others include height, age, race, native language, ethnicity, and gender. All potential characteristics of participants should be considered when developing a distance learning course. Just as modern sidewalks and buildings are designed to be used by everyone, distance learning designers should create learning environments that allow all potential students and instructors to fully participate.

The next sections of this publication provide examples of strategies for making distance learning courses welcoming, accessible, and usable to everyone. Be sure to include a statement on all promotional materials about how to obtain materials in alternate format and other disability-related accommodations.

On-Site Instruction
The interactive video sessions, proctored examinations, and retreats for students in some distance learning courses require place-bound meetings. In these cases, the facility should be wheelchair accessible. The furniture should be flexible enough to accommodate wheelchair-users and accessible restrooms and parking should be available nearby. Standard disability-related accommodations, such as sign language interpreters, should be provided when requested. Instructors should speak clearly; face students when speaking to facilitate lipreading; and read aloud and describe text and other visual materials for those who cannot see them.
Internet-Based Communication
Some distance learning programs employ real-time communication in their courses. In this case, students communicate synchronously (at the same time), as compared to asynchronously (not necessarily at the same time). Besides providing scheduling challenges, synchronous communication is difficult or impossible for someone who cannot communicate quickly. For example, someone with a learning disability who takes a long time to compose her thoughts or someone whose input method is slow may not be fully included in the discussion. In addition, some synchronous software erects barriers for individuals who are blind. Instructors who choose to use synchronous tools should plan for an alternate method of communication (e.g., email) when not all students in a group can fully participate using the synchronous tool.

Text-based, asynchronous tools such as email, message boards, and email-based lists generally erect no special barriers for students with disabilities. If a prerequisite to a course is for students to have access to email, the instructor can assume that participants with disabilities already have an accessible email program to use. Email communication between individual students, course administration staff, the instructor, guest speakers, and other students is accessible to all parties, regardless of disability.

Web Pages
Applying UD principles makes web pages accessible to individuals with a wide range of disabilities. Guidelines for making web pages accessible have been developed by the Web Accessibility Initiative (WAI) of the World Wide Web Consortium (W3C). W3C, an industry group that was founded in 1994 to develop common protocols that enhance interoperability and guide the evolution of the web, is committed to ensuring that the World Wide Web is fully accessible to people with disabilities.

There are basically two approaches for making web page content and navigation accessible. Certain types of inaccessible data and features need to be avoided or alternative methods need to be provided for carrying out the function or accessing the content provided through an inaccessible feature or format. For example, an online learning designer can avoid using a graphic that is inaccessible to individuals who are blind, or can create a text description of the content that is accessible to text-to-speech software.

Web pages for a distance learning class should be tested with a variety of monitors, computer platforms, and a web browser with the graphics and sound-loading features turned off (to simulate the experiences of people with sensory impairments). Testing to see if all functions at a website can be accessed using a keyboard alone is also a good accessibility test.

Course designers using learning management systems (LMSs; such as Blackboard, eCollege, and Canvas) can employ product accessibility tools to create accessible courses.

Documents
Students who are blind or who have specific learning disabilities that affect their ability to read may require that printed and electronic documents (e.g., PDF, Word, PowerPoint) be available in accessible formats. Making the content of materials available in an accessible web-based format (HTML) may provide the best solution for students. Otherwise, consult resources to make specific files accessible. Prepare to make them in text-based formats with structured headings and the content of images described in alternative text.
Videoconference
Ideally, whenever a video presentation is used in a distance learning course, captioning should be provided for those who have hearing impairments and audio description (that describes aurally the visual content) should be provided for those who are blind. If a video publisher does not make these options available, the distance learning program should have a system in place to accommodate students who have sensory impairments. For example, the institution could hire someone local to the student to describe the visual material to a blind student or to sign audio material for a student who is deaf. Real-time captioning (developed at the time of the presentation) or sign language interpreting should be provided for videoconferences when requested by participants who are deaf.

Teleconference
Sometimes, online courses include teleconferencing opportunities for discussion in small groups. This mode of communication creates scheduling challenges for everyone. It is also inaccessible to a student who is deaf. Instructors who use teleconferencing for small group discussions should allow alternative communication (e.g., email) that is accessible to everyone in a specific group. Or, a student who is deaf might be able to participate in a teleconference by using the Telecommunications Relay Service (TRS), where an operator types what the speaker says for a student who is deaf to view on his text telephone (TTY) and translates his printed input into speech. However, this system might be too slow to allow participation in lively conversations. Another accommodation approach involves setting up a private chat room on the web. A transcriptionist types the conversation for the student who is deaf to view. The student can also type his contributions into the chat room and they can be voiced by someone in the group who is monitoring the chat room. Various options should be discussed with the student who needs an accommodation.

Benefits of Accessible Design for People without Disabilities
People without disabilities may have temporary or situational constraints that are similar to those imposed by disabilities. For example, people who cannot access graphics due to computer system limitations are in a similar situation as students who are blind. A noisy environment that prohibits the use of audio features imposes constraints similar to those faced by students with hearing impairments. Those for whom English is a second language experience reading difficulties similar to those experienced by people with some types of learning disabilities. People who need to operate a computer but whose hands are occupied with other activities face challenges similar to those who use a hands-free input method because of a disability.

Applying UD principles assists both people with and people without disabilities. For example, using clear and simple language
and navigational mechanisms on web pages facilitates use by those whose native language is not the one in which the course is taught, as well as people with visual and learning disabilities. People who have turned off support for images on their browsers in order to maximize access speed, benefit when multimedia features provide text alternatives for the content, as do people who are blind and those who wish to use search tools to locate specific content. Similarly, people who cannot view the screen because they must attend to other tasks benefit from text-to-speech systems used by people who are blind. Captions provided on video assist people who work in noisy or noiseless surroundings, people for whom English is a second language, and people who have hearing impairments. Making sure that information conveyed with color is also available without color benefits those using monochrome monitors as well as those who are colorblind. Providing multiple formats of information also addresses differences in learning styles.

**Getting Started**

Distance learning programs should be proactive in making their courses accessible. Rather than wait until someone with a disability enrolls in a course to address accessibility issues, they should consider them as they plan the course. To get started, program staff can

- think about the wide range of abilities and disabilities potential students might have
- include information in promotional publications on how to request accommodations
- arrange wheelchair-accessible facilities for on-site instruction
- make sure media can be accessed using sight or hearing alone, and online content can be accessed with a keyboard alone
- adopt and enforce accessibility standards
- provide information about standards, training, and support to instructors and design staff
- use the accessibility features of an LMS
- periodically review and update standards, procedures, and support issues

For a list of ten indicators for accessible distance learning programs consult the publication *Equal Access: Universal Design of Distance Learning Programs* at [www.uw.edu/doit/equal-access-universal-design-distance-learning-programs](http://www.uw.edu/doit/equal-access-universal-design-distance-learning-programs).

**Conclusion**

Distance learning courses are designed to reach out to students from anywhere. If UD principles are used in creating these classes, they will be accessible to any students who enroll in them and any instructors who are hired to teach them. Designed correctly, distance learning options create learning opportunities for students with a broad range of abilities and disabilities. Designed poorly, they erect new barriers to equal participation in academics and careers. UD can bring us closer to making learning accessible to anyone, anywhere, at any time.
Video
A short video presentation, Real Connections: Making Distance Learning Accessible to Everyone, demonstrates key points summarized in this publication. It may be freely viewed online at www.uw.edu/doit/videos/index.php?vid=22 or purchased in DVD format. Permission is granted to reproduce DO-IT videos and publications for educational, noncommercial purposes as long as the source is acknowledged.

Additional Resources
The following resources are useful to those who wish to research this topic further.

AccessDL (The Center on Accessible Distance Learning)
www.uw.edu/doit/programs/accessdl

Americans with Disabilities Act of 1990
www.ada.gov/pubs/ada.htm

CAST (Center for Applied Special Technology)
www.cast.org

The Center for Universal Design
www.ncsu.edu/ncsu/design/cud/

The Center for Universal Design in Education
www.uw.edu/doit/programs/center-universal-design-education/overview

Closing the Gap Resource Directory
www.closingthegap.com

Creating Video and Multimedia Products that are Accessible to People with Sensory Impairments
www.uw.edu/doit/creating-video-and-multimedia-products-are-accessible-people-sensory-impairments

EASI (Equal Access to Software and Information)
easi.cc

Equal Access: Universal Design of Distance Learning Programs
www.uw.edu/doit/equal-access-universal-design-distance-learning-programs

IMS Guidelines for Developing Accessible Learning Applications
www.imsglobal.org/accessibility/accessiblevers/index.html

SNOW (Special Needs Ontario Window)
snow.idrc.ocad.ca/

Trace Center
www.trace.wisc.edu

W3C, Web Content Accessibility Guidelines 2.0
www.w3.org/TR/WCAG20/

WebAIM—Web Accessibility in Mind
www.webaim.org
About DO-IT
DO-IT (Disabilities, Opportunities, Internetworking, and Technology) serves to increase the success of individuals with disabilities in challenging academic programs and careers, such as those in science, engineering, mathematics, and technology. Primary funding for DO-IT is provided by the National Science Foundation, the State of Washington, and the U.S. Department of Education.

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Your gift is tax deductible as specified in IRS regulations. Pursuant to RCW 19.09, the University of Washington is registered as a charitable organization with the Secretary of State, State of Washington. For more information, call the Office of the Secretary of State, 800-322-4483.
The goal of Blackboard Learn is to provide an accessible platform for students and instructors for equal access to online courses. Instructors have some responsibility to make their course content accessible. Students need to ask for accommodations if they need them. Find out how you can create and participate in inclusive learning experiences by using the accessibility features in Blackboard Learn.

Blackboard is fully committed to ensuring that our platform contains no barriers for users with disabilities and is both usable and accessible by everyone, regardless of age, ability, or situation. Blackboard measures and evaluates accessibility levels using two sets of standards: Section 508 of the Rehabilitation Act issued from the United States federal government and the Web Content Accessibility Guidelines (WCAG 2.0) issued by the World Wide Web Consortium (W3C).

The linked resources are available in English only.

### Design Accessible Content

The following list includes the top five things you need to know about designing accessible content:

1. If you are adding images to your content, you must define alternative (alt) text for them. Alt text should be simple and succinct, and describe exactly what the image is. Example: `alt = "photograph of a Cell Dividing."` If an image is a diagram that conveys more complicated information, a long description or textual format of the material is required.

2. If you are adding video or other multi-media content to your course, you must include descriptive captions for the content to ensure users with hearing impairments can consume it. To learn more, see [Best Practice: Captioning Video Content](#).
3. One of the top complaints from students with visual impairments is the inability to consume attached files. Format attached documents with appropriate headings to ensure they can be properly consumed by screen readers. When creating your documents, use the **Formatting and Style** options available in Microsoft Office, Adobe, or other word processing tools to define appropriate headings and lists.

4. Properly tag attached PDF files to ensure their structures can be read by screen readers. Simple methods for "print" or "save" to PDF create a single image of the file. While the document looks like it is properly structured, the screen reader is not able to interact with or read any of the material. To learn more about making accessible PDF documents, see [Meet PDF Accessibility Standards](https://support.adobe.com/en_US/kb/pdf-accessibility.html) on the Adobe Acrobat website.

5. Be sure that you provide your students with clear expectations, instructions, and directions for all assignments and tests. Students with cognitive impairments or learning disabilities can have trouble focusing on even simple tasks. Clear directions and understandable expectations can help them focus, making them much more likely to succeed.

### Using Blackboard With a Hearing Impairment

While the Blackboard Learn product does not auto-caption media files, it does provide full support for captions in all media types that you can upload or view within your course content. With some forethought, you can even caption the videos you add with [Browse My YouTube Videos (Video Everywhere)](https://support.blackboard.com/hc/en-us/articles/204964330-Captioning-video-content-in-Blackboard-Learn). To learn more, see [Best Practice: Captioning Video Content](https://support.blackboard.com/hc/en-us/articles/204964330-Captioning-video-content-in-Blackboard-Learn).

### Using Blackboard With a Visual Impairment

The following list includes the top five things to know about using Blackboard with a visual impairment:

1. **Blackboard Learn** is developed against the [W3C Web Content Accessibility Guidelines](https://www.w3.org/WAI/intro/index.html) to ensure its compatibility with the latest versions of assistive technology including screen readers such as JAWS and VoiceOver.

2. Pages in Blackboard Learn follow a common structure to ensure familiarity as you navigate through the system. A combination of headings and ARIA landmarks are used to define the structure of the page. Features such as the global navigation menu and Quick Links can help with faster, more efficient navigation. All keyboard navigation follows commonly used web navigation models.

3. The **Quick Links** feature goes beyond traditional skip links, allowing you to jump directly to any heading or ARIA landmark on the current page. You can open Quick Links with a keyboard shortcut (Shift+Alt+L) from anywhere in a page so that it's always easy to move around.

4. Alt tags are used to identify all images used within Blackboard Learn. When instructors are building course content, they are prompted to add alt text to images they upload, as well to ensure visual information is available to all users.

5. If you have defined high contrast settings on your computer, you can enable high contrast styles on the login page of Blackboard Learn. Doing so will inform the system to respect your operating system selections to ensure the best visual experience based on your personal needs.
Using Blackboard With a Mobility Impairment

The following list includes the top five things to know about using Blackboard with a mobility impairment:

1. Keyboard navigation throughout the Blackboard Learn system follows common web navigation models to ensure consistency and familiarity with other web-based experiences.
2. Quick links will aggregate up a list of all the headings and landmarks on the page. This allows you to quickly find and navigate to elements in the middle of the page. You can open Quick Links with a keyboard shortcut (Shift+Alt+L) from anywhere in the page so that it's always easy to move around.
3. Keyboard shortcuts are available for a variety of tools in Blackboard Learn to increase efficiency for keyboard users. Keyboard shortcuts are specific to the current page or tool in use. Discover them by opening the Quick Links tool (Shift+Alt+L). To learn more, see Keyboard Shortcuts for the Content Editor.
4. Located on every page where you can reorder items using drag-and-drop function, the keyboard accessible reordering tool displays the items on the page as a list. You can use keyboard commands to reorder the items. To learn more, see Keyboard Accessible Reordering.

Using Blackboard With a Learning Disability

The following list includes the top five things to know about using Blackboard with a learning disability:

1. When you are in a course, you can collapse the course menu to reduce the clutter on the page and help you focus on the task at hand. Bring the menu back at any time by holding your mouse on the left of the screen and clicking the bar that appears. This control is also accessible with a keyboard.
2. Menu options, buttons, and controls that are not always needed only appear when the items they relate to receive focus from either the mouse or keyboard. This helps reduce the visual noise on the page and ensures access to the menus as soon as you need them.
3. Activity counters within the global navigation menu and My Blackboard tools can alert you to new items or information requiring your attention. As you review these items, the counters are cleared so that you are always aware of what is new or has changed since you last accessed the system.
4. If your system is enabled, you can set up individual notifications for new content, due dates, discussion posts, and other items within Blackboard Learn to alert you to information even when you are not logged into the system. These notifications are sent to you by email, shown in My Blackboard updates, or the Notifications Dashboard. If Blackboard Connect is installed, you can receive alerts by text message.
5. The Blackboard Learn system allows instructors to set up accommodations for tests based on individual needs. If you require more time, more attempts, different display options, or an alternative testing location, contact your instructor.

Accessibility Features in Blackboard Learn
As a student or an instructor, awareness and use of these features and tools creates an accessible environment for success.

My Blackboard

My Blackboard aggregates information from across the Blackboard Learn system and focuses on the individual user. From a single place, users can get a quick overview of everything related to various tools and courses, as well as their academic or institutional network and community. This allows users to respond, review, and directly interact with the information presented there. Activity counters quickly call attention to items requiring a user’s attention since he last accessed My Blackboard. Having a single place to go can simplify the overall experience for students with disabilities and help them feel more focused on the tasks they need to complete. Students can get an overview of outstanding information before diving into the details of their courses.

To learn more, see My Blackboard and Navigation.

Global Navigation

The global navigation menu refers to the set of links that appears at the top of the Blackboard Learn interface. To access it, click your name or use a keyboard shortcut. This menu provides a consistent, quick, and easy way to find information. You can also navigate to tools like My Blackboard, your courses, and even some personal settings from anywhere in the system.

Adaptive Release

With adaptive release, instructors can create individualized learning paths for students. Adaptive release controls the release of content to students based on a set of rules an instructor creates. The rules may be related to availability, date and time, individual users, group membership, scores or attempts on any Grade Center item, calculated columns in the Grade Center, or review status of an item in the course. Instructors can use adaptive release to target alternative content formats or additional materials directly to the students who need them.

To learn more, see Release Content.

Quick Links

Located in the top left of the interface, the Quick Links icon opens a list of all the ARIA landmarks, as well as an outline of all content headings on the page you are viewing. Any available keyboard shortcuts for the current tool or page also appear. You can quickly locate any heading or section within any page in the Blackboard Learn
application and jump directly to it. Quick Links is specific to the page you are viewing. You can open it at any
time with a keyboard shortcut (Shift+Alt+L). This shortcut provides a significant increase in efficiency for users
who rely primarily on their keyboards for navigating within the application.

To learn more, see Quick Links.

Test Exceptions

New settings appear on the Test and Survey Options pages called Test/Survey Availability Exceptions. With
these settings, instructors can select one or more groups or students and make a number of exceptions to the
already established availability settings for a test or survey. Exceptions provide an accommodation to a student
with a disability, such as allowing more time or attempts on the test, or providing accommodation for technology
and language differences.

To learn more, see Test and Survey Options.

Keyboard Accessible Reordering

Located on every page where you can reorder items using drag-and-drop function, the keyboard accessible
reordering tool displays the items on the page as a list. You can use keyboard commands to reorder the items.

To learn more, see Keyboard Accessible Reordering.

YouTube Player Controls

The YouTube mashup allows an instructor to search for and embed YouTube videos directly in course content.
When the video is displayed, students can use the accessible player controls that allow them to play, pause,
stop, and control the volume of a video with a keyboard or screen reader. They are not required to interact with
the more challenging Flash based controls that are present with the default YouTube videos.

Notifications

You can configure Blackboard to send out notifications through a variety of channels, informing users about
changes to their courses. Notifications are specific to the individual user, so both instructors and students can
set what notifications are sent to them, as well as when and how they want to receive notifications. Users can
click a link within a notification and go directly to the individual item without the need to consume all the
surrounding content. When integrated with Blackboard Connect, users can optionally receive notifications by
text (SMS), text-to-voice, and telephone. These capabilities allow all users to understand what is happening with their courses in the medium that is most comfortable for them.

To learn more, see Notifications and Notification Dashboard Settings.

Display Options and Content Folders

Instructors can control the visual display of content on content pages or within folders in their courses. Options include showing only the text, showing only an icon to represent a content object, and showing both the text and the icon. With a lot of content on a page, students with cognitive disabilities can find it challenging to consume the information. Instructors can use folders and formatting to control the amount of clutter and help students to focus on one element at a time.

To learn more, see Course Style Options.

Content Editor

The content editor in Blackboard Learn is based on third-party technology from TinyMCE. It provides accessible controls, as well as keyboard shortcuts for formatting content created within it. The editor properly cleans up unnecessary HTML code that may be included when content is copied from Microsoft Office documents. This clean HTML ensures that screen reader users can fully consume any content created in or copied into the editor.

The formatting controls in the editor also ensure that headings added to content by an instructor do not conflict with the overall semantic structure of the page the content is displayed in. Building accessible content within a course is key to the success of all students. The content editor helps ensure that any content you create within it meets user and system expectations.

To learn more, see Content Editor.

High Contrast Styles

On the login page for the Blackboard Learn system, you can choose to enable a high contrast setting. This ensures the system uses the contrast settings you already defined in your operating system to display text, menus, and other navigation controls within the Blackboard Learn environment. For users with visual impairments, the contrast settings defined within the operating system likely provide the most comfortable manner to view and consume information. The high contrast support in Blackboard Learn allows you to continue to use them.

To learn more, see Log In to Learn.
Strive for clean and simple.

The following list presents ideas for page design, layout, and typography to help make your content effective and increase its readability.

Design Principles

- **Keep pages clean and uncluttered.** Use plenty of white space to separate paragraphs, images, and other page elements to avoid overwhelming readers.

- **Align text and headings on the left.** Online readers’ eyes usually scan down the left side of the page. Centering headings will make your readers work harder to stay focused on the material.

- **Use block-style paragraphs.** Leave a space between each paragraph and do not indent the first line.

- **Be consistent.** Create predictability by using layouts that repeat design elements from page to page. Use the same fonts, colors, icons, and heading styles on each page to help students feel comfortable and find information faster.

- **Use headings.** Chunk information and make your page easier to scan. Choose your color scheme carefully and use colors that maximize readability. When in doubt, use black on white.

- **Use tables for presenting data.** Do not use tables when creating your page layout. You can add tags to tables used for data so screen readers can interpret header rows and cell data. If you use tables to define the layout of your page, screen readers will have a more difficult time interpreting the information on the page.

- **Use simple typography.** Use no more than three font faces in your entire course. Be consistent with how you use them. For example, use Verdana for body copy text, and use Times New Roman for subheadings. Use fonts that are standard for everyone’s computers and easy to read, such as Arial, Times New Roman, Trebuchet, Georgia, and Verdana.

To learn more, visit [10 Typography Mistakes](#) for examples of good and bad usage. The website is an
excellent example of all the principles listed for good page design.

Layout Examples

Click the following images to enlarge them in your browser. Use your browser's back button to return to the topic.

Easy-to-scan headings

- Useful, simple icons added to the headings help readers easily determine what they want to read.
- Color draws attention to elements of the page, such as "Example."
- Horizontal bars divide the page into manageable chunks.
- White space improves page layout, and emphasizes and divides the content. It leads a reader's eye from one element to another.

Images speak for themselves

Some learners prefer to have information presented visually. Try using a mix of images and text to accommodate for this learning style.

Ask yourself: Can a learner look at an image and understand the concept without reading the text?

Use icons consistently

To help keep pages short and concise, offer more information in links to other pages. For example, if you want students to view videos, always use the same icon when introducing the link.

Consistency helps users become comfortable with how to navigate in your course and what to expect.
Reading online is quite different from reading printed material.

In preparing content for your online course, you may find you have existing materials you want to incorporate into Blackboard Learn. To help maximize student learning, chances are you need to do some editing to get these ready for the web.

In a 1997 survey conducted by Jakob Nielson, researchers found approximately 80% of their test users scanned web pages. A mere 16% read through the content word for word.

The study also showed most users read in a roughly "F" formation. First, they read across the top part of the page. Next, they skip down several lines and carry out a second horizontal sweep, following this up with a vertical skimming of the left side of the page.

What can you learn from the online reading habits of the test users? Put the most important information in the first two paragraphs. If students do not read any further, at least they are exposed to the main concepts you want to get across. Students who have cognitive difficulties may quit reading part way through the page and will benefit if the information is structured in this way.

Consider using more of the following guidelines from Jakob Nielson's website.

💡 Assist page scanning

- Present information in chunks.
- Use bulleted lists to further break up content.
Put your most important content at the top of the screen or in the region of the browser window that loads first. This portion of the web page is visible without scrolling.

- In your subheadings, paragraphs, and bullet points, add information-carrying words. This allows students to quickly see these keywords when skimming down the left side of the page.
- Use brief sentences.

Create well-structured paragraphs

- Present one idea per paragraph. Limit paragraphs to two to four sentences.
- Put the most important information in the first sentence, followed by details.

Reduce word count

- Use 50% less words than you use in print.
- If a page is longer than two or three screens, break it up into several shorter pages.

Highlight key words

- Use color, bold text, italic, or typeface variations, but in moderation.
- Avoid using ALL CAPS. This is difficult to read and carries extra emphasis in a screen reader—may sound like shouting. Moreover, capitalized words in sentences and paragraphs are harder to read than lowercase words. Capitalization causes problems for people with dyslexia.
- Avoid underlining. Students may assume it is a link.

Use a conversational tone

- Write as if you are having a conversation, keeping the tone informal, but informational.
- Use personal pronouns and action verbs.
- Use active voice so sentences are concise, flow smoothly, and are easy to understand.
- Avoid jargon and unnecessarily complex or technical language.
Outstanding online courses begin with outstanding content presented in a way that minimizes barriers to understanding.

Effective content design can create a more compelling and engaging showcase for your course material. More importantly, well-designed content can help achieve the following:

- **Ease of learning**: How quickly can a new student navigate through your course while learning the material?
- **Efficiency of use**: After a student is familiar with your course setup, how quickly can they accomplish tasks?
- **Subjective satisfaction**: How much do students enjoy working through your course material?
- **Usability**: Can users with different levels of ability, experience, knowledge, language skills, hardware, or concentration level use your course easily?
- **Accessibility**: Products and services that are accessible provide the means for people with disabilities to receive the same level of information, services, and use that people without disabilities receive. Is your course a level playing field?

Effective design can also be a simple and straightforward design. Clean and simple can be aesthetically pleasing...
and still have impact.

Pages with simple design:

- Download quickly.
- Are easy for students to understand and navigate.
- Create emphasis and predictability.
- Have a fresh, up-to-date feel.
- Are more likely to meet accessibility guidelines.

A well-designed course requires planning. You must consider not only visual design, but also writing style, tone, arrangement of information, and accessibility.
1 in every 12 men and 1 in every 165 women report some form of color vision disability.

Many of us realize the power and significance color schemes and color cues play in learning. Most of us have specific color preferences. Color blindness is only one important fact to keep in mind when devising a color scheme that makes your content accessible to all students.

Colors appear differently depending on the person, the computer, the monitor, the operating system, or the browser used.

Because you cannot be sure everyone will see the "real" colors you chose, try to view your course on an array of computers and browsers to see what others may see.

**Key Color Considerations**

- *Use a consistent color scheme.* Use no more than five colors in your palette. Different shades of the same hue with one or two extra colors as accents work well.

- *Choose a light shade for the background color.* Dark text against a white background is the most readable combination. If you decide to use a non-white background, select a light color to maximize contrast. Avoid dark pages or loud glaring colors, such as bright red, green, or yellow. These cause eye fatigue and are hard to read.
- **Use color discreetly and use strong color sparingly.** For example, black on yellow is a good color combination because the contrast between the colors is strong. But for the entire page? Instead, use the black and yellow combination for drawing attention to a portion of your page, such as an information chart.

- **Choose different colors for each of the three link statuses: visited, active, and static.** Keep these consistent throughout the course. Link colors should be dark enough to be easily visible on a white background.

- **Avoid placing red and green, and blue and brown together.** These color pairings are hard to tell apart by people with color blindness.

- **Do not rely on color alone to relay key information.** Make important text stand out by highlighting it in bold, using an asterisk (*) beside it, or using the emphasis tag. Use the ALT attribute on colored images to help convey information that is color dependent.

## Harmonious Color Combinations

### Monochromatic

Monochromatic color schemes use a single color. You can use differing values of one color to create the feel of different colors. Monochromatic color schemes are harmonious and peaceful, and provide a feel of sophistication. Using a single color creates unity and can help to create or tie things together.

### Analogous

Analogous color combinations use colors that are related. Analogous color schemes use colors that are next to each other on the color wheel. They usually match well and create serene and comfortable designs. These combinations are often found in nature, and are harmonious and pleasing to the eye. A selection of blues and purples, or reds and oranges create an analogous color scheme.

### Contrasting

Contrasting colors are complementary and pleasing to the eye. Colors that are opposites create contrasting color schemes. For example, yellow and purple or red and green are contrasting colors. Contrasting color schemes generally use a warm color and a cool color.

### Triad

Triadic color combinations are comprised of three opposing colors. A triadic color scheme uses colors that are evenly spaced around the color wheel. Red, yellow, and blue would be a triadic color scheme.
Use graphics purposefully and not just because they look good.

You can use graphics to enhance other content or serve as standalone instructional elements. They can provide valuable information, such as charts, photos, diagrams, examples. They can assist in navigation with the use of banners or provide visual cues to help orient the student to the course with the use of icons.

Benefits of Graphics

- **Navigation.** Users locate information more quickly through visual clues.
- **Understanding.** Increase retention and make difficult information easy to understand.
- **Models.** Depict a concept visually to save time and increase effectiveness.
- **Relationships.** Connections between ideas or concepts are more easily understood with images.

Tips for Adding Graphics to Your Course
- Use simple graphics. Clean and simple is often the most effective. You do not want design overtaking content, nor do you want to increase download time unnecessarily. Avoid lengthy text and lots of numbers within the graphic.

- Avoid background images. Use a white or pale solid background with dark text instead of adding background images. High contrast between text and background is easier to read.

- Watch the file size. Large and numerous images may look great on your page, but they will frustrate users who must wait for images to load.

- Use the right format. You must save your pictures in a web-ready format. In general, use the PNG format for simple graphics, such as logos, charts, and drawings. The JPG format is usually better for photos and images with subtle shadings or gradients. The JPEG format also allows for better compression of a file—a 1500 KB file can reduce to 150 KB—but this may reduce some image quality. Select the best format for better image quality and smaller file size.

- Crop photos. Cut out nonessential areas of an image to maximize impact and decrease download time.

- Use animated images sparingly. They can cause the screen, or parts of it, to flicker and change rapidly. Animations can detract from the accessibility and usability of a page. Moving images also cause problems for students with cognitive impairments and may be hard to interpret by students who have low vision.

- Provide alternative text using the ALT attribute. For detailed images like graphs or maps, use the long description attribute to provide more information. Screen readers and other text-to-speech software read the image's alternative text aloud to the user.
Best Practice: Captioning Video Content

About Captioning

If you want to fully engage learners with video content, add captions. Captioning video creates accessible content for individuals who are deaf or hearing impaired. Captions are also important for anyone working in a noisy environment. Captions add another dimension to video content, making a richer learning experience for students who have specific neurological processing problems, non-native speakers, adults working toward basic literacy, and children learning to read.

Different Types of Captions

The following list includes the different types of captioning. Not all types of captioning fulfill all accessibility requirements.

- **Closed Captions**: Video that has closed captions is denoted with a familiar CC icon. Using closed captions is optional. Users can turn them on or off with their video player or other controls. Closed captions for video on television are read by a decoder that is part of the hardware of all television sets sold in the United States. Closed captions for video on the web are read by a media player if it supports closed captions. Not all versions of media players support closed captions. Closed captions are not part of the actual video stream and exist in a separate text stream.

  Users who want to access closed captions need to understand how to turn them on from their televisions or media players. Include instructions for users in your course.

- **Open Captions**: Video that is accessed on the web can use open captions to provide on-screen text. Open captions are always displayed because they are part of the video stream. Open captions are not subject to different media player features. Users do not have to know how to turn the captions on. A disadvantage of open captions is that if the video is compressed, there can be a loss of quality and readability. They can also
• **Audio Description**: Adding a written description of sound effects such as "floor creaking" or "glass shattering" provides a richer experience for viewers. Audio descriptions are part of open or closed captions. They can fill in missing information a narrator fails to provide. For example, if a narrator says, "As you can see, the three main points support the conclusion," but doesn't say what those three main points are, audio description provides the missing information in the captions.

  *The easiest way to avoid requiring audio description in the example is to have a storyboard that the narrator follows that details visual information out loud.*

• **Real-time Captions**: Taking place during a synchronous event such as streaming video or a Blackboard Collaborate session, real-time captioning, sometimes referred to as real-time text, is a transcription service similar to TDD/TTY for telephones. Transcription services are separate from Blackboard Learn. There is usually a cost for the service and the service needs to be arranged in advance of the event.

• **Subtitles**: Translating just dialog and not including sound effects or other description, subtitles assume that viewers can see and hear. Only spoken dialog is captioned and often translated into a different language.

**Finding Captioned Content**

The easiest and fastest way to add captioned content to your course is to locate videos that already have captions. A relatively small percentage of videos are captioned, but you can locate them by filtering your search. In YouTube, enter your search term and then add a comma followed by cc. For example, when searching for captioned videos on MOOCs, type "MOOC, cc" in the search box.

iTunes and Hulu have filters to help you locate videos that have captions. Just because a video has captions doesn't make the actual content any better or worse than uncaptioned videos. Before adding a captioned video to your course, play it all the way through to ensure the captions are accurate and the content is what you are expecting.

**How to Caption a Video with YouTube**

You can caption any videos that you own, meaning you uploaded them to your YouTube account. YouTube's automatic captioning service provides a solid start to captioning your videos.

Having a storyboard is important, even if you are making informal videos. Have an outline and what you are going to say typed out. This takes a little extra time up front, but it saves time in the long run. With a storyboard, you'll sound better in your video, and you'll make fewer retakes. You'll also be able to copy and paste your narration into YouTube instead of retyping it into the caption editor.

1. Type an outline and basic storyboard.
2. Create your video.
3. Upload the video to YouTube.
4. Wait two to six hours.
5. Log back in to YouTube and click **Video Manager**.
6. Click *Edit* and click *Captions*.

7. Click *Automatic Captions*.

8. Edit the existing captions. Sometimes the automatic approximations are hilarious so this is fun.

Although YouTube's automatic captioning is far from perfect, it will get you 80 percent of the way there. The clearer your speaking voice and diction, the better results you'll get. The best part of the automatic captioning tool is the time codes are synched to your content. All you need to do is edit the existing text in each frame.
Adding captions to YouTube videos

1. Visit your Video Manager and click the drop-down menu next to the “Edit” button for the video you’d like to add captions to

2. Select Subtitles and CC

3. Select the original language of the video from the drop-down menu (160 languages)

4. Click the Add subtitles or CC button

5. Choose the language of the subtitles or CC you would like to create.

6. Click English (automatic) to see text of captions. *(It may take up to an hour for the automatic captions to be generated.)*

7. Once the English (automatic) caption option becomes available, click on the link to view the subtitle text.

8. These captions are auto-generated. Listen and view the captions to determine if edits should be made.

9. If edits are needed, click the edit button and type in the correct captioning. Be sure to save any changes.

10. Publish the final captions by clicking the publish button.

Be sure to add tag “yt:cc=on” in the tags box if you would like your video to automatically include captions.
Helping users understand the destinations of links is an important step towards increasing the usability and accessibility of a Web page.

Guidelines for In-Text Links

These guidelines apply to links embedded within the text of a document or a Web page.

Write links that make sense out of context. Use descriptive link text detailing the destination, not just “click here,” or other ambiguous phrases Link text should be made up of phrases rather than single words, so that users with limited motor control will not have difficulty selecting links.

Unclear Link Text Examples

- [Click here](#) for instructions on how to use the new Penn State Web tool.
- Learn more about color and accessibility [here](#) and [here](#)
Usable Link Text

- Instructions for the new Penn State Web tool are available online.
- Learn more about color and accessibility in terms of contrast and color coding
- Story 1: Read More | Story 2: Read More
- Register for: Accessibility 101, Accessibility 102
- Syllabus (PDF) Syllabus (Word)

NOTE: Some search engines, such as Google, give higher rankings to sites that use “context-rich” text links.

Other In-Text Link Design Guidelines

1. Maintain the standard that text links are underlined and are a different color value (lighter or darker) than the main text. This provision will help colorblind users find links more easily, and is good usability practice.

2. Avoid links opening in a new window unless absolutely necessary. New windows are disorienting to users of both screen readers and visual browsers (because the Back button becomes "disabled") Also be aware that some users of visual browsers disable pop-up windows to avoid advertising.
   NOTE: If links do open in a new window, include a textual indication (e.g. External Resources [New Window]) so screen reader users are aware of the new window.

3. If you use JavaScript links, such as those to open pop-up windows, make sure they are coded to be accessible to screen readers. Many JavaScript links are unusable in screen readers.

4. If you use an image or image map to create links, make sure the destination is included in an ALT tag. See the Image Maps and Image pages for more details on creating accessible links with images.

5. You can insert "Top of Page" links after each section in longer documents to reduce the need to scroll up (which can be difficult for motion impaired users). These links should be formatted differently from other links so that users know they are page-internal.

Guidelines for Blocks of Navigational Links
These guidelines apply primarily to blocks of navigational links in Web pages or PDF files.

1. If your Web site uses a block of navigational links on each page, make sure a skip navigation strategy has been implemented so that screen readers can avoid reading these links on each page.

   **WCAG 2.0 Guideline 13.6** —"Group related links, identify the group (for user agents), and, until user agents do so, provide a way to bypass the group."

2. Whenever possible, break up long lists of links into categorized blocks separated by headers (e.g. H1, H2). Otherwise, you may have to implement a Skip Navigation strategy.

3. Maintain a consistent set of navigational links on every page of your site, even if you must implement a skip navigation strategy.

4. You can place a breadcrumb trail, a listing of the page's location in the site's hierarchy, below the page's title bar to help users keep track of their location within a complex site.

Bread Crumb Trail Example

**NOTE**: The safest symbol indicating a subordinate page is the colon (:) instead of punctuation symbols like » ("Right double angle bracket) or > ("greater than"). It's also best to avoid to avoid arrow symbols (e.g. →) since they may not even be pronounced by a screen reader.

A Breadcrumb Trail

[Creating Accessible Web sites Home : HTML and Web Page Accessibility : Links]
Myths of Web Accessibility

Some Accessibility Gotchas

In the years of discussion about accessibility in Web design, some implementation myths have emerged.

Below are some of the most common misconceptions.

1. There’s only a small audience for accessibility.

**Myth**—Accessibility compliance only benefits users registered with the Office of Disability Services.

**Reality**—Accessibility accommodations benefit users beyond those with an “official disability.” Consider how many people watch closed captions on TV, even if they are not deaf. At some point almost all of us will be in a situation where an image link is broken, colors are not distinguishable, text is too small, audio is not working, we cannot see the whole screen or we
cannot move the mouse properly.

2. Only accessibility experts can implement accessibility fixes.

**Myth** — Accessibility issues are so arcane only an expert can really fix them.

**Reality** — Most accessibility fixes are simple to understand and implement once the content creator is aware of the tools and techniques. For instance, techniques in creating accessible **Word documents** involve applying tools such as Heading styles, the table of contents generator and appropriate selection of fonts. The most specialized tool, ALT tagging images, can be quickly accessed by right-clicking the image and selecting the Format Picture option. The same is true for PowerPoint, ANGEL and many other common tools.

3. Waiting for problems is just as easy as doing it now.

**Myth** — You don't need to worry about implementing accessibility until a user requests accommodation.

**Reality** — If “an ounce of prevention is worth a pound of cure,” then one minute of implementing an extra tag or adding more descriptions is worth one hour of finding each problem and figuring out how to fix it. Retrofitting a site for accessibility is far more time-consuming than implementing accessibility measures from the beginning.

**Myth 2** — I rarely get accommodation requests for a course and then usually to extend deadlines. Accessibility isn’t an issue for this course.

**Reality** — The number of cases of accommodations for blind, low vision and deaf students has increased significantly at Penn State, particularly for online courses. Students may also wait until the semester is partly complete before requesting assistance. Developing an accessibility plan may save instructors remediation effort in the future.

4. Fixing just the Blockers fixes all major issues

**Myth** — Once I make sure the blockers are fixed, the remaining issues are relatively minor.

**Reality** — Although Penn State designated some blockers as being important to fix first, the
other remaining issues such as keyboard accessibility, color coding and others can pose serious issues, even to screen reader issues. A full accessibility plan should address all issues.

5. If it’s audio, then a screen reader can access it.

**Myth**—If my content is delivered by audio, then by default a visually impaired user can access it.

**Reality**—The navigation to the audio (including the login process) may not be accessible.

6. ARIA/Standards/CSS styling will guarantee accessibility.

**Myth**—If I use CSS, create standards compliant code and implement ARIA, I can guarantee that my site will be accessible.

**Reality**—Although these techniques can significantly improve accessibility if implemented properly, you can also create additional accessibility issues if you use the markup incorrectly.

The same statement applies to other standards such as HTML 5, XML, MathML, Unicode, etc. These standards facilitate data exchange, and are easier for assistive technologies to work with, but do not guarantee accessibility.

7. Accessibility means no more tables, JavaScript, Flash, image maps or frames.

**Myth**—All HTML tables, JavaScript, image maps, multimedia and frames must be removed to be standards-compliant.

**Reality**—None of these eliminations are required by WCAG 2.0. What is required is that these tools be implemented with sufficient information for a screen reader to use. In most cases, this only requires the addition of a few specific attributes. Even JavaScript programmers have developed techniques to create accessible code, especially in terms of the recently developed ARIA standard.
8. Accessible design interferes with design.

**Myth** — An accessible Web site is a plain Web site or one without any design innovations.

**Reality** — More complex designs can be implemented while remaining accessible. The key is to incorporate elements that do not interfere with legibility, screen reader access or keyboard access. See the following accessibility Web sites for examples: WebAIM, Jim Thatcher Accessibility Tutorials, and Accessify.com.

It is also the case that many accessibility principles (e.g. good color contrast, good semantic structure) do follow good design and Web development principles.

9. A text-only or an “Accessible site” is a good accessibility option.

**Myth** — Creating a parallel, text-only site or service while maintaining an inaccessible site is the best solution for accessibility.

**Reality** — Most users prefer that accessibility options be incorporated into a single Web site, saving text-only transcripts for multimedia content and plug-ins. The reasons include:

1. Many people with disabilities feel that text-only sites are exclusionary. A single site with appropriate accessibility is perceived as more inclusive to the entire Internet community.
2. It’s much more difficult to maintain a second site. Once it's out of date, you are out of compliance, because equivalent information is not available to everyone.
3. Newer screen readers can actually process accessible HTML better than they can a text-only site.
4. Text-only sites may address some accessibility issues specific to screenreaders, but not all accessibility issues.
5. Accessibility goes beyond “text-only,” so the original site must be reviewed in any case.

NOTE: It can be beneficial to provide portions content in alternate formats to enhance accessibility. Examples include Flash vs. non-Flash, PDF vs. Word and other alternate formats.

10. Accessibility requires EM and STRONG tags.
**Myth**—You must replace the **B** (bold face) and *I* (italics) tags with STRONG and EM tags to be compliant.

**Reality**—Although this is recommended in the Web Standards community for a variety of reasons, it makes little practical impact in visual browsers or screen readers.

11. **Minimum WCAG 2.0 compliance fixes all problems.**

**Myth**—If you meet the minimum requirements for WCAG 2.0 compliance, you will never have to worry about accessibility issues again.

**Reality**—Not all user needs can be accounted for in any guideline. A user may require further assistance because of a particular combination of needs. In addition, advances in Internet options will inevitably create additional accessibility issues. This page and this site are continually updated to ensure compliance with accessibility guidelines. The goal of WCAG 2.0 is to address common barriers to usability in order to reduce future accessibility issues.
UNIVERSALLY DESIGNED CONFERENCES & POSTERS
Equal Access: Universal Design of Your Project

A checklist for making projects welcoming, accessible, and usable
by Sheryl Burgstahler, Ph.D.

As increasing numbers of people with disabilities participate in academic opportunities and careers, the accessibility of classes, service offices, libraries, computer labs, electronic resources, events, and specific project activities increases in importance. The goal is simply equal access; everyone who qualifies to use your resources or participate in sponsored activities should be able to do so comfortably and efficiently.

Legal Issues
Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, and the Americans with Disabilities Act Amendments of 2008 mandate that no otherwise qualified person with a disability shall, solely by reason of his or her disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination in public programs. This means that courses, student services, information resources, and project activities should be accessible to qualified individuals with disabilities.

Universal Design
An approach to making facilities, information, and activities accessible to and usable by everyone is called universal design (UD). Universal design means that rather than designing for the average user, you design for people with differing native languages, genders, racial and ethnic backgrounds, abilities, and disabilities. Make sure that project staff and volunteers are trained to support people with disabilities, respond to specific requests for accommodations in a timely manner, and know who to contact regarding disability-related issues. The universal design of your project offerings will make everyone feel welcome and minimize the need for special accommodations for individual participants.

Guidelines and Examples
Addressing the following questions provides a good starting point for making your facility, information resources, and project activities universally accessible. This content does not provide legal advice. Contact the Office for Civil Rights (OCR) about legal mandates.

Planning, Policies, and Evaluation
Consider diversity issues as you plan and evaluate services.
— Are people with disabilities, racial and ethnic minorities, men and women, young and old students, and other groups represented in the project planning process in numbers proportional to those of the whole campus or community?
— Do you have project policies and procedures that ensure access to facilities, events, and information resources for people with disabilities?
— Are disability-related access issues and other diversity issues addressed in program evaluation plans and instruments?
— Do you address issues related to the inclusion of participants with disabilities in grant proposals, perhaps by partnering with an organization with expertise in this area?

Information Resources and Technology
If career services uses computers as information resources, ensure these systems employ accessible design, that staff members are aware of accessibility options, and systems are in place to make accommodations.
— Do pictures in your publications and website include people with diverse characteristics with respect to race, gender, age, and disability?
— In key publications of your project, do you include a statement about your commitment to access and procedures for requesting disability-related accommodations? For example, you could include the following statement: “Our project’s goal is to make materials and activities accessible to all participants. Please inform organization leaders of accessibility barriers you encounter and request accommodations that will make project activities and information resources accessible to you.”
— Are all printed publications available (immediately or in a timely manner) in alternate formats such as Braille, large print, and electronic text?
— Are key documents provided in language(s) other than English?
— Are printed materials in your facility or at an event within easy reach from a variety of heights and without furniture blocking access?
— Do electronic resources, including web pages, adhere to accessibility standards adopted, your institution, or your project or funding source? *Section 508 Standards for Electronic and Information Technology* ([www.access-board.gov/508.htm](http://www.access-board.gov/508.htm)) and *Web Accessibility Initiative* (WAI) ([www.w3.org/WAI/](http://www.w3.org/WAI/)) are most commonly used. For example, are text alternatives provided for graphic images on web pages? Can the content be accessed with a text-only browser and by using the keyboard alone? For general information about making your website accessible to everyone, consult the video and presentation *World Wide Access: Accessible Web Design* at [www.uw.edu/doit/videos/index.php?vid=35](http://www.uw.edu/doit/videos/index.php?vid=35).
— Do you include a statement on your website affirming your commitment to accessible design? For example, you could include the following statement: “We strive to make our website accessible to everyone. We provide text descriptions of graphic images and photos. Video clips are open-captioned and audio-described. Suggestions for increasing the accessibility of these pages are welcome.”
— Do videos developed or used in the project have captions? Are they audio-described?
— Is an adjustable-height table available for each type of workstation to assist participants who use wheelchairs or are small or large in stature?
— Do you provide adequate work space for both left- and right-handed users?
— Is software to enlarge screen images and a large monitor available to assist people with low vision and learning disabilities?
— Do you provide a trackball to be used by someone who has difficulty controlling a mouse?
— Are staff members aware of accessibility options (e.g., enlarged text feature) included in computer operating systems and of assistive technology available in the facility?
— Are procedures in place for a timely response to requests for assistive technology?

For more information, consult *Creating Video and Multimedia Products That Are Accessible to People with Sensory Impairments* at [www.uw.edu/doit/Brochures/Technology/vid_sensory.html](http://www.uw.edu/doit/Brochures/Technology/vid_sensory.html) and the Working Together videos and publications at [www.uw.edu/doit/Resources/at.html](http://www.uw.edu/doit/Resources/at.html). For making distance learning accessible, consult *Real Connections: Making Distance Learning Accessible to Everyone* video presentation and publication at [www.uw.edu/doit/Video/real_con.html](http://www.uw.edu/doit/Video/real_con.html).

**Project and Activity Facilities**

Ensure that facilities, activities, materials, and equipment are physically accessible to and usable by all participants, and that all potential characteristics are addressed in safety considerations.
— Ensure physical access, comfort, and safety within an environment that is welcoming to visitors with a variety of abilities, racial and ethnic backgrounds, genders, and ages.
— Are there parking areas, pathways, and entrances to the building that are wheelchair accessible and clearly identified?
— Are all levels of the facility connected via an accessible route of travel?
— Are aisles kept wide and clear of obstructions for the safety of users who have mobility or visual impairments?
— Are wheelchair-accessible and child-friendly restrooms with well-marked signs available in or near the facility?
— Is at least part of a service counter or desk at a height accessible from a seated position?
— Is adequate light available?
— Are there ample high-contrast, large-print directional signs to and throughout the facility, that include directions to accessible routes? When appropriate are these signs marked in Braille?

Consult the *ADA Checklist for Readily Achievable Barrier Removal* at [www.ada.gov/checkweb.htm](http://www.ada.gov/checkweb.htm) for more suggestions. For computing facilities, consult the *Equal Access: Universal Design of Computer Labs* video and publication at [www.uw.edu/doit/Video/real_con.html](http://www.uw.edu/doit/Video/real_con.html).
Staff
Make sure staff are prepared to work with all program participants.
— Are all staff members familiar with the availability and use of the Telecommunications Relay Service, assistive technology, and alternate document formats?
— Do all staff members know how to respond to requests for disability-related accommodations, such as sign language interpreters?
— Are project staff and contractors in specific assignment areas (e.g., web page development, video creation) knowledgeable about accessibility requirements and considerations?
— Are all staff members aware of issues related to communicating with participants who have disabilities? Do staff deliver conference presentations and exhibits that are accessible to all participants? See Presentation, Exhibit, and Other Communication Hints at the end of this publication. For further suggestions, consult Effective Communication: Faculty and Students with Disabilities at www.uw.edu/doit/Brochures/Academics/effective.html.

Checklist Updates
To increase the usefulness of this working document, send suggested improvements to sherylb@uw.edu.

Additional Resources

About DO-IT
DO-IT (Disabilities, Opportunities, Internetworking, and Technology) serves to increase the successful participation of individuals with disabilities in challenging academic programs and careers such as those in science, engineering, mathematics, and technology.

For further information, to be placed on the DO-IT mailing list, request materials in an alternate format, or to make comments or suggestions about DO-IT publications or web pages, contact:

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Presentation, Exhibit, and Other Communication Hints

Treat people with disabilities with the same respect and consideration with which you treat others. There are no strict rules when it comes to delivering a presentation, hosting an exhibit, and otherwise relating to people with disabilities. However, here are some helpful hints.

General

- Ask a person with a disability if he or she needs help before providing assistance.
- Talk directly to the person with a disability, not through the person’s companion or interpreter.
- Refer to a person’s disability only if it is relevant to the conversation. If so, mention the person first and then the disability. “A man who is blind” is better than “a blind man” because it puts the person first.
- Avoid negative descriptions of a person’s disability. For example, “a person who uses a wheelchair” is more appropriate than “a person confined to a wheelchair.” A wheelchair is not confining—it’s liberating!
- Provide information in alternate means (e.g., written, spoken, diagrams).
- Do not interact with a person’s guide dog or service dog unless you have received permission to do so.
- Use large bold fonts with high contrast on uncluttered overhead displays.
- Speak all of the content presented with overhead projections and other visuals.
- Repeat questions from audience members.

Blind or Low Vision

- Be descriptive. Say, “The computer is about three feet to your left,” rather than “The computer is over there.”
- When guiding people with visual impairments, offer them your arm rather than grabbing or pushing them.

Learning Disabilities

- Offer instruction both orally and in writing. If asked, read instructions to individuals who have specific learning disabilities.

Mobility Impairments

- Sit or otherwise position yourself at the approximate height of people sitting in wheelchairs when you interact.

Speech Impairments

- Listen carefully. Repeat what you think you understand and then ask the person with a speech impairment to clarify or repeat the portion that you did not understand.

Deaf or Hard of Hearing

- Face people with hearing impairments so they can see your lips. Avoid talking while chewing gum or eating.
- Speak clearly at a normal volume. Speak louder only if requested.
- Use paper and pencil if the person who is deaf does not read lips or if more accurate communication is needed.
- When using an interpreter, speak directly to the person who is deaf; when an interpreter voices what a person who is deaf signs, look at the person who is deaf, not the interpreter.

Psychiatric Impairments

- Provide information in clear, calm, respectful tones.
- Allow opportunities for addressing specific questions.
Increasing numbers of people with disabilities attend professional conferences and meetings. Most presenters and exhibitors have the goal that everyone who visits an exhibit, attends a presentation, or seeks information from a publication is able to do so. Reaching this goal, however, involves efforts at many levels. Following are a few examples:

- Exhibits and presentation rooms need to be arranged in such a way that individuals using wheelchairs can access materials and products, see the presenters, and otherwise fully participate.
- Presenters need to deliver spoken, video, and printed information in multiple formats so that participants with sensory impairments can access the content.
- Webmasters, product developers, and material creators need to be aware of accessibility issues and apply accessible design principles.

**Legal Issues**

Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, and the Americans with Disabilities Act Amendments of 2008 prohibit discrimination against individuals with disabilities. According to these laws, no otherwise qualified person with a disability shall, solely by reason of his or her disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity of a public entity. This means that conference and meeting activities should be accessible to attendees with disabilities.

**Universal Design**

An approach to making facilities, information, and activities accessible to and usable by everyone is called universal design. Universal design means that rather than designing for the average user, you design for people with a broad range of characteristics such as native language, gender, racial and ethnic background, age, and disability. Make sure that presenters and exhibit staff are trained to support people with disabilities, respond to specific requests for accommodations in a timely manner, and know who to contact regarding disability-related issues. Ensure that everyone feels welcome, and can

- get to the facility and maneuver within it,
- communicate effectively with support staff,
- access printed materials and electronic resources, and
- fully participate in events and other activities.

**Guidelines and Examples**

Addressing the following questions provides a good starting point for making your conference exhibits, presentations, and information resources universally accessible. This content does not provide legal advice. Contact the Office for Civil Rights (OCR) for information about legal mandates.

**Exhibit and Presentation Facilities**

Ensure physical access, comfort, and safety within an environment that is inclusive to people with a variety of abilities, racial and ethnic backgrounds, genders, and ages.

- Is the exhibit and presentation area wheelchair accessible? Aisles should be kept wide and clear of obstructions for the safety of users who have mobility or visual impairments. Remove a few chairs in a presentation room or lab so that a wheelchair user has options for locations to sit in the room.
- Are signs and posters in high contrast and large print so that they can be read by someone with limited vision?
Staff
Make sure that staff members are prepared to work with all participants.
— Do all staff members know how to respond to requests for disability-related accommodations provided by your organization (e.g., presentation and exhibit materials in alternate formats) and by the conference organizer (e.g., sign language interpreters)?
— Are all staff members aware of issues related to communicating with participants who have disabilities? See Presentation, Exhibit, and other Communication Hints at the end of this publication for specific guidelines. For further suggestions, consult Effective Communication: Faculty and Students with Disabilities.¹
— Are staff and contractors that create materials used in exhibits and presentations (e.g., web pages, video presentations) knowledgeable about accessibility considerations and directed to employ accessible design principles?

Information Resources and Technology
If your exhibit or presentation uses computers as information resources, ensure these systems employ accessible design, that staff members are aware of accessibility options, and systems are in place to make accommodations.
— In key publications, do you include a statement about your commitment to universal access and procedures for requesting disability-related accommodations? For example, you could include the following statement: “Our goal is to make all materials and products accessible to everyone. Please inform staff of accessibility barriers you encounter and request accommodations that will make our programs, and information resources accessible to you.”
— Are all printed publications available (immediately or in a timely manner) in alternate formats such as Braille, large print, and electronic text?
— Are key documents provided in language(s) other than English?
— Are printed materials within easy reach from a variety of heights and without furniture blocking access? Are staff ready to assist visitors who cannot reach handouts?
— Do overhead presentation materials use large, clear characters that can be seen by most individuals from the back of a large room? If you demonstrate web pages do you present them in enlarged print that participants who have visual impairments can read? Do you also ensure that key content is spoken?
— Do electronic resources, including web pages, adhere to accessibility guidelines or standards adopted by your organization, project, or funding source? Guide to the Section 508 Standards for Accessible Electronic and Information Technology² and the World Wide Web Consortium’s Accessibility Guidelines³ are most commonly used. For information about making your website accessible to everyone, consult the World Wide Access: Accessible Web Design video and publication.⁴
— Do video presentations developed or used in your exhibit or presentation have captions? It is also a good idea to have them audio described (where additional visual content is verbalized for someone who is blind) or have a transcription available in a text format.
— If your exhibit or presentation provides computers for participants, are you ready to respond to requests for assistive technology that individuals with disabilities might make? In most cases, it would be reasonable that such requests be made before the event; adopt a procedure to respond in a timely manner.
— Do you place computers on an adjustable-height table?
— Do you provide a trackball for someone unable to use a mouse?
— Do you provide a large screen monitor and enlargement software (often built into an application)?
— If your company produces electronic technology, is it designed in such a way to be accessible to people with disabilities? A universal design approach is appropriate here; the U.S. Federal Government provides a model for accessible design in its Guide to the Section 508 Standards for Accessible Electronic and Information Technology.²
Checklist Updates
This checklist was field tested at more than twenty postsecondary institutions nationwide. The results of a nationwide survey to test face-validity of checklist items led to further refinement of the checklist. To increase the usefulness of this working document, send suggestions to sherylb@uw.edu.

Additional Resources
For more information about making conferences accessible, consult Planning an Accessible Conference published by SIGACCESS and written by Shari Trewin.

For more detailed content online consult Making Exhibits Accessible, Removing Barriers: Planning Meetings That Are Accessible To All Participants, Creating Video and Multimedia Products That Are Accessible to People with Sensory Impairments, Working Together videos and publications, and the Equal Access: Universal of Design Computer Labs video and publication.

For more information about applications of universal design consult The Center for Universal Design in Education. The book Universal Design in Higher Education: From Principles to Practice published by Harvard Education Press shares perspectives of UD leaders nationwide. To receive a 20% discount visit the DO-IT website.

Cited Web Resources
1. www.uw.edu/doit/Brochures/Academics/effective.html
2. www.access-board.gov/sec508/guide/
3. www.w3.org/WAI/
4. www.uw.edu/doit/Video/www.html
5. www.uw.edu/doit/Brochures/Academics/admin.html
6. www.sigaccess.org/community/accessible_conference/
7. www.openexhibits.org/research/cnme/
9. www.uw.edu/doit/Brochures/Technology/vid_sensory.html
10. www.uw.edu/doit/Resources/at.html
11. www.uw.edu/doit/Video/equal.html
12. www.uw.edu/doit/CUIDE/
13. www.uw.edu/doit/UDHE/coupon.html

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Blind or Low Vision

• Be descriptive. Say, “The computer is about three feet to your left,” rather than “The computer is over there.”
• Speak all of the content presented with overhead projections and other visuals.
• When guiding people with visual impairments, offer them your arm rather than grabbing or pushing them.

Learning Disabilities

• Offer directions or instructions both orally and in writing. If asked, read instructions to individuals who have specific learning disabilities.

Mobility Impairments

• Sit or otherwise position yourself at the approximate height of people sitting in wheelchairs when you interact.

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• Listen carefully. Repeat what you think you understand and then ask the person with a speech impairment to clarify or repeat the portion that you did not understand.

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• Repeat questions from audience members.
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• When using an interpreter, speak directly to the person who is deaf; when an interpreter voices what a person who is deaf signs, look at the person who is deaf, not the interpreter.

Psychiatric Impairments

• Provide information in clear, calm, respectful tones.
• Allow opportunities for addressing specific questions.
For Organizers/Moderators: Preparing Accessible Presentations

1. Prior to the meeting, request that presenters make their presentations and handouts universally accessible to all attendees. See the AUCD Accessibility Guidelines for suggestions.

2. E-mail copies of AUCD Conference Presentation Accessibility Guidelines to panelists well in advance of the meeting to facilitate accessible presentations and handouts.

3. Prior to the meeting, encourage presenters in your session to post their presentations on the AUCD meeting website so they will be available to attendees during and after the conference.

4. Remind presenters to provide a copy of their presentations/slides to sign language interpreters if present.

5. Make sure that there is enough light in the room for sign language interpreters to be easily seen. Avoid a totally dark room.

For Organizers/Moderators: Conducting Accessible Meetings

1. Ask if meeting attendees are able to see and hear the presentation, or if anyone requests alternate handout formats.

2. Remind attendees who attend the poster sessions to check for tacks on the floor that could puncture a wheelchair or scooter tire.

3. Help AUCD ensure a meeting that is accessible to all by monitoring alternative formats available from presenters, as well as tracking of alternative formats actually used by attendees.

Moderator Points for Delivering an Accessible Presentation

1. At the beginning of the meeting, Moderators should remind presenters to distribute their handouts in alternative formats to attendees who need them.

2. Presenters should always describe slides briefly. For example: "This slide covers these three key points..." "This graph illustrates these key points."
3. Avoid pointing to something on the slide and using words like "this, that, these, and those", unless you indicate what "this" means. Example: This map shows..., These results indicate... Not: "This shows..." People who can't see you pointing to a slide don't know what "this" used alone means.

4. Presenters should speak directly into the microphone. Do not cover your mouth when speaking.

5. Presenters should speak clearly at a moderate pace. This practice promotes understanding in the audience and allows sign language interpreters or CART transcribers time to translate what you are saying.

Emergency Preparedness
Hotel personnel do not give out emergency information in advance for security reasons. Moderators with emergency concerns in their sessions should contact the Conference registration desk to obtain this information.

Past Quarter's Moderators: Continental Accessible Meetings
To ensure attendees are able to see and hear the presentation, or if you receive feedback that your presentation is difficult to follow for hearing impaired, make sure there is enough light in the room to facilitate interpreters to pick up even faintly spoken words.

Moderator Points for Delivering an Accessible Presentation
At the beginning of the meeting, moderators should remind audience members to distribute their handouts in accessible formats to attendees who need them.

5. Presenters should signal their slides clearly. For example: "This slide covers these key points..." "This graph illustrates these key points..."
Using Accessible Text

- Is poster text legible from a distance of 3 to 6 feet? (Font size)
  - Title: Ideal is 158-point font (1.5 inches). Use at least 72 point font or larger for poster titles (The title should be viewable from 10 to 15 feet away to catch the attention of the reader (Conner, ND)).
  - Section Title: Ideal is 56-point font (.54 inches). Use at least 46 to 56-point font for section titles (Texas Tech University, 2007).
  - Block Text/Body: Ideal is 36-point font (.34 inches). At least 24-36 point font for body text.
  - Sizes may vary depending on the viewing distance and amount of text to be included (Texas Tech University, 2007).

Figure 1: Example poster text.
Examples in actual size are given for 158-point font for a poster title, 56-point font for a section title (heading), and 36-point for body (block) text.
• Is the font choice legible enough? (Font type)
  o Use non-serif (san-serif) fonts (University of Edinburgh, 2005).
  o Serif means a small decorative line added as embellishment to the basic form or main strokes of an alphabetical letter. Typefaces are often described as being serif or sans serif (without serifs). The most common serif typeface is Times Roman. A common sans serif typeface is Helvetica. Serif fonts can be more difficult to read, particularly the more decorative, hand written, and italicized fonts (Wikipedia, June, 2007; Shaw, May, 2007).
  o Common sans serif fonts (Shaw, May, 2007):
    ▪ Helvetica
    ▪ Veranda
    ▪ Microsoft sans serif
    ▪ For a list of fonts and explanations see:
      http://www.codestyle.org/css/font-family/sampler-SansSerif.shtml

Figure 2: Example serif and sans serif font.
Notice the sans serif Arial font does not have decorative tails at the end of character strokes unlike the Harrington font.
• Is the font color contrasted enough with the background (Lighthouse International, 2007)?
  o Black text with white background is the most legible with printed material.
  o Still, you may want to use different colors. If this is important to your design for aesthetic or other reasons it is better to use combinations different from black text on white background only for larger or highlighted text, such as headlines and titles.

**Figure 3: Contrast example for a heading.**
*Notice the white text on solid color background.*

![Introduction](image)

• Is the line spacing too crowded?
  ▪ “Leading” refers to the amount of added vertical spacing between lines of type. In this text the leading or line spacing is 1.5. Using between 1.2 and 2.0 line-spacing allows the reader greater ease in moving from line to line (Wikipedia, 2007).
    • Tracking is the space between characters. If your processor allows for letter-spacing adjustments +3 is adequate.
    • You can increase tracking for headlines but you should not use less then +3 for tracking anywhere.

• Are there too many lines per text block? (See Figure 4)
  o Text block: Could be a standard 11 by 8.5 piece of paper, which will hold about 100 words or 19 lines of text with
    ▪ Font size 24
- Lines-pacing 1.2
  - A text block could also be the text associated with a particular heading arrange in way other than a rectangular block.

Figure 4: Sample block text using different shaped areas for text (i.e. rectangle and oval).

Notice that lines of text are spaced using 1.5 line-spacing and the space between text characters is spaced to increase access. Arial font is used in the figure below.

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Using Images/graphics without losing access

- It is not necessary to completely avoid using images. Instead, use them creatively and ensure that all elements work together to draw the audience to understand the message.

- Do all images used to communicate ideas have sufficient text labels and text captions (American Society of Primatologists [ASP], 2002)?
  - Captions and/or alternative text allow the audience to access more precisely what the image is intended to communicate.

- Place images/graphics with consideration to where in the sequence of text they belong (ASP, 2002).

- Do not place text over images (Lighthouse International, 2007).

- Are image/graphic titles appropriately referred to in the text (ASP, 2002)?

- Are the uses of any charts (pie, line, scatter, histograms, etc.) used appropriately and with clear textual explanations of the data?

- Is the resolution of the images correct for large printing? Using .gif, .jpeg, .bmp, .eps, .png, etc. files that are not rendered at a sufficient resolution will cause them to blur and be of poor visual quality in your printed poster. As a general rule, use a minimum 300 dots per inch (dpi) when saving images created in programs such as Adobe™ Illustrator™, InDesign™, or Photoshop™. Avoid copying and pasting images from the web that are below 250kb for best results (TTU, 2007).
Typical Poster Sizes and Use of Space

- Typical poster sizes are:
  - 40" x Up to 56"
  - 34" x Up to 56"
  - 22" x Up to 56"
- Know what size is required or available per the conference poster guidelines.
- Be wary of crowding a small poster. If possible, have a larger poster and utilize more white space to improve access.

Figure 5: Crowed white space.
Notice the block text using insufficient line spacing and under-utilized use of white space.

Consider using more white space to increase ease of access.

Figure 6: Optimized white space.
Notice increased line spacing and efficient use of white space.

Using more white space increases the audience’s ease of access.
Organization of information

- Location of the poster title should generally be across the top of the page and displayed prominently.
- Headings and subheadings should be displayed in relationship to the body/block text they lead.
- An introduction to the poster should be clear, engage the audience, and inform them of the power message to take from the poster.
- Readers should be logically led in the correct direction from heading to heading by a clear narrative and attractive while logical design of the poster. (See figure 7).

Figure 7: A Poster Layout

Notice that the organization flows from the title spanning the top of the page to the left column and then reads from the top of each column to the bottom progressing from left to right. Other types of organization are useful as well, such as progressively numbering each heading.
Providing multiple formats

Providing multiple formats increases the options for how to access the poster. Increasing options for access is good design (Slatin & Rush, 2002).

- Poster content should also be provided in the following formats:
  - A data version that allows for the easy alteration of font, type size, and interpretation by a screen reader, such as:
    - Microsoft Word™ .doc/.rtf.
    - Html (Webpage)
  - Data versions that can be provided via the web, email, or CD. CD’s can provide the most immediate access to the poster content and be handed out during the poster session with printed handouts.
  - Avoid handouts of power point slides. Text is often extremely reduced, rendering it inaccessible. Use standard letter (8.5 inch by 11 inch) size paper with 12-point sans serif fonts.
  - Provide a large print hardcopy. Large print for standard letter pages is at least 18-point text.
UNIVERSALLY DESIGNED DEPARTMENTS & PROGRAMS: CHECKLIST ASSESSMENTS
As increasing numbers of people with disabilities pursue educational opportunities that require computer use, accessibility of computing facilities is critical. The vision is simply equal access. Everyone who needs to use your lab should be able to do so comfortably.

**Universal Design**

To make your lab accessible, employ principles of universal design (UD). Universal design means that rather than designing your facilities and services for the average user, it is designed for people with a broad range of abilities, disabilities, ages, reading levels, learning styles, native languages, cultures, and other characteristics. Keep in mind that individuals using your lab may have learning disabilities or visual, speech, hearing, and mobility impairments. Preparing your computer lab accessible to them will minimize the need for special accommodations for those who use your services and for future employees as well. Make sure everyone

- feels welcome,
- can get to the facility and maneuver within it,
- is able to communicate effectively with support staff
- is able to access printed materials and electronic resources, and
- can make use of equipment and software.

Train staff to support people with disabilities. Have a plan in place to respond to specific accommodation requests in a timely manner.

**Guidelines and Examples**

The following questions can guide you in making your computer lab universally accessible. To clarify legal issues, consult your campus legal counsel or ADA/504 compliance officer or call your regional Office for Civil Rights (OCR).

**First Steps**

To begin the process of making your computer lab accessible to everyone, take the following steps.

1. Include students with disabilities in planning and evaluating lab products and services.
2. Develop policies and procedures that ensure access to lab facilities, computers, and electronic resources for people with disabilities. Require that accessibility be considered in the procurement process.
3. Ensure that the facility and services are wheelchair-accessible and publications can be reached from a seated position.
4. In key lab documents, include a statement about your commitment to universal access and procedures for requesting disability-related accommodations.
5. Make signs with high contrast and large print.
6. Make key documents available in formats accessible to those who have low vision and those who are blind (e.g., large print, Braille, electronic).
7. Although a lab cannot be expected to have specialized equipment for every type of disability on hand, staff should make equipment available that they anticipate will be most often used or that is available at relatively low cost. This might include
• an adjustable table for each type of workstation in your lab;
• a wrist rest and forearm rest;
• a trackball;
• software to modify keyboard response such as sticky keys, repeat rate, and keystroke delay (that may be available in the operating system);
• software to enlarge screen images (that may be available in the operating system), along with a large monitor;
• large-print keytop labels; and
• web resources that adhere to accessibility standards or guidelines adopted by the lab.

8. Once a lab is established and serves a large number of users, consider adding
• text-to-speech software;
• scanner and optical character recognition (OCR) software;
• CCTV to enlarge printed documentation;
• Braille translation software and printer;
• word prediction software;
• hearing protectors;
• keyboard guards to assist those who have limited fine motor skills;
• alternative keyboards, mini-keyboards, or extended keyboards for users with mobility impairments;
• speech input software; and
• one-handed keyboards or “keyboard layout” software.

9. Develop a procedure to ensure quick responses to requests for assistive technology that you do not currently have available or for other disability-related accommodations.

10. Train staff on available accessible products in the lab, on appropriate communication, and on procedures for addressing requests for accommodations. Include accessibility issues in all training offered in the lab.

11. Include people with disabilities when addressing accessibility in periodic lab evaluations.

Planning, Policies, and Evaluation
Consider diversity issues as you plan and evaluate your computer lab.

— Are people with disabilities, racial and ethnic minorities, men and women, young and old students, and other groups represented on your staff, faculty, and student body in numbers proportional to those of the whole campus or community?
— Are people with disabilities, racial and ethnic minorities, men and women, young and old students, and other groups represented in lab planning and review processes and advisory committees in numbers proportional to those of the whole campus or community?
— Do you have policies and procedures that ensure access to facilities, printed materials, computers, and electronic resources for people with disabilities?
— Do policies and procedures require that accessibility be considered in the procurement process for software and other information technology? (See the federal government’s Section 508 Standards for Accessible Electronic and Information Technology at www.access-board.gov/508.htm.)
— Do you have a procedure to ensure a timely response to requests for disability-related accommodations?
— Are disability-related access issues addressed in your evaluation methods?

Physical Environments
Ensure physical access, comfort, and safety within an environment that is welcoming to visitors with a variety of abilities, racial and ethnic backgrounds, genders, and ages.

— Are there parking areas, pathways, and entrances to the building that are wheelchair-accessible and clearly defined?
— Are all levels of the facility connected via an accessible route of travel?
— Are there ample high-contrast, large-print directional signs to and throughout the lab? Is Braille signage available when appropriate?
— Do elevators have auditory, visual, and tactile signals and are elevator controls accessible from a seated position?
— Are wheelchair-accessible and child-friendly restrooms with well-marked signs available in or near the lab?
— Is at least part of a service counter or desk at a height accessible from a seated position?
— Are aisles wide and clear of obstructions for wheelchair users who have mobility or visual impairments?
— Is adequate light available?
— Are there quiet work or meeting areas where noise and other distractions are minimized and/or facility rules in place (e.g., no cell phone use) to minimize noise?
— Can at least one public telephone be reached from a seated position?

**Information Resources and Technology**
Ensure that lab publications and websites welcome a diverse group and that information is accessible to everyone.

— Do pictures in your publications and website include people with diverse characteristics with respect to race, gender, age, and disability?
— In key publications, do you include a statement about your commitment to universal access and procedures for requesting disability-related accommodations? For example, you could include the following statement: “Our goal is to make all materials and services accessible. Please inform staff of accessibility barriers you encounter and request accommodations that will make activities and information resources accessible to you.”
— Are all printed software and hardware documentation and other publications available (immediately or in a timely manner) in alternate formats such as Braille, large print, and electronic text?
— Are key documents provided in language(s) other than English?
— Are printed materials within easy reach from a variety of heights and without furniture blocking access?
— Do electronic resources, including web pages, adhere to accessibility guidelines or standards adopted by your institution or your specific project or funding source? *Section 508 Standards for Accessible Electronic and Information Technology (www.access-board.gov/sec508/guide/)* and *Web Accessibility Initiative (WAI) (www.w3.org/WAI/)* are most commonly used. For information about making your website accessible to everyone, consult *World Wide Access: Accessible Web Design* video and publication at www.uw.edu/doit/Video/www.html.

**Lab Staff**
Make sure staff are prepared to work with all students.

— Are staff members familiar with the availability and use of the Telecommunications Relay Service, assistive technology, and alternate document formats?
— Do staff members know how to respond to requests for disability-related accommodations such as sign language interpreters?
— Are staff members aware of issues related to communicating with students with different characteristics regarding race and ethnicity, age, and disability? (See the Communication Hints at the end of this publication.)
— Do staff members have ready access to a list of on- and off-campus resources for students with disabilities?
— Is the Webmaster knowledgeable about accessible web design?
— Do video presentations used by the lab have captions? Audio descriptions?
— Are accessibility issues incorporated into mainstream web design and other technology training for students and staff?
— Is an adjustable-height table available for each type of workstation in the lab? Can the height be adjusted from a seated position?
— Do some keyboards have large-print key labels, Braille labels, or home-row key indicators to help users with visual impairments locate keys?
— Is screen enlargement software available for users with low vision, perhaps in the operating systems of the computers? Is a large monitor available so that a larger amount of screen can be viewed while magnified?
— Is a trackball available for those who have difficulty controlling a mouse?
— Are a wrist rest and forearm rest available for those who require extra support while typing?
— Is equipment marked with large-print and Braille labels?
— Is software available to modify keyboard response, such as sticky keys, repeat rate, and keystroke delay, perhaps by making accessibility features of operating systems readily available?
— Is word prediction software available to reduce the number of keystrokes needed for text entry?
— Can controls on computers, printers, scanners, and other information technology be reached from a seated position?
— Are adequate work areas available for both right- and left-handed users?

**Checklist Updates**
This checklist was field tested at more than twenty postsecondary institutions nationwide (see www.uw.edu/doit/Brochures/Academics/admin.html). To increase the usefulness of this working document, send suggestions to sheryl@uw.edu.

**Additional Resources**
An electronic copy of the most current version of this publication can be found at www.uw.edu/doit/Brochures/Technology/comp.access.html. A 10-minute video, Equal Access: Universal Design of Computer Labs, demonstrates key points summarized in this publication. An online version may be freely viewed at www.uw.edu/doit/Video/equal.html or purchased in DVD format.

For further guidelines and suggestions on how to create accessible computer labs consult the ADA Checklist for Readily Achievable Barrier Removal at www.ada.gov/checkweb.htm.

A useful online interactive tool for learning about IT accessibility and managing your lab’s IT accessibility goals is the Information Technology in Education Accessibility Checklist at
For more information about assistive technology, consult the videos and publications at [www.uw.edu/doit/Resources/technology.html](http://www.uw.edu/doit/Resources/technology.html).

The Student Services Conference Room at [www.uw.edu/doit/Conf](http://www.uw.edu/doit/Conf) includes a collection of documents and videos to help you make student services accessible to everyone. Included are checklists for career services, distance learning, computer labs, recruitment and admissions, registration, housing and residential life, financial aid, libraries, tutoring and learning centers, and student organizations. The Student Services Conference Room also hosts a searchable Knowledge Base of questions and answers, case studies, and promising practices.

For more information about applications of universal design consult [www.uw.edu/doit/Resources/udesign.html](http://www.uw.edu/doit/Resources/udesign.html) or The Center for Universal Design in Education at [www.uw.edu/doit/CUDE](http://www.uw.edu/doit/CUDE/). The book *Universal Design in Higher Education: From Principles to Practice* published by Harvard Education Press shares perspectives of UD leaders nationwide. To receive a 20% discount, visit [www.uw.edu/doit/UDHE/coupon.html](http://www.uw.edu/doit/UDHE/coupon.html).

### About DO-IT

DO-IT (Disabilities, Opportunities, Internetworking, and Technology) serves to increase the successful participation of individuals with disabilities in challenging academic programs such as those in science, engineering, mathematics, and technology. Primary funding for the DO-IT program is provided by the National Science Foundation, the State of Washington, and the U.S. Department of Education.

For further information, to be placed on the DO-IT mailing list, request materials in an alternate format, or to make comments or suggestions about DO-IT publications or web pages, contact:

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Communication Hints

Treat people with disabilities with the same respect and consideration with which you treat others. There are no strict rules when it comes to relating to people with disabilities. However, here are some helpful hints.

**General**
- Ask a person with a disability if he or she needs help before providing assistance.
- Talk directly to the person with a disability, not through the person’s companion or interpreter.
- Refer to a person’s disability only if it is relevant to the conversation. If so, mention the person first and then the disability. “A man who is blind” is better than “a blind man” because it puts the person first.
- Avoid negative descriptions of a person’s disability. For example, “a person who uses a wheelchair” is more appropriate than “a person confined to a wheelchair.” A wheelchair is not confining—it’s liberating!
- Do not interact with a person’s guide dog or service dog unless you have received permission to do so.

**Blind or Low Vision**
- Be descriptive. Say, “The computer is about three feet to your left,” rather than “The computer is over there.”
- Speak all of the content presented with overhead projections and other visuals.
- When guiding people with visual impairments, offer them your arm rather than grabbing or pushing them.

**Learning Disabilities**
- Offer directions or instructions both orally and in writing. If asked, read instructions to individuals who have specific learning disabilities.

**Mobility Impairments**
- Sit or otherwise position yourself at the approximate height of people sitting in wheelchairs when you interact.

**Speech Impairments**
- Listen carefully. Repeat what you think you understand and then ask the person with a speech impairment to clarify or repeat the portion that you did not understand.

**Deaf or Hard of Hearing**
- Face people with hearing impairments so they can see your lips. Avoid talking while chewing gum or eating.
- Speak clearly at a normal volume. Speak louder only if requested.
- Use paper and pencil if the person who is deaf does not read lips or if more accurate communication is needed.
- In groups raise hands to be recognized so the person who is deaf knows who is speaking. Repeat questions from audience members.
- When using an interpreter, speak directly to the person who is deaf; when an interpreter voices what a person who is deaf signs, look at the person who is deaf, not the interpreter.

**Psychiatric Impairments**
- Provide information in clear, calm, respectful tones.
- Allow opportunities for addressing specific questions.
Equal Access: Universal Design of Libraries

Libraries play an important role in ensuring that everyone has access to information in printed and electronic forms. In making these resources accessible and useful to everyone, principles of universal design (UD) can be employed.

Legal Issues
Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, and the Americans with Disabilities Act Amendments of 2008 prohibit discrimination against individuals with disabilities. According to these laws, no otherwise qualified person with a disability shall, solely by reason of his or her disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity of a public entity. “Person with a disability” means “any person who has a physical or mental impairment which substantially limits one or more major life activities including walking, seeing, hearing, speaking, breathing, learning, and working, has a record of such an impairment, or is regarded as having such an impairment.”

Universal Design
Universal design (UD) means that rather than designing your facility and services for the average user, you design them for people with a broad range of abilities, disabilities, and other characteristics—such as age, reading ability, learning style, language, culture, and others. Keep in mind that students and other visitors may have learning disabilities or visual, speech, hearing, and mobility impairments. Making your library accessible to them will make it more usable by everyone and minimize the need for special accommodations for those who use your services and for future employees as well. Ensure that everyone feels welcome, and can
- get to the library facility and maneuver within it,
- communicate effectively with support staff,
- access printed materials and electronic resources, and
- fully participate in events and other activities.

Train staff to support people with disabilities, respond to specific requests for accommodations in a timely manner, and know whom they can contact if they have disability-related questions.

Guidelines and Examples
The following questions can guide you in making your library accessible to everyone. This content does not provide legal advice. To help clarify issues, consult your institution’s legal counsel or ADA/504 compliance officer or call the regional Office for Civil Rights (OCR) can also help clarify issues.
Planning, Policies, and Evaluation
Consider diversity issues as you plan and evaluate services.
— Are people with disabilities, racial and ethnic minorities, men and women, young and old students, and other groups represented on your staff in numbers proportional to those of the whole campus or community?
— Does the library have a written policy and description of services for patrons with disabilities, including information on how to request accommodations?
— Is accessibility included in the procurement of library holdings?
— Does the library have a procedure in place that ensures timely response to requests for disability-related accommodations and other special assistance?
— Are disability-related access issues addressed in your evaluation methods?

Physical Environments and Products
Ensure physical access, comfort, and safety within an environment that is inclusive of people with a variety of abilities, racial and ethnic backgrounds, genders, and ages.
— Are there parking areas, pathways, and entrances to the library that are wheelchair-accessible and clearly identified?
— Are all levels of the library connected via an accessible route of travel, or are there procedures to assist patrons with mobility impairments in retrieving materials from inaccessible locations?
— Do elevators have auditory, visual, and tactile signals and are elevator controls accessible from a seated position?
— Are wheelchair-accessible restrooms with well marked signs available in or near the library?
— Are information desks and facilities such as book returns wheelchair accessible?
— Are aisles kept wide and clear of obstructions for the safety of users who have mobility or visual impairments?
— Are there ample high-contrast, large print directional signs throughout the library? Are shelf and stack identifiers provided in large print and Braille formats? Are call numbers on book spines printed in large type? Is equipment marked with large print and Braille labels?
— Is adequate light available?
— Are private study areas available for patrons with disabilities who need to bring personal equipment, who need the assistance of a reader, or who are distracted by noise and movement around them?

Library Staff
Make sure staff are prepared to work with all patrons.
— Are all staff members aware of issues related to communicating with patrons of different races and ethnicities, ages, and abilities? (See Communication Hints at the end of this publication for suggestions.)
— Are staff trained in the use of the Telecommunications Relay Service, as well as assistive computer technology provided in the library?
— Are staff trained in policies and procedures for providing accommodations to patrons with disabilities?
— Do staff members have ready access to a list of resources for patrons with disabilities?
— Are staff knowledgeable about federally-funded Talking Book and Braille Libraries and other organizations that provide relevant services to patrons with disabilities?
— Do service staff wear large-print name badges?
— If there are staff members with sign language skills, are they identified to other staff members so that, when available, they can assist patrons who are deaf?

Information Resources and Technology

Ensure that publications and websites welcome a diverse group and content is accessible to everyone.
— Can the library’s electronic and information resources, including web pages, online catalogs, indexes, and full-text databases and CD-ROMs, be accessed with a variety of adaptive computer technologies such as screen readers?
— Are librarians prepared to assist patrons with inaccessible electronic resources by providing consultations or materials in other formats?
— Are reader and research assistants available to patrons with visual impairments?
— Are reference and circulation services available by both phone and email?
— Are resource delivery services available for patrons unable to leave their homes, retirement facilities, or hospitals?
— Are applications for the nationwide network of Talking Book and Braille Libraries available for patrons with print-related disabilities?
— In key publications and on your website, do you include a statement about your commitment to universal access and procedures for requesting disability-related accommodations? For example, “Our library’s goal is to make all materials and activities accessible. Please inform project staff of accessibility barriers you encounter and of accommodations that will make information resources accessible to you.”
— Are all printed library publications available (immediately or in a timely manner) in alternate formats such as Braille, large print, and electronic text?
— Are key documents provided in languages other than English?
— Do electronic resources, including web pages, adhere to accessibility guidelines adopted by your institution or library? Section 508 Standards for Accessible Electronic and Information Technology (www.access-board.gov/508) and Web Content Accessibility Guidelines (WCAG) (www.w3.org/WAI/intro/wcag.php) are most commonly used. For general information about making your website accessible to everyone, consult World Wide Access: Accessible Web Design video and publication at www.uw.edu/doit/Video/ww.html.
— Do you include a statement on your website affirming your commitment to accessible design? For example, “We strive to make our website universally accessible. We provide text descriptions of graphics and photos. Video clips are open-captioned and audio-described, providing access to users who can’t hear the audio or see the video, respectively. Suggestions for increasing the accessibility of these pages are welcome.”
— Do videos developed or used in the library have captions? For more information, consult Creating Video and Multimedia Products That Are Accessible to People with Sensory Impairments at www.uw.edu/doit/Brochures/Technology/vid_sensory.html.
— Is an adjustable-height table available for each type of workstation to assist students who use wheelchairs or are small or large in stature?
— Do you provide adequate work space for both left- and right-handed users?
— Is software to enlarge screen images and a large monitor available to assist students with low vision and learning disabilities?
— Do you provide a trackball to be used by someone who has difficulty controlling a mouse?
— Are wrist and forearm rests available to assist some people with mobility impairments?
— Are staff members aware of accessibility options (e.g., enlarged text feature) included in computer operating systems and of assistive technology available in the facility?
— Are procedures in place for a timely response to requests for assistive technology?

Events
Ensure that everyone feels welcome and can participate in events sponsored by the organization.
— Are events located in wheelchair-accessible facilities? Is the accessible entrance clearly marked?
— Is information about how to request disability-related accommodations included in publications promoting events?
— Is accessible transportation available if transportation is arranged for other participants?

Checklist Updates
This checklist was field tested at more than twenty postsecondary institutions nationwide (see www.uw.edu/doit/Brochures/Academics/admin.html). A nationwide survey to test face-validity of checklist items led to further refinement of the checklist. To increase the usefulness of this working document, send suggestions to sherylb@uw.edu.

Additional Resources
An electronic copy of the most current version of this publication as well as additional useful brochures can be found at www.uw.edu/doit/Brochures/. A 10-minute video, Equal Access: Campus Libraries, demonstrates key points summarized in this publication. It may be freely viewed online and purchased in DVD format from DO-IT. Consult www.uw.edu/doit/Video/ for access to this and other videos that may be of interest. Permission is granted to reproduce DO-IT videos and publications for educational, noncommercial purposes provided the source is acknowledged.

For more information about making your library accessible to everyone, consult The Student Services Conference Room at www.uw.edu/doit/Conf/. It includes checklists for career services, distance learning, computer labs, recruitment and admissions, registration, housing and residential life, financial aid, libraries, tutoring and learning centers, and student organizations. The Student Services Conference Room also includes a searchable Knowledge Base of questions and answers, case studies, and promising practices.
For more information about applications of universal design consult [www.uw.edu/doit/Resources/udesign.html](http://www.uw.edu/doit/Resources/udesign.html) or The Center for Universal Design in Education at [www.uw.edu/doit/CUDE/](http://www.uw.edu/doit/CUDE/). The book *Universal Design in Higher Education: From Principles to Practice* published by Harvard Education Press shares perspectives of UD leaders nationwide. To receive a 20% discount visit [www.uw.edu/doit/UDHE/coupon.html](http://www.uw.edu/doit/UDHE/coupon.html).

**About DO-IT**
DO-IT (Disabilities, Opportunities, Internetworking, and Technology) serves to increase the successful participation of individuals with disabilities in challenging academic programs and careers, such as those in science, engineering, mathematics and technology. Primary funding for DO-IT is provided by the National Science Foundation, the U.S. Department of Education, and the State of Washington.

For further information, to be placed on the DO-IT mailing list, request materials in an alternate format, or to make comments or suggestions about DO-IT publications or web pages, contact:

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**Acknowledgment**
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Communication Hints

Treat people with disabilities with the same respect and consideration with which you treat others. There are no strict rules when it comes to relating to people with disabilities. However, here are some helpful hints.

General
- Ask a person with a disability if he or she needs help before providing assistance.
- Talk directly to the person with a disability, not through the person’s companion or interpreter.
- Refer to a person’s disability only if it is relevant to the conversation. If so, mention the person first and then the disability. “A man who is blind” is better than “a blind man” because it puts the person first.
- Avoid negative descriptions of a person’s disability. For example, “a person who uses a wheelchair” is more appropriate than “a person confined to a wheelchair.” A wheelchair is not confining—it’s liberating!
- Do not interact with a person’s guide dog or service dog unless you have received permission to do so.

Blind or Low Vision
- Be descriptive. Say, “The computer is about three feet to your left,” rather than “The computer is over there.”
- Speak all of the content presented with overhead projections and other visuals.
- When guiding people with visual impairments, offer them your arm rather than grabbing or pushing them.

Learning Disabilities
- Offer directions or instructions both orally and in writing. If asked, read instructions to individuals who have specific learning disabilities.

Mobility Impairments
- Sit or otherwise position yourself at the approximate height of people sitting in wheelchairs when you interact.

Speech Impairments
- Listen carefully. Repeat what you think you understand and then ask the person with a speech impairment to clarify or repeat the portion that you did not understand.

Deaf or Hard of Hearing
- Face people with hearing impairments so they can see your lips. Avoid talking while chewing gum or eating.
- Speak clearly at a normal volume. Speak louder only if requested.
- Use paper and pencil if the person who is deaf does not read lips or if more accurate communication is needed.
- In groups raise hands to be recognized so the person who is deaf knows who is speaking. Repeat questions from audience members.
- When using an interpreter, speak directly to the person who is deaf; when an interpreter voices what a person who is deaf signs, look at the person who is deaf, not the interpreter.

Psychiatric Impairments
- Provide information in clear, calm, respectful tones.
- Allow opportunities for addressing specific questions.
As increasing numbers of people with disabilities pursue educational opportunities at all levels, the accessibility of admissions offices, libraries, computer labs, tutoring centers, and other student services increases in importance. The goal is simply equal access; everyone who needs to use your services should be able to do so comfortably and efficiently.

Legal Issues
Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, and its 2008 Amendments prohibit discrimination against individuals with disabilities. According to these laws, no otherwise qualified person with a disability shall, solely by reason of his or her disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity of a public entity. This means that student services as well as academic programs must be accessible to qualified students with disabilities.

Universal Design
You can make your student service accessible and useful to everyone by employing principles of universal design (UD). Universal design means that rather than designing your facility and services for the average user, you design them for people with a broad range of abilities, disabilities, ages, reading levels, learning styles, native languages, cultures, and other characteristics. Keep in mind that students and other visitors may have learning disabilities or visual, speech, hearing, and mobility impairments. Preparing your program to be accessible to them will make it more usable by everyone and minimize the need for special accommodations for those who use your services and for future employees as well. Make sure everyone feels welcome, and can
- get to the facility and maneuver within it,
- communicate effectively with support staff,
- access printed materials and electronic resources, and
- fully participate in events and other activities.

Train staff to support people with disabilities, respond to specific requests for accommodations in a timely manner, and know whom they can contact if they have disability-related questions.

A Process for Universal Design
the UD of all student services is a long-term goal. Deliberate, small steps can make that goal attainable for your service department. Below you will find a series of steps to lead you through the re-design of an existing service or the creation of a new one. As you travel through the phases of implementing UD, remember to plan ahead and keep the diverse needs of students at the forefront.

1. **Identify the service.** Select a student service (e.g., library, tutoring center, career services office). Consider the purpose of the campus unit, specific services and resources provided, facility constraints, budget, and other issues that impact the range and delivery of services provided.

2. **Define the universe.** Describe the overall population and then consider the diverse characteristics of those who might potentially use the service (e.g., students and other visitors with diverse characteristics with respect to gender; age; size; ethnicity...
and race; native language; learning style; and abilities to see, hear, manipulate objects, read, and communicate).

3. **Involve consumers.** Involve people with diverse characteristics (as identified in Step 2) in all phases of the development, implementation, and evaluation of the service. Also, gain perspectives of students through diversity programs such as the campus disability services office.

4. **Adopt guidelines or standards.** Review research and best practices to identify specific strategies for the delivery of an effective service (e.g., best practices for housing and food services, career services, a tutoring center, or other services as identified in Step 1). Create or select existing universal design guidelines and standards for the service. Integrate universal design practices with other best practices within the field of service.

5. **Apply guidelines or standards.** Apply universal design strategies in concert with other best practices, both identified in Step 4, to the overall design of the service, all subcomponents of the service, and all ongoing operations (e.g., procurement processes, staff training) to maximize the benefit of the service to students with the wide variety of characteristics identified in Step 2.

6. **Plan for accommodations.** Develop processes to address accommodation requests (e.g., arrangements for a sign language interpreter) from individuals for whom the design of the service does not automatically provide access. Share the process in signage, publications, and on a website.

7. **Train and support.** Tailor and deliver ongoing training and support to student service staff.

8. **Evaluate.** Include universal design measures in the evaluation of the service; evaluate the service with a diverse group of students; and make modifications based on their feedback. Provide ways to collect ongoing input from service users (e.g., through online and printed instruments and communications with staff).

### Guidelines and Examples

The following questions can guide you in making your campus service unit universally accessible. This content does not provide legal advice. To clarify issues, consult your campus legal counsel or ADA/504 compliance officer, or call the regional Office for Civil Rights (OCR). This checklist was developed in consultation with more than twenty postsecondary institutions as part of the AccessCollege project. It was field-tested at more than twenty postsecondary institutions nationwide. The results of a nationwide survey to test face-validity of checklist items led to further refinement of the checklist.

### Planning, Policies, and Evaluation

Consider diversity issues as you plan and evaluate services.

- Are people with disabilities, racial and ethnic minorities, men and women, young and old students, and other groups represented on your staff in numbers proportional to those of the whole campus or community?
- Do you have policies and procedures that ensure access to facilities, printed materials, computers, and electronic resources for people with disabilities?
- Is accessibility considered in the procurement process?
- Do you have a procedure to ensure a timely response to requests for disability-related accommodations?
- Are disability-related access issues addressed in your evaluation methods?

### Physical Environments and Products

Ensure physical access, comfort, and safety within an environment that is inclusive of
people with a variety of abilities, racial and ethnic backgrounds, genders, and ages.
— Are there parking areas, pathways, and entrances to the building that are wheelchair-accessible and clearly identified?
— Are all levels of the facility connected via an accessible route of travel?
— Are there ample high-contrast, large-print directional signs to and throughout the office?
— Do elevators have auditory, visual and tactile signals and are elevator controls accessible from a seated position?
— Are wheelchair-accessible restrooms with well-marked signs available in or near the office?
— Are universally-recognized icons used on signage?
— Is at least part of a service counter or desk at a height accessible from a seated position?
— Are aisles kept wide and clear of obstructions for the safety of users who have mobility or visual impairments?
— Are there quiet work or meeting areas where noise and other distractions are minimized and/or facility rules in place (e.g., no cell phone use) that minimize noise?
— Is adequate light available?

Consult the ADA Checklist for Readily Achievable Barrier Removal¹ for more suggestions. For computing facilities, consult Equal Access: Universal Design of Computer Labs video and publication.²

**Staff**

Make sure staff are prepared to work with all students.
— Are all staff members familiar with the availability and use of the Telecommunications Relay Service and alternate document formats?
— Do staff members know how to respond to requests for disability-related accommodations, such as sign language interpreters?
— Are all staff members aware of issues related to communicating with students of different races and ethnicities, ages, and students who have disabilities? (See Communication Hints at the end of this publication.)

**Information Resources and Technology**

If your service unit uses computers as information resources, ensure these systems employ accessibility options, and systems are in place to make accommodations.
— Do pictures in your publications and website include people with diverse characteristics with respect to race, gender, age, and disability?
— In key publications and on your website, do you include a statement about your commitment to universal access and procedures for requesting disability-related accommodations? For example, you could include the following statement: “Our goal is to make all materials and services accessible. Please inform staff of accessibility barriers you encounter and request accommodations that will make activities and information resources accessible to you.”
— Are all printed publications available (immediately or in a timely manner) in alternate formats such as Braille, large print, and electronic text?
— Are key documents provided in a language(s) other than English?
— Are printed materials within easy reach from a variety of heights and without furniture blocking access?
— Do electronic resources, including web pages, adhere to accessibility guidelines or standards adopted by your institution or your specific project or funding source? Section 508 Standards for Accessible Electronic and Information Technology³ and the World Wide Web Consortium’s Accessibility Guidelines⁴ are most commonly used. For information about making your website accessible to everyone, consult the World

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1. ADA Checklist for Readily Achievable Barrier Removal
2. Equal Access: Universal Design of Computer Labs
3. Section 508 Standards for Accessible Electronic and Information Technology
4. Accessibility Guidelines
Wide Access: Accessible Web Design video and publication.\(^5\)
— Are videos used by your service captioned?
— Is an adjustable-height table available for each type of workstation to assist students who use wheelchairs or are small or large in stature?
— Do you provide adequate work space for both left- and right-handed users?
— Is software to enlarge screen images and a large monitor available to assist students with low vision and learning disabilities?
— Do you provide a trackball to be used by someone who has difficulty controlling a mouse?
— Are staff members aware of accessibility options (e.g., enlarged text feature) included in computer operating systems and of assistive technology available in the facility?
— Are procedures in place for a timely response to requests for assistive technology?

Note that your organization need not have special technology on hand for every type of disability but should have available assistive technology that can benefit many people. For more information about adaptive technology, consult the videos and publications.\(^8\)

Events
Ensure that everyone can participate in events sponsored by your organization.
— Are events located in wheelchair-accessible facilities? Is the accessible entrance clearly marked?
— Is information about how to request disability-related accommodations included in publications promoting events?
— Is accessible transportation available if transportation is arranged for other participants?

Checklist Updates
To increase the usefulness of this working document, send suggestions to sherylb@uw.edu. Each item, in keeping with the UD approach, should reflect a proactive practice that makes a student service more welcoming, accessible, and usable by students with a wide range of characteristics.

Additional Resources
An electronic copy of the most current version of this publication as well as additional useful brochures are available online.\(^8\) A 14-minute video, Equal Access: Student Services\(^9\), demonstrates key points summarized in this publication. An online version may be freely viewed or purchased in DVD format. Permission is granted to reproduce DO-IT videos and publications for educational, noncommercial purposes provided the source is acknowledged.

The Student Services Conference Room\(^10\) includes a collection of documents and videos to help you make student services accessible to everyone. They include checklists for career services, distance learning, computer labs, recruitment and admissions, registration, housing and residential life, financial aid, libraries, tutoring and learning centers, and student organizations. The Conference Room also includes a searchable Knowledge Base of questions and answers, case studies, and promising practices.

For more information about applications of universal design consult The Center for Universal Design in Education website,\(^11\) or the book Universal Design in Higher Education: From Principles to Practice published by Harvard Education Press. To receive a 20% discount visit the DO-IT website.\(^12\)
Cited Web Resources
1. www.ada.gov/checkweb.htm
2. www.uw.edu/doit/Video/equal.html
3. www.access-board.gov/508.htm
4. www.w3.org/WAI/guid-tech.html
5. www.uw.edu/doit/Video/www.html
6. www.uw.edu/doit/resources/
   popular-resource-collections/
   accessible-technology
7. www.uw.edu/doit/Brochures/Academics/admin.html
8. www.uw.edu/doit/Brochures/
9. www.uw.edu/doit/Video/ea_student.html
10. www.uw.edu/doit/Conf/
11. www.uw.edu/doit/CUDE/
12. www.uw.edu/doit/UDHE/coupon.html

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Grants and gifts fund DO-IT publications, videos, and programs to support the academic and career success of people with disabilities. Contribute today by sending a check to DO-IT, Box 354842, University of Washington, Seattle, WA 98195-4842.

Your gift is tax deductible as specified in IRS regulations. Pursuant to RCW 19.09, the University of Washington is registered as a charitable organization with the Secretary of State, State of Washington. For more information, call the Office of the Secretary of State, 800-322-4483.

University of Washington
College of Engineering
UW Information Technology
College of Education
Communication Hints

Treat people with disabilities with the same respect and consideration with which you treat others. There are no strict rules when it comes to relating to people with disabilities. However, here are some helpful hints.

General

- Ask a person with a disability if he or she needs help before providing assistance.
- Talk directly to the person with a disability, not through the person’s companion or interpreter.
- Refer to a person’s disability only if it is relevant to the conversation. If so, mention the person first and then the disability. “A man who is blind” is better than “a blind man” because it puts the person first.
- Avoid negative descriptions of a person’s disability. For example, “a person who uses a wheelchair” is more appropriate than “a person confined to a wheelchair.” A wheelchair is not confining—it’s liberating!
- Do not interact with a person’s guide dog or service dog unless you have received permission to do so.

Blind or Low Vision

- Be descriptive. Say, “The computer is about three feet to your left,” rather than “The computer is over there.”
- Speak all of the content presented with overhead projections and other visuals.
- When guiding people with visual impairments, offer them your arm rather than grabbing or pushing them.

Learning Disabilities

- Offer directions or instructions both orally and in writing. If asked, read instructions to individuals who have specific learning disabilities.

Mobility Impairments

- Sit or otherwise position yourself at the approximate height of people sitting in wheelchairs when you interact.

Speech Impairments

- Listen carefully. Repeat what you think you understand and then ask the person with a speech impairment to clarify or repeat the portion that you did not understand.

Deaf or Hard of Hearing

- Face people with hearing impairments so they can see your lips. Avoid talking while chewing gum or eating.
- Speak clearly at a normal volume. Speak louder only if requested.
- Use paper and pencil if the person who is deaf does not read lips or if more accurate communication is needed.
- In groups raise hands to be recognized so the person who is deaf knows who is speaking. Repeat questions from audience members.
- When using an interpreter, speak directly to the person who is deaf; when an interpreter voices what a person who is deaf signs, look at the person who is deaf, not the interpreter.

Psychiatric Impairments

- Provide information in clear, calm, respectful tones.
- Allow opportunities for addressing specific questions.
The admissions office is the gateway to two-year colleges, vocational technical institutes, and universities, and it plays a central role in informing students and parents about campus programs and services. People with disabilities represent a significant and visible portion of those seeking information and admission. This publication identifies

- key access issues for recruitment and admissions offices,
- disability-related issues with respect to admission policies and activities, and
- resources for additional information.

**Legal Issues**

Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, and the Americans with Disabilities Act Amendments of 2008 prohibit discrimination against individuals with disabilities. According to these civil rights laws and corresponding regulations, no otherwise qualified person with a disability shall, solely by reason of his/her disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity of a public entity. Program participants, as defined in the ADA and Section 504, include not only current and prospective students but also parents or other individuals with disabilities who seek information or participate in recruitment- or admissions-sponsored activities.

Prospective and current students as well as visitors may have learning disabilities and visual, speech, hearing, and mobility impairments. Keep in mind that most students with disabilities have nonvisible disabilities such as learning disabilities, Attention-Deficit / Hyperactivity Disorder (ADHD), depression, and health impairments. With respect to recruitment and admissions office policies and procedures, ADA and Section 504 prohibit preadmission inquiries about disabling conditions, and prohibit limiting the number or proportion of students with disabilities admitted or using tests or criteria for admission that have a disproportionate adverse effect on applicants with disabilities.

**Universal Design**

To make your admissions or recruitment office accessible and useful to everyone, employ principles of universal design (UD). Universal design means that rather than designing your facility and services for the average user, you design them for people with a broad range of abilities, disabilities, ages, reading levels, learning styles, native languages, cultures, and other characteristics. Keep in mind that students and other visitors may have learning disabilities or visual, speech, hearing, and mobility impairments. Preparing your program to be accessible to them will make it more usable by everyone and minimize the need for special accommodations for those who use your services and for future employees as well. Make sure everyone feels welcome, and can
• get to the facility and maneuver within it,
• communicate effectively with support staff,
• access printed materials and electronic resources, and
• fully participate in events and other activities.

Train staff to support people with disabilities, respond to specific requests for accommodations in a timely manner, and know whom they can contact if they have disability-related questions.

Guidelines and Examples
The following questions can guide you in making your campus service unit more inclusive. This content does not provide legal advice. To help clarify legal issues, consult your campus legal counsel or ADA/504 compliance officer or call your regional Office for Civil Rights (OCR).

Planning, Policies, and Evaluation
Consider diversity issues as you plan and evaluate services.
— Are people with disabilities, racial and ethnic minorities, men and women, young and old students, and other groups represented on your staff in numbers proportional to those of the whole campus or community?
— Do you have policies and procedures that ensure access to facilities, printed materials, computers, and electronic resources for people with disabilities?
— Is accessibility considered in the procurement process?
— Do you have a procedure to ensure a timely response to requests for disability-related accommodations?
— Are disability-related access issues addressed in your evaluation methods?

Physical Environments and Products
Ensure physical access, comfort, and safety within an environment that is inclusive of people with a variety of abilities, racial and ethnic backgrounds, genders, and ages.
— Are there parking areas, pathways, and entrances to the admissions office that are wheelchair-accessible and clearly identified?
— Are all levels of the facility connected via an accessible route of travel?
— Are there ample high-contrast large print directional signs to and throughout the office?
— Do elevators have auditory, visual, and tactile signals and are elevator controls accessible from a seated position?
— Are wheelchair-accessible restrooms with well marked signs available in or near the admissions office?
— Is at least part of a service desk or counter in the admissions office at a height accessible from a seated position?
— Are there private meeting areas where students can discuss disability-related needs confidentially?
— Is adequate light available?


Staff
Make sure staff are prepared to work with current and potential students.
— Do all staff know how to respond to requests for disability-related accommodations, such as sign language interpreters, large-print publications, or sighted guide assistance for a visitor who is blind?
— Are staff members greeting the public in person or by telephone aware of issues related to communicating with visitors and students who have disabilities? (See Communication Hints for suggestions.)
— Do staff have access to a current list of key campus offices or programs that offer disability-related assistance in order to respond to telephone, email, or visitor requests for information or assistance? This list might include contacts for disabled student services, wheelchair-accessible transportation, assistive technology, accessible housing, and special types of financial aid.

— Do staff have basic knowledge of accessible travel routes to effectively direct visitors with disabilities to the office and to other key locations on campus?


**Information Resources and Technology**

Ensure that publications and websites welcome a diverse group that the content is accessible to everyone.

— Do pictures in your publications and website include people with diverse characteristics with respect to race, gender, age, and disability?

— In key publications and on your website, do you include a statement about your commitment to universal access and procedures for requesting disability-related accommodations? For example, you could include the following statement, “Our goal is to make all materials and services accessible. Please inform staff of accessibility barriers you encounter and request accommodations that will make activities and information resources accessible to you.”

— Are all printed publications available (immediately or in a timely manner) in alternate formats such as Braille, large print, and electronic text? This includes admission applications and instructions, housing applications, and academic program applications as well as the campus catalogue and other key publications such as academic department publications distributed by admissions.

— Are key documents provided in language(s) other than English?

— Does the campus map include sufficient disability access information (e.g., disabled parking locations, accessible building entrances) to assist prospective and newly admitted students and other visitors with disabilities who are unfamiliar with the campus?

— Are videos used by admissions and recruitment staff captioned? This applies to materials used on- or off-campus for exhibits, group presentations, or other events. Additionally, if videos about the campus are sent to prospective students, captioned formats should be available upon request and so noted in admissions publications.

— Do electronic resources, including web pages and online admissions forms, adhere to accessibility guidelines or standards adopted by the institution or your office? Section 508 Standards for Accessible Electronic and Information Technology (www.access-board.gov/508.htm) and World Wide Web Consortium’s *Web Content Accessibility Guidelines* (www.w3.org/WAI/) are most commonly used. For general information about making your website accessible to everyone, consult the *World Wide Access: Accessible Web Design* video and publication at www.uw.edu/doit/Video/www.html.
— Is an adjustable-height table available for each type of workstation to assist students who use wheelchairs or are small or large in stature?
— Do you provide adequate work space for both left- and right-handed users?
— Is software to enlarge screen images and a large monitor available to assist students with low vision and learning disabilities?
— Do you provide a trackball to be used by someone who has difficulty controlling a mouse?
— Are staff members aware of accessibility options (e.g., enlarge text feature) included in computer operating systems and of assistive technology available in the facility?
— Are procedures in place for a timely response to requests for assistive technology?

**Recruitment Events and Campus Tours**

Ensure that everyone feels welcome and can participate in all recruitment events and campus tours. If an event or program is sponsored by your office, publicize procedures about and arrange for accommodations for participants with disabilities.

— Are events that are sponsored by your office located in wheelchair-accessible facilities? Is the accessible entrance and travel route clearly marked?
— Is information about how to request disability-related accommodations included in publications promoting events?
— Are procedures in place to ensure a timely response to requests for accommodations for on- and off-campus events? Common accommodation requests include sign language interpreters, alternate document formats, and accessible seating.
— Does your listing of recruitment and outreach organizations and schools include organizations for individuals with disabilities? This list could include community independent living programs, state vocational rehabilitation agencies, high school-to-college transition programs, high school-high tech programs, the state agency or commission for the blind, and local chapters of the Learning Disabilities Association. Your campus disabled students services office can assist you in identifying local and state organizations such as these.
— Does the admissions office have procedures in place to handle requests by visitors with disabilities for a special tour or an additional tour to get more detailed information about campus access features? These requests may best be met in cooperation with the disabled student services office.

**Applications and Disclosure**

Review your applications for admission to ensure that disability-related issues are handled properly.

— Are you careful not to ask preadmission questions about disabling conditions or accommodation needs?
— Have you been careful not to impose limitations on the number or proportion of students with disabilities who may be admitted to the university or to an academic department or major?
— In publications and on web pages, do you tell applicants how to request accommodations for admissions tests?
— If an applicant voluntarily discloses disabilities on the application or appends disability-related information with the application, does the admissions office have a procedure to separate it from the applicant’s file and place it in a separate, secure location where it can later be forwarded to the disabled student services office?
— Do admissions counselors avoid seeking out disability-related information or accommodation needs when an applicant visits or calls the admissions office?
— Are campus tour staff trained to act as sighted guides for blind individuals? The campus disabled student services office may provide assistance in this area.
Evaluation of Applications and Appeals
— Have those who evaluate applications received training about disabling conditions, possible educational impacts of disability, and how these may be reflected in prior educational records? This is especially important if personal or educational impacts are discussed by applicants in their essays.
— Do those who evaluate applications understand that some students with disabilities (e.g., learning disabilities, brain injuries, sensory impairments) may have received formal approval for course substitutions (e.g., for foreign language)? The admissions office should have an approach for handling these situations and communicate the review policy to admissions staff and prospective students. It may also be advisable to form understandings between two- and four-year campuses in your state, especially if there are existing articulation agreements between institutions.
— If your admissions office accepts or considers appeals from applicants who have been denied admission, do you have procedures in place to give adequate consideration to those appeals where disability-related factors are involved?

Informing Applicants and New Students about Accommodation Resources
— Do you describe disability-related services in admission materials so that individuals may seek out further information?
— Do the admissions office and the disabled student services office have a procedure to inform applicants and newly admitted students about disability-related services? Some admissions offices include a separate tear-off request form that the applicant can send directly to the disabled student services office to request information. Similar information should be included in new student information packets. Students should be encouraged to contact this office long before their first academic term begins because it takes time to process disability-related documentation, and determine and arrange for accommodations.

Special Admission and Review Programs
— Do you have special admission programs (such as educational opportunity programs for low-income students, or TRIO student support services), and are they equally available to eligible individuals with disabilities who do not meet regular admission requirements? Reasonable accommodations should be provided.
— Do you have special admission programs or review procedures designed only for people with disabilities or for a specific disability group? Numerous campuses have these programs to which 1) applicants who are denied or not eligible for regular admission may apply or 2) individuals may voluntarily opt to apply for a special program and regular admission at the same time. There have been some Office for Civil Rights (OCR) cases involving complaints on the operation and practices of these special programs. Contact your OCR office for findings. Some such programs are acceptable so long as individuals are not denied the opportunity to apply for regular admission, are not required to
participate in the special program in order to receive academic accommodations required under the ADA or Section 504, and are not required to pay additional fees or surcharges for accommodations. These special programs should work closely with admissions and disabled student services offices regarding communication of admission and application procedures, program operation, and provision of accommodations.

Orientation for New Students
— Are orientation programs (whether operated by or coordinated between admissions, dean of students, or new student orientation programs) for new students accessible to students with disabilities? Consider factors such as accessible housing; accessible transportation if groups of new students are provided with transportation to off-campus orientation activities; and disability accommodations, including alternate format for print documents, interpreters for deaf students, and accessible seating.
— Have peer leaders received training and awareness in disability etiquette and communication?
— Do you have places on registration forms to request disability accommodation?
— Is there a supplemental orientation program for new students with disabilities sponsored by the disability resources office? If so, is it also publicized by the admissions office in the publicity for the larger orientation?

Readmission Requests or Applications
Some admissions offices and academic departments have a central role in reviewing readmission requests or applications from former students who were suspended or on a leave of absence.
— Do the admissions office and relevant academic departments have procedures in place to review requests or applications in order to appropriately consider disability-related issues presented by applicants?
— In the readmissions process, do you consider the possibility of future accommodations or changes in a student’s disability (i.e., new or different medications) that would result in a different outcome for the student’s success?

Checklist Updates
This checklist was field-tested at more than twenty postsecondary institutions nationwide (see www.uw.edu/doit/Brochures/Academics/admin.html). The results of a nationwide survey to test face-validity of checklist items led to further refinement of this checklist. To increase the usefulness of this working document, send suggestions to sherylb@uw.edu.

Additional Resources
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The Student Services Conference Room at www.uw.edu/doit/Conf/ includes a collection of documents and videos to help you make student services accessible to everyone. They include checklists for career services, distance learning, computer labs, recruitment and admissions, registration, housing and residential life, financial aid, libraries, tutoring and learning centers, and student organizations. The Student Services Conference Room also includes a searchable Knowledge Base of questions and answers, case studies, and promising practices.

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Grants and gifts fund DO-IT publications, videos, and programs to support the academic and career success of people with disabilities. Contribute today by sending a check to DO-IT, Box 354842, University of Washington, Seattle, WA 98195-4842.

Your gift is tax deductible as specified in IRS regulations. Pursuant to RCW 19.09, the University of Washington is registered as a charitable organization with the Secretary of State, State of Washington. For more information, call the Office of the Secretary of State, 800-322-4483.
Communication Hints

Treat people with disabilities with the same respect and consideration with which you treat others. There are no strict rules when it comes to relating to people with disabilities. However, here are some helpful hints.

General

• Ask a person with a disability if he or she needs help before providing assistance.
• Talk directly to the person with a disability, not through the person’s companion or interpreter.
• Refer to a person’s disability only if it is relevant to the conversation. If so, mention the person first and then the disability. “A man who is blind” is better than “a blind man” because it puts the person first.
• Avoid negative descriptions of a person’s disability. For example, “a person who uses a wheelchair” is more appropriate than “a person confined to a wheelchair.” A wheelchair is not confining—it’s liberating!
• Do not interact with a person’s guide dog or service dog unless you have received permission to do so.

Blind or Low Vision

• Be descriptive. Say, “The computer is about three feet to your left,” rather than “The computer is over there.”
• Speak all of the content presented with overhead projections and other visuals.
• When guiding people with visual impairments, offer them your arm rather than grabbing or pushing them.

Learning Disabilities

• Offer directions or instructions both orally and in writing. If asked, read instructions to individuals who have specific learning disabilities.

Mobility Impairments

• Sit or otherwise position yourself at the approximate height of people sitting in wheelchairs when you interact.

Speech Impairments

• Listen carefully. Repeat what you think you understand and then ask the person with a speech impairment to clarify or repeat the portion that you did not understand.

Deaf or Hard of Hearing

• Face people with hearing impairments so they can see your lips. Avoid talking while chewing gum or eating.
• Speak clearly at a normal volume. Speak louder only if requested.
• Use paper and pencil if the person who is deaf does not read lips or if more accurate communication is needed.
• In groups raise hands to be recognized so the person who is deaf knows who is speaking. Repeat questions from audience members.
• When using an interpreter, speak directly to the person who is deaf; when an interpreter voices what a person who is deaf signs, look at the person who is deaf, not the interpreter.

Psychiatric Impairments

• Provide information in clear, calm, respectful tones.
• Allow opportunities for addressing specific questions.
Equal Access: Universal Design of Registration

A checklist for making registration offices welcoming and accessible to everyone by Sheryl Burgstahler, Ph.D.

As increasing numbers of people with disabilities pursue educational opportunities at all levels, the accessibility of registration offices and other student services increases in importance. The goal is simply equal access; everyone who needs to use your services should be able to do so comfortably and efficiently.

Administrators and support staff in the registration office should consider how accessible their services are to all students on campus, including those with disabilities. Some access questions that may arise include, “Is my staff knowledgeable and comfortable in dealing with students with disabilities?” “Are our web resources accessible?” “Are our publications available in accessible formats?”

Legal Issues
Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, and the Americans with Disabilities Act Amendments of 2008 prohibit discrimination against individuals with disabilities. According to these laws, no otherwise qualified person with a disability shall, solely by reason of his or her disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity of a public entity. This means that postsecondary student services, as well as academic programs, must be accessible to qualified students with disabilities.

Universal Design
To make your registration services accessible, employ principles of universal design. Universal design (UD) means that rather than designing your facility and services for the average user, you design them for people with a broad range of abilities, disabilities, ages, reading levels, learning styles, native languages, cultures, and other characteristics. Keep in mind that students and other visitors may have learning disabilities or visual, speech, hearing, and mobility impairments. Preparing your program to be accessible to them will make it more usable by everyone and minimize the need for special accommodations. Make sure everyone feels welcome, and can:

• get to the facility and maneuver within it,
• communicate effectively with support staff,
• access printed materials and electronic resources, and
• fully participate in events and other activities.

Train staff to support people with disabilities, respond to specific requests for accommodations in a timely manner, and know whom they can contact on campus if they have disability-related questions.

Guidelines and Examples
The following questions can guide you in making registration services universally accessible. Your disabled student services office may also be able to assist you in increasing the accessibility of your unit. This content does not provide legal advice. Your campus legal counsel or ADA/504 compliance officer or your regional Office for Civil Rights (OCR) can help clarify legal issues.

Planning, Policies, and Evaluation
Consider diversity issues as you plan and evaluate services.

— Are people with disabilities, racial and ethnic minorities, men and women, young and old students, and other groups represented on your staff in numbers proportional to those of the whole campus or community?
— Do you have policies and procedures in place that ensure access to facilities, printed materials, computers, and electronic resources for people with disabilities?
— Do your procurement processes and procedures for software, technology, and furnishings comply with federal and state legislation (e.g. sections 504 and 508) regarding accessibility standards?
— Do you have a procedure to ensure a timely response to requests for disability-related accommodations?
— Are disability-related access issues addressed in your evaluation methods?
Physical Environments and Products
Ensure that facilities, activities, materials, and equipment are physically accessible to and usable by all students and that all potential student characteristics are addressed in safety considerations.
— Are there parking areas, pathways, and entrances to the building that are wheelchair-accessible and clearly identified?
— Are all levels of the facility connected via an accessible route of travel?
— Are there maps available that designate accessible travel routes and building entrances?
— Are there ample high-contrast, large-print directional signs to and throughout the office?
— Do elevators have auditory, visual, and tactile signals and are elevator controls accessible from a seated position?
— Are wheelchair-accessible restrooms with well-marked signs available in or near the office?
— Is adequate light available?
— Is at least part of a service desk or counter at a height accessible from a seated position?
— Are aisles kept wide and clear of obstructions for the safety of users who have mobility or visual impairments?
— When there is a need to meet with an individual who uses a wheelchair, is there an office or meeting room available that is accessible?


Information Resources and Technology
If your learning center uses computers as information resources, ensure these systems employ accessible design, that staff members are aware of accessibility options, and systems are in place to make accommodations.
— Do pictures in your publications and website include people with diverse characteristics with respect to race, gender, age, and disability?
— In key publications and on your website, do you include a statement about your commitment to universal access and procedures for requesting disability-related accommodations? For example, you could include the following statement: “Our goal is to make all materials and services accessible. Please inform staff of accessibility barriers you encounter, and request accommodations that will make activities and information resources accessible to you.”
— Are printed publications available in alternate formats such as Braille, large print, and electronic text?
— Are key documents provided in language(s) other than English?
— Are printed materials within easy reach from a variety of heights and without furniture blocking access?
— Do electronic resources, including web pages, adhere to accessibility guidelines or standards adopted by your institution or your office? Is every step of your online registration process accessible to people with disabilities? Guide to the Section 508 Standards for Accessible Electronic and Information Technology (www.access-board.gov/508.htm) and World Wide Web Consortium’s Web Content Accessibility Guidelines (www.w3.org/WAI/) are most commonly used. For information about making your website accessible to everyone, consult the World Wide Access: Accessible Web Design video and publication at www.uw.edu/doit/Video/www.html.
— Is an adjustable-height table available for each type of workstation to assist students who use wheelchairs or are small or large in stature?
— Do you provide adequate work space for both left- and right-handed users?
— Is software to enlarge screen images and a large monitor available to assist students with low vision and learning disabilities?
— Do you provide a trackball to be used by someone who has difficulty controlling a mouse?

Staff
Make sure staff are prepared to serve all current and prospective students.
— Do staff members know how to respond to requests for disability-related accommodations, such as sign language interpreters and documents in alternate formats?
— Are staff members aware of how to access accommodation or assistive technology resources (Braille printers, interpreters, large print, electronic text, speech output software, etc.) that are available on campus?
— Are all staff members aware of issues related to communicating with students with different characteristics regarding race and ethnicity, age, and disability? (See Communication Hints at the end of this publication.)
— Are staff members aware of accessibility options (e.g., enlarged text feature) included in computer operating systems and of assistive technology available in the facility?
— Are procedures in place for a timely response for assistive technology?

For more information about assistive technology, consult the videos and publications at www.uw.edu/doit/Resources/at.html.

Checklist Updates
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For more information about applications of universal design consult www.uw.edu/doit/Resources/udesign.html or The Center for Universal Design in Education at www.uw.edu/doit/CUDE/. The book Universal Design in Higher Education: From Principles to Practice published by Harvard Education Press shares perspectives of UD leaders nationwide. To receive a 20% discount visit the DO-IT website.

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- Avoid negative descriptions of a person’s disability. For example, “a person who uses a wheelchair” is more appropriate than “a person confined to a wheelchair.” A wheelchair is not confining—it’s liberating!
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**Blind or Low Vision**

- Be descriptive. Say, “The computer is about three feet to your left,” rather than “The computer is over there.”
- Speak all of the content presented with overhead projections and other visuals.
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**Learning Disabilities**

- Offer directions or instructions both orally and in writing. If asked, read instructions to individuals who have specific learning disabilities.

**Mobility Impairments**

- Sit or otherwise position yourself at the approximate height of people sitting in wheelchairs when you interact.

**Speech Impairments**

- Listen carefully. Repeat what you think you understand and then ask the person with a speech impairment to clarify or repeat the portion that you did not understand.

**Deaf or Hard of Hearing**

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- Speak clearly at a normal volume. Speak louder only if requested.
- Use paper and pencil if the person who is deaf does not read lips or if more accurate communication is needed.
- In groups raise hands to be recognized so the person who is deaf knows who is speaking. Repeat questions from audience members.
- When using an interpreter, speak directly to the person who is deaf; when an interpreter voices what a person who is deaf signs, look at the person who is deaf, not the interpreter.

**Psychiatric Impairments**

- Provide information in clear, calm, respectful tones.
- Allow opportunities for addressing specific questions.
College and university housing facilities and services, whether for single students or families, are important elements of a college education for many students. For students with disabilities, living on campus can facilitate access to academic programs and campus activities. This publication is a resource for campus housing and residential life staff and identifies key areas of concern, offers general guidance, and provides resources regarding disability access issues.

**Legal Issues**
Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, and the Americans with Disabilities Act Amendments of 2008 prohibit discrimination against individuals with disabilities. According to these laws, no otherwise qualified person with a disability shall, solely by reason of his or her disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity of a public entity. Housing programs must also comply with applicable state laws and federal laws such as the Fair Housing Act and Family Educational Rights and Privacy Act (FERPA). This publication does not provide legal advice. To clarify issues, consult your campus legal counsel or ADA/504 compliance officer, or your regional Office for Civil Rights (OCR).

**Facilities and Programs to Consider**
Housing facilities owned or managed by the campus, as well as services they offer, should adopt accessibility policies, guidelines, and procedures. These facilities and services include but are not limited to
- single undergraduate student residence halls and apartments;
- graduate student and family housing;
- academic theme houses, special interest houses, or sorority and fraternity houses;
- off-campus housing referral service (for example, if a referral system is operated by the housing office, especially if landlords are solicited for their listings, it is advisable to collect and disseminate information about disability access);
- cafeterias, restaurants, meeting rooms, common areas, restrooms, recreational facilities, and computer labs operated by housing services;
- childcare facilities;
- transportation services operated by the housing office, such as large passenger buses or small shuttle vehicles; and
- housing leased by or from the campus (e.g., ensure that leasing agreements address disability access issues in facilities, facility renovations and maintenance, and individual requests for facility adjustments such as adding grab bars in a bathroom).

**Whom to Consider**
In addition to students who live in campus housing, other individuals should be ensured access to housing facilities and programs. They include the following:
- a student’s spouse or partner, children, or other family members with disabilities eligible to live with them;
- friends and other individuals with disabilities who visit students;
- prospective students, parents, and other visitors with disabilities who are touring housing facilities as part of a campus tour;
- newly admitted students who are participating in a “stay-over” program to gain greater understanding of campus life; and
- individuals residing in campus housing facilities as part of summer conferences, workshops, or camps.
Coordination with Disabled Student Services
Staff should respect a student’s privacy with respect to disability-related information whenever possible, sharing information only with those who have a need to know and in compliance with legal mandates and campus policies. The housing and residential life office and the disabled student services office should consider developing specific housing accommodation policies and procedures and making them available to staff and students. Some campuses have a small joint housing and disability committee that considers policy and procedures and reviews exceptional requests on an individual basis. On most campuses, a disabled student services office is responsible for receiving and reviewing disability-related documentation and for determining or recommending accommodations or appropriate adjustments in campus procedures and policies. This office may forward disability verification and specific recommendations to the housing office. Staff should respect a student’s privacy with respect to disability-related information whenever possible, sharing information only with those who have a need to know and in compliance with legal mandates and campus policies.

Guidelines and Examples
The following questions can guide you in making housing and residential life welcoming and accessible to everyone.

Planning, Policies, and Evaluation
Ensure physical access, comfort, and safety within an environment that is inclusive of people with a variety of abilities, racial and ethnic backgrounds, genders, and ages.
— Are students with disabilities, racial and ethnic minorities, men and women, young and old students, and other groups represented in the housing planning, review process, and advisory committees in numbers proportional to those of the whole community?
— Is accessibility considered in the procurement process?
— Are disability-related access issues addressed in your evaluation methods?
— Do you have a review process that provides a case-by-case review of accommodation requests in a timely manner?
— Do you have an internal housing document that details policies and procedures on disability-related accommodations for housing and residential life? Be prepared for students who may request housing for a personal care assistant, first-floor space, accessible bathrooms or kitchens, a special diet, a single room, permission to house a service animal, or accessible fire and smoke alarms.
— Do you have a policy about whether students approved for a single room are charged a single- or double-occupancy rate?
— Do you make exceptions to full-time enrollment rules for living in campus housing for students who must enroll part-time because of their disabilities?
— Is a policy in place regarding accommodations for students with disabilities who require personal care assistants? Personal care assistants may need access to the housing facility and parking; some may need to room with the resident.
— Are procedures established regarding service animals? Service animals may include guide dogs for blind individuals, hearing dogs for deaf or hard-of-hearing people, seizure response dogs to assist people with seizure disorders, and assistance animals for people with other disabling conditions.
— Are there procedures to handle requests for modifications in food selections, listings of ingredients for students with specific food allergies, and flexibility in policy to allow a student to opt out of the meal plan?
— Is a review procedure in place to ensure that disability-related factors are adequately considered in violations of the campus student code of conduct?
Physical Environments and Products
Ensure physical access, comfort, and safety within an environment that is inclusive of people with a variety of abilities, racial and ethnic backgrounds, genders, and ages. State and federal regulations address most disability access requirements for new housing construction and major renovation projects. Some campus housing programs choose to exceed the requirements in order to provide enhanced maneuvering space in bathrooms and kitchens, as well as kitchen features such as side-by-side refrigerators and stoves with controls on the front edge. Some campuses also provide a greater number of accessible units than the minimum number required by state or federal standards.

— Are there parking areas, pathways, and entrances to the building that are wheelchair-accessible and clearly identified?
— Are all levels of facility connected via an accessible route of travel?
— Are there ample high-contrast, large-print directional signs to and throughout the facility?
— Do elevators have auditory, visual, and tactile signals and are elevator controls accessible from a seated position?
— Are wheelchair-accessible restrooms with well-marked signs available?
— Is at least part of a counter or service desk at a height accessible from a seated position?
— Are adjustable-height tables available for study or work areas within the facility?
— Is adequate light available?
— Are aisles kept wide and clear of obstructions for the safety of users who have mobility or visual impairments?

Consult the ADA Checklist for Readily Achievable Barrier Removal at www.ada.gov/checkweb.htm for more suggestions.

Staff
Make sure staff are prepared to work with all students and visitors. Housing staff (including resident directors and assistants, custodial and maintenance, food service staff, facility managers, and programming staff) should know how to effectively communicate and work with students who have disabilities. Training can be developed in collaboration with your disabled student services office.

— Do housing staff receive training about communicating with students who have disabilities including nonvisible disabling conditions? (See Communication Hints for content in this area.)
— Do housing staff with more intensive interactions and greater responsibilities (e.g., resident assistants, space assignment staff, facility managers, hall and apartment managers and directors) receive training in disability accommodation procedures and issues and civil rights legislation?
— Do staff members have ready access to a list of on- and off-campus resources for students with disabilities?
— Do staff members have knowledge of accessible travel routes around campus?
— Is the housing Webmaster knowledgeable about accessible web page design?


Information Resources and Technology
If residential life uses computers as information resources, ensure that systems employ accessible design, that staff members are aware of accessibility options, and systems are in place to make accommodations.

— Are videos used in housing and residential life captioned and audio described?
— Is the computer lab wheelchair-accessible?
— Do you have at least one adjustable-height table, software to enlarge screen images, a large monitor, and a trackball?
— Is a system in place for a timely response to requests for assistive technology such as alternative keyboards and text-to-speech systems?
— Are staff members aware of accessibility options (e.g., enlarged text feature included in computer operating systems) and of assistive technology available in the lab?
Do pictures in your publications and website include people with diverse characteristics with respect to race, gender, age, and disability?

In key publications and on your website, including the housing application form, do you include a statement about your commitment to universal access and procedures for requesting disability-related accommodations? For example, you could include the following statement, “Our goal is to make all materials and facilities and services accessible. Please inform staff of accessibility barriers you encounter, and request accommodations that will make activities and information resources accessible to you.”

Do electronic resources, including web pages, adhere to accessibility guidelines or standards adopted by your institution or your specific project or funding source? *Section 508 Standards for Accessible Electronic and Information Technology* ([www.access-board.gov/sec508/guide/](http://www.access-board.gov/sec508/guide/)) and *World Wide Web Consortium’s Web Content Accessibility Guidelines* ([www.w3.org/WAI/](http://www.w3.org/WAI/)) are most commonly used. For information about making your website accessible to everyone, consult *World Wide Access: Accessible Web Design* video and publication at [www.uw.edu/doit/Video/www.html](http://www.uw.edu/doit/Video/www.html).

Are all printed publications available (immediately or in a timely manner) in alternate formats such as Braille, large print, and electronic text?

Are key documents provided in language(s) other than English?

Are all printed materials within easy reach from a variety of heights and without furniture blocking access?

For more information consult the *Equal Access: Universal Design of Computer Labs* video and publication at [www.uw.edu/doit/Video/equal.html](http://www.uw.edu/doit/Video/equal.html).

**Emergency Evacuation**

Accessible evacuation procedures are a major concern in housing and residential life.

Do the disabled student services office and housing and emergency services units on campus collaborate to develop strong and effective policies and procedures related to emergency and safety issues for students with disabilities?

Do students with disabilities sign a release of information that allows residential staff to compile a list of students with disabilities who may need assistance during an evacuation?

Do you provide clear training to all students regarding their responsibility in getting themselves safely out of the building in the case of an emergency evacuation and the fire department’s responsibility to help those students who may need more assistance?

Do housing services staff consult with residents who have known disabilities to learn about their preferences for assistance in evacuating facilities?

Do housing evacuation plans (including written procedures and public notices) and training include specific procedures for the evacuation of residents with disabilities and service animals?

Do you notify students with disabilities about safety and emergency drills?

**Events**

Ensure that everyone can participate in events sponsored by your organization.

Are events located in wheelchair-accessible facilities? Is the accessible entrance and exit clearly marked?

Is information about how to request disability-related accommodations included in all publications promoting the event?

Is accessible transportation arranged for events for which transportation is arranged for participants?
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As increasing numbers of people with disabilities pursue educational opportunities, the accessibility of tutoring and learning centers and other student services increases in importance. The goal is simply equal access; everyone who needs to use your services should be able to do so comfortably and efficiently.

Legal Issues
Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, and the Americans with Disabilities Act Amendments of 2008 prohibit discrimination against individuals with disabilities. According to these laws, no otherwise qualified person with a disability shall, solely by reason of his or her disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity of a public entity. This means that postsecondary student services as well as academic programs must be accessible to qualified students with disabilities.

Universal Design
To make your tutoring and learning center accessible, employ principles of universal design (UD). Universal design means that rather than designing your facility and services for the average user, you design them for people with a broad range of abilities, disabilities, and other characteristics. Keep in mind that students, employees, and visitors may have disabilities such as learning, visual, speech, hearing, or mobility impairments. Designing your program to be accessible to all will make it more usable by everyone and minimize the need for special accommodations for those who use your services and for future employees as well. Make sure everyone feels welcome, and can

- get to the facility and maneuver within it,
- communicate effectively with support staff,
- access printed materials and electronic resources, and
- fully participate in all learning activities.

Train staff to work with students who have disabilities, respond to specific requests for accommodations in a timely manner, and know whom to contact if they have disability-related questions. Staff who tutor or teach students should understand the learning issues faced by students with disabilities, especially those that affect gaining and demonstrating knowledge.

Guidelines and Examples
The following questions can guide you in making your campus services universally accessible. This content does not provide legal advice. To help clarify legal issues, consult your campus legal counsel or ADA/504 compliance officer or call your regional Office for Civil Rights (OCR).

Planning, Policies, and Evaluation
Consider diversity issues as you plan and evaluate services.

- Are people with disabilities, racial and ethnic minorities, men and women, young and old students, and other groups represented in the center’s service planning and review processes and advisory committees in numbers proportional to those of the whole campus or community?
- Do you have policies and procedures that ensure access to facilities, printed materials, computers, and electronic resources for people with disabilities?
- Is accessibility considered in the procurement process?
— Is your staff prepared to respond to requests for accommodations in a timely manner?
— Do you have a procedure to ensure a timely response to requests for disability-related accommodations?
— Are disability-related access issues addressed in your evaluation methods?

Physical Environments and Products
— Ensure that facilities, activities, materials, and equipment are physically accessible to and usable by all students, and that all potential student characteristics are addressed in safety considerations.
— Are there parking areas, pathways, and entrances to the building that are wheelchair-accessible and clearly identified?
— Are all levels of the facility connected via an accessible route of travel?
— Are there ample high-contrast, large print directional signs to and throughout the office?
— Do elevators have auditory, visual, and tactile signals and are elevator controls accessible from a seated position?
— Are wheelchair-accessible restrooms with well-marked signs available in or near the office?
— Is at least part of a service counter or desk accessible from a seated position?
— Are aisles kept wide and clear of obstructions for the safety of users who have mobility or visual impairments?
— Are there quiet work or meeting areas where noise and other distractions are minimized and/or facility rules in place (e.g., no cell phone use) that minimize noise?
— Is adequate light available?

Tutors and learning facilitators are encouraged to be responsive to the needs of all students. However, students with disabilities may have some additional instructional needs that they should discuss with their tutor or facilitator. The student with a disability is the best source of information regarding necessary accommodations. In postsecondary settings, it is the student’s responsibility to request special accommodations if desired (usually to a disabled student services office), but a tutor or facilitator can make a student comfortable by inquiring about special needs or challenges. Following are examples of typical academic accommodations for students with different types of disabilities.

Instructional Needs
All students benefit from working with information and handouts made available in accessible, electronic format. In addition, the following accommodations should be considered.

Low Vision
• Large-print handouts
• Computers equipped to enlarge screen characters and images

Blindness
• Audiotaped, Brailled, or electronic-formatted notes and handouts
• Verbal descriptions of visual aids
• Raised-line drawings and tactile models of graphic materials
• Computers with large monitors and with optical character readers, speech output, Braille screen displays, and printer output

Hearing Impairments
• Interpreters, FM systems, captioned videotapes
• Use of visual aids
• Written instructions and demonstration summaries
• Visual warning system for emergencies
• Use of email for communication and private discussions
Learning Disabilities
• Note takers and audiotaped sessions
• Extra time for sessions
• Visual, aural, and tactile instructional demonstrations
• Computers with speech output, spelling checker, and grammar checker

Mobility Impairments
• Note takers
• Tutoring sessions in accessible locations
• Adjustable tables; materials located within reach
• Computers equipped with special input device (e.g., speech input, Morse code, alternative keyboards)

Health Impairments
• Note takers
• Flexible scheduling or attendance requirements
• Extra time for sessions
• Use of email for communication and discussion

Keep in mind that it will take the disabled student services office time to convert learning materials to alternate formats (e.g., audiotape, Braille, large print). Consult this office for further information regarding accessibility for students with disabilities and a fuller understanding about campus services.

Staff
Make sure all staff are prepared to work with all program participants.
— Are all staff members familiar with the availability and use of the Telecommunications Relay Service, assistive technology, and alternate document formats?
— Do all staff members know how to respond to requests for disability-related accommodations, such as sign language interpreters?

— Are all staff members aware of issues related to communicating with students who have disabilities? (See Communication Hints at the end of this publication.)
— Are staff members aware of the benefits of universal design of instruction and accommodations for students with different types of disabilities?
— Do staff members have ready access to a list of on- and off-campus resources for students with disabilities?

Information Resources and Technology
If your learning center uses computers as information resources, ensure these systems employ accessible design, that staff members are aware of accessibility options, and systems are in place to make accommodations.
— Do pictures in your publications and website include people with diverse characteristics with respect to race, gender, age, and disability?
— In key publications and on your website, do you include a statement about your commitment to universal access and procedures for requesting disability-related accommodations? For example, “Our goal is to make all of our materials and services accessible. Please inform staff of accessibility barriers you encounter, and request accommodations that will make activities and information resources accessible to you.”
— Are all printed publications available (immediately or in a timely manner) in alternate formats such as Braille, large print, and electronic text?
— Are key documents provided in language(s) other than English?
— Are printed materials within easy reach from a variety of heights and without furniture blocking access?
— Do electronic resources, including web pages, adhere to accessibility guidelines or standards adopted by your institution or your
Section 508 Standards for Accessible Electronic and Information Technology (www.access-board.gov/508.htm) and World Wide Web Consortium’s Web Content Accessibility Guidelines (www.w3.org/WAI) are most commonly used. For information about making your website accessible to everyone, consult the World Wide Access: Accessible Web Design video and publication at www.uw.edu/doit/Video/www.html.

- Is an adjustable-height table available for each type of workstation to assist students who use wheelchairs or are small or large in stature?
- Is adequate light available?
- Do you provide adequate work space for both left- and right-handed users?
- Is software to enlarge screen images and a large monitor available to assist students with low vision and learning disabilities?
- Do you provide a trackball to be used by someone who has difficulty controlling a mouse?
- Are staff members aware of accessibility options (e.g., enlarged text feature) included in computer operating systems and of assistive technology available in the facility?
- Are procedures in place for a timely response to requests for assistive technology?

For more information about assistive technology, consult the Adaptive Technology videos and publications at www.uw.edu/doit/Resources/at.html.

Events
Ensure that everyone can participate in events sponsored by your learning center.

- Are events such as group meetings and presentations located in wheelchair-accessible facilities? Is the accessible entrance is clearly marked?
- Is information about how to request disability-related accommodations included in publications promoting activities?
- Is accessible transportation available if transportation is arranged for other participants?

Checklist Updates
This checklist was field-tested at more than twenty postsecondary institutions nationwide (see www.uw.edu/doit/Brochures/Academics/admin.html). The results of a nationwide survey to test face-validity of checklist items led to further refinement of the checklist. To increase the usefulness of this working document, send suggestions to sherylb@uw.edu.

Additional Resources
An electronic copy of the most current version of this publication as well as additional useful brochures can be found at www.uw.edu/doit/Brochures/. A 14-minute video, Equal Access: Student Services, demonstrates key points summarized in this publication. It may be freely viewed online at www.uw.edu/doit/Video/ea_student.html and purchased in DVD format from DO-IT. Consult www.uw.edu/doit/Video/ for access to this and other videos that may be of interest. The Equal Access: Computer Labs and Real Connections: Making Distance Learning Accessible to Everyone videos and publications are particularly relevant to tutoring and learning centers. Permission is granted to reproduce DO-IT videos and publications for educational, noncommercial purposes provided the source is acknowledged.

The Student Services Conference Room at www.uw.edu/doit/Conf/ includes a collection of documents and videos to help you make student services accessible to everyone. They include checklists for career services, distance learning, computer labs, recruitment and admissions, registration, housing and residential life, finan-
cial aid, libraries, tutoring and learning centers, and student organizations. The Student Services Conference Room also includes a searchable Knowledge Base of questions and answers, case studies, and promising practices.


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509-328-9331 (voice / TTY) Spokane
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Founder and Director: Sheryl Burgstahler, Ph.D.

Acknowledgment
The contents of this publication and the accompanying video were developed under a grant from the U.S. Department of Education, #P333A020044. However, these contents do not necessarily represent the policy of the U.S. Department of Education, and you should not assume endorsement by the federal government.


Grants and gifts fund DO-IT publications, videos, and programs to support the academic and career success of people with disabilities. Contribute today by sending a check to DO-IT, Box 354842, University of Washington, Seattle, WA 98195-4842.

Your gift is tax deductible as specified in IRS regulations. Pursuant to RCW 19.09, the University of Washington is registered as a charitable organization with the Secretary of State, State of Washington. For more information, call the Office of the Secretary of State, 800-322-4483.

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Communication Hints

Treat people with disabilities with the same respect and consideration with which you treat others. There are no strict rules when it comes to relating to people with disabilities. However, here are some helpful hints.

**General**
- Ask a person with a disability if he or she needs help before providing assistance.
- Talk directly to the person with a disability, not through the person’s companion or interpreter.
- Refer to a person’s disability only if it is relevant to the conversation. If so, mention the person first and then the disability. “A man who is blind” is better than “a blind man” because it puts the person first.
- Avoid negative descriptions of a person’s disability. For example, “a person who uses a wheelchair” is more appropriate than “a person confined to a wheelchair.” A wheelchair is not confining—it’s liberating!
- Do not interact with a person’s guide dog or service dog unless you have received permission to do so.

**Blind or Low Vision**
- Be descriptive. Say, “The computer is about three feet to your left,” rather than “The computer is over there.”
- Speak all of the content presented with overhead projections and other visuals.
- When guiding people with visual impairments, offer them your arm rather than grabbing or pushing them.

**Learning Disabilities**
- Offer directions or instructions both orally and in writing. If asked, read instructions to individuals who have specific learning disabilities.

**Mobility Impairments**
- Sit or otherwise position yourself at the approximate height of people sitting in wheelchairs when you interact.

**Speech Impairments**
- Listen carefully. Repeat what you think you understand and then ask the person with a speech impairment to clarify or repeat the portion that you did not understand.

**Deaf or Hard of Hearing**
- Face people with hearing impairments so they can see your lips. Avoid talking while chewing gum or eating.
- Speak clearly at a normal volume. Speak louder only if requested.
- Use paper and pencil if the person who is deaf does not read lips or if more accurate communication is needed.
- In groups raise hands to be recognized so the person who is deaf knows who is speaking. Repeat questions from audience members.
- When using an interpreter, speak directly to the person who is deaf; when an interpreter voices what a person who is deaf signs, look at the person who is deaf, not the interpreter.

**Psychiatric Impairments**
- Provide information in clear, calm, respectful tones.
- Allow opportunities for addressing specific questions.
As increasing numbers of people with disabilities pursue educational opportunities at all levels, the accessibility of campus services and student organizations increases in importance. The goal is simply equal access. Everyone should be able to access services and programs comfortably and efficiently.

**Legal Issues**

Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, and the Americans with Disabilities Act Amendments of 2008 prohibit discrimination against individuals with disabilities. According to these laws, no otherwise qualified person with a disability shall, solely by reason of his or her disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity of a public entity.

**Universal Design**

To make student organizations accessible to everyone, employ principles of universal design. Universal design means that rather than designing a facility and services for the average user, you design them for people with a broad range of abilities, disabilities, ages, reading levels, learning styles, native languages, cultures, and other characteristics. Keep in mind that students may have learning disabilities or visual, speech, hearing, and mobility impairments. Preparing your program to be accessible to them will minimize the need for last-minute, unexpected changes. Make sure everyone can get to the facility and maneuver within it, access materials and electronic resources, and participate in events and other activities.

Train staff to respond to specific requests for accommodations in a timely manner and know whom they can contact on campus if they have disability-related questions. Having a knowledgeable staff can make your resources more accessible. Consider hosting a training at the start of each semester, hosted by the disabled student services office.

**Guidelines and Examples**

The following questions can guide you in making your student organization universally accessible. Consider those that apply to your situation. This content does not provide legal advice. To help clarify issues, consult your institution’s legal counsel or ADA/504 compliance officer or call the regional Office for Civil Rights (OCR) can also help clarify issues.

**Planning, Policies, and Evaluation**

Consider diversity issues as you plan and evaluate student organization activities.

— Are people with disabilities, racial and ethnic minorities, men and women, young and old students, and other groups represented in planning and review processes and advisory committees in numbers proportional to those of the whole campus or community?

— Do you have policies and procedures that ensure access to facilities, printed materials, computers, electronic resources, and activities for people with disabilities?

— Do you have a procedure to ensure a timely response to requests for disability-related accommodations?

— Are disability-related access issues addressed in your evaluation methods?

— Are you planning a variety of activities that appeal to an audience with a range of abilities, interests, and perspectives?

**Physical Environments and Products**

Ensure physical access, comfort, and safety within an environment that is inclusive of people with a variety of abilities, racial and ethnic backgrounds, genders, and ages.

— Are there parking areas, pathways, and entrances to the building that are wheelchair-accessible and clearly identified?

— Are all levels of the facility connected via an accessible route of travel?

— Are there ample high-contrast, large-print directional signs to and throughout the office?
— Do elevators have auditory, visual, and tactile signals and are elevator controls accessible from a seated position?
— Are wheelchair-accessible restrooms with well-marked signs available in or near the office?
— Is at least part of a service desk or counter at a height accessible from a seated position?
— Are aisles kept wide and clear of obstructions for the safety of users who have mobility or visual impairments?
— Is adequate light available?
— Are there quiet work and meeting areas where noise and other distractions are minimized?


Paid or Volunteer Staff
Make sure staff and volunteers are prepared to work with all students.
— Are all staff members familiar with the availability and the use of the Telecommunications Relay Service and alternate document formats?
— Do staff members know how to respond to requests for disability-related accommodations, such as sign language interpreters?
— Are all staff members aware of issues related to communicating with students with different characteristics regarding race and ethnicity, age, and disability? (See Communication Hints at the end of this publication for content in this area.)

Events
Ensure that everyone can participate in events sponsored by your student organization.
— Are events located in wheelchair-accessible facilities? Is the accessible entrance clearly marked?
— Is information about how to request disability-related accommodations included in publications promoting events sponsored by your organization?
— Is accessible transportation available for events where transportation is arranged for others?

Information Resources and Technology
Ensure that publications and websites welcome a diverse group, are accessible to all visitors, and technology within the service area is accessible to everyone.
— Do pictures in your publications and websites include people with diverse characteristics with respect to race, gender, age, and disability?
— In key publications and on your website, is there a statement included about your commitment to universal access and procedures for requesting disability-related accommodations? For example: “Our goal is to make all materials and services accessible. Please inform staff of accessibility barriers you encounter, and request accommodations that will make activities and information resources accessible to you.”
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— Are videos used by your organization captioned? Audio described?

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- Speak all of the content presented with overhead projections and other visuals.
- When guiding people with visual impairments, offer them your arm rather than grabbing or pushing them.

**Learning Disabilities**

- Offer directions or instructions both orally and in writing. If asked, read instructions to individuals who have specific learning disabilities.

**Mobility Impairments**

- Sit or otherwise position yourself at the approximate height of people sitting in wheelchairs when you interact.

**Speech Impairments**

- Listen carefully. Repeat what you think you understand and then ask the person with a speech impairment to clarify or repeat the portion that you did not understand.

**Deaf or Hard of Hearing**

- Face people with hearing impairments so they can see your lips. Avoid talking while chewing gum or eating.
- Speak clearly at a normal volume. Speak louder only if requested.
- Use paper and pencil if the person who is deaf does not read lips or if more accurate communication is needed.
- In groups raise hands to be recognized so the person who is deaf knows who is speaking. Repeat questions from audience members.
- When using an interpreter, speak directly to the person who is deaf; when an interpreter voices what a person who is deaf signs, look at the person who is deaf, not the interpreter.

**Psychiatric Impairments**

- Provide information in clear, calm, respectful tones.
- Allow opportunities for addressing specific questions.
**UID INCLUSION CHECKLIST**

**1. Creating a welcoming, respectful learning environment**

<table>
<thead>
<tr>
<th>Accomplished</th>
<th>Now</th>
<th>Future</th>
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</thead>
<tbody>
<tr>
<td>Send welcome email to students prior</td>
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<tr>
<td>Create introductory exercises that are personable, friendly and encourage humor</td>
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<td></td>
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<tr>
<td>Learn students’ names</td>
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<tr>
<td>Be open to meeting with students</td>
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<tr>
<td>Let students know from the outset that the environment is inclusive and that all “voices” are heard</td>
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<td>Encourage questions</td>
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<td>Compliment student participation</td>
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<td>Develop materials with student input</td>
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**2. Addressing essential department/program components**

<table>
<thead>
<tr>
<th>Accomplished</th>
<th>Now</th>
<th>Future</th>
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<tbody>
<tr>
<td>Provide programs and services that meet the department’s intended learning outcomes</td>
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<tr>
<td>Discuss with students the components of the program/services and how they relate to their educational experience</td>
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**3. Communicating clear expectations & providing constructive feedback**

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<tr>
<th>Accomplished</th>
<th>Now</th>
<th>Future</th>
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<tbody>
<tr>
<td>Post comprehensive user-friendly materials online</td>
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<tr>
<td>Post online video of department/program director explaining policies and procedures</td>
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<tr>
<td>Provide clear written and audio explanations of policies and procedures online</td>
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<tr>
<td>Request feedback from students on the programs and services throughout the semester rather than only at the end of the semester</td>
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</table>
### Universal Instructional Design Checklist

#### 4. Providing natural supports (including technology) for learning to enhance opportunities for all learners

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<thead>
<tr>
<th>Accomplished</th>
<th>Now</th>
<th>Future</th>
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</thead>
<tbody>
<tr>
<td>Post all reading materials and website links online</td>
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<tr>
<td>Provide all handouts and evaluations in 12-14 pt. san serif font</td>
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<tr>
<td>Provide all PowerPoint slides &amp; handouts in UID format (i.e., few words per slide, san serif font, large bold print) with no more than two slides per page for handouts</td>
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<td></td>
</tr>
<tr>
<td>Be available to students via email, phone, website, and in person for assistance</td>
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<td></td>
</tr>
<tr>
<td>Ensure that all programs, events, and educational opportunities are accessible to all students</td>
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<tr>
<td>Allow for ample time for written work (forms to be completed, etc.)</td>
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#### 5. Using presenting methods that consider diverse learning styles, abilities, ways of knowing, and previous experience and background knowledge

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<thead>
<tr>
<th>Accomplished</th>
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<th>Future</th>
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<tbody>
<tr>
<td>Utilize a constructivist approach to teaching by providing information and having students construct meaning from new information based on prior knowledge and experiences</td>
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<tr>
<td>Utilize multi-modal teaching techniques including, lecture, large group discussion, small group discussion, pair and share, role playing, case studies, games, exercises, guest speakers, panels, movies, videos, podcasts, vodcasts.</td>
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<tr>
<td>Use open captioned videos, DVDs, and video streams</td>
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<tr>
<td>Consider the learning styles of your current students and use appropriate teaching strategies</td>
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#### 6. Offering multiple ways for students to demonstrate their knowledge

<table>
<thead>
<tr>
<th>Accomplished</th>
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<th>Future</th>
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<tbody>
<tr>
<td>Offer students the option of papers, presentations, PowerPoint’s, online presentations, teams, poster sessions, role playing, websites, games, exercises, case studies, online discussions, individual and group projects</td>
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</table>

#### 7. Promoting interaction among students and between you and the students

<table>
<thead>
<tr>
<th>Accomplished</th>
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<tbody>
<tr>
<td>Be available and encourage conversation and assistance via email, phone, discussion board, chatrooms, and in person.</td>
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<tr>
<td>Encourage students to develop peer learning communities</td>
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</tbody>
</table>

List other ways you might ensure inclusion . . .
Universal Instructional Design Checklist

**DOES YOUR CURRICULUM PROVIDE AN INCLUSIVE ENVIRONMENT?**

**IS IT UID FRIENDLY?**

Complete this checklist to find out.

Universal Instructional Design (UID) ensures an inclusive environment for all students.

“The basic premise of Universal Instructional Design is that curriculum should include alternatives to make it accessible and applicable to students with different backgrounds, learning styles, abilities and disabilities.” (Center for Applied Special Technology, n.d.)

By following the 7 principles* below, you can make your curricula accessible to all.

*Adapted from Chickering & Gamson (1987) 7 Principles for Good Practice in Undergraduate Education

<table>
<thead>
<tr>
<th><strong>UID INCLUSION CHECKLIST</strong></th>
<th>Accomplished</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Creating a welcoming, respectful learning environment</strong></td>
<td>Now</td>
</tr>
<tr>
<td>Send welcome email to students prior to start of class</td>
<td></td>
</tr>
<tr>
<td>Create introductory exercises that are personable, friendly and encourage humor</td>
<td></td>
</tr>
<tr>
<td>Include a syllabus statement that fosters an inclusive learning environment. (Refer to attached examples.)</td>
<td></td>
</tr>
<tr>
<td>Learn students’ names</td>
<td></td>
</tr>
<tr>
<td>Be open to meeting with students</td>
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</tr>
<tr>
<td>During the first week of class lay the foundation to establish learning communities</td>
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</tr>
<tr>
<td>Let students know from the outset that the environment is inclusive and that all “voices” are heard</td>
<td></td>
</tr>
<tr>
<td>Encourage questions</td>
<td></td>
</tr>
<tr>
<td>Compliment student participation</td>
<td></td>
</tr>
<tr>
<td>Develop course objectives with student input</td>
<td></td>
</tr>
<tr>
<td>Collect information on “Student Information Sheet”</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>2. Addressing essential course components</strong></th>
<th>Now</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide class sessions and assignments that meet intended learning outcomes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discuss with students the components of the course that build toward subsequent courses</td>
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</tbody>
</table>
### Universal Instructional Design Checklist

#### 3. Communicating clear expectations & providing constructive feedback

<table>
<thead>
<tr>
<th>Accomplished</th>
<th>Now</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post comprehensive user-friendly syllabus online prior to beginning of course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post online video of instructor explaining teaching style and philosophy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide clear written and audio explanations of course assignments online</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post grading rubrics of all assignments online at the beginning of class</td>
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</tr>
<tr>
<td>Start each day with an overview of the day’s objectives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ask students to match course objectives with course content, lectures, and assignments</td>
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<tr>
<td>Provide students with completed grading rubrics including written comments in a timely manner (i.e., preferably at least one week prior to due date of next assignment)</td>
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</tr>
<tr>
<td>Discuss in class general overall strengths and weaknesses of completed assignments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ask students to complete peer evaluations for team members</td>
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<td></td>
</tr>
<tr>
<td>Encourage students to submit assignments at least one week prior to due date for teacher and peer review before resubmitting revised assignment</td>
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<td></td>
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<tr>
<td>Provide students with information regarding how to access support structures such as tutoring, writing center, and other out-of-class assistance</td>
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</tr>
<tr>
<td>Ask students to do a one-minute paper at the end of class to outline what they learned, indicate when they were the most/least engaged, and provide comments about the day’s class.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Request feedback from students on the course/instruction throughout the semester rather than only at the end of the semester</td>
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</tr>
</tbody>
</table>

#### 4. Providing natural supports (including technology) for learning to enhance opportunities for all learners

<table>
<thead>
<tr>
<th>Accomplished</th>
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<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post all reading materials (except text books) and website links online</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post some student assignments (e.g., book reviews, movie reviews, etc.) on course site so that other students may review</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide all handouts and evaluations in 12-14 pt. san serif font</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide all PowerPoint slides &amp; handouts in UID format (i.e., few words per slide, san serif font, large bold print) with no more than two slides per page for handouts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Be available to students via email, phone, online course site, and in person for assistance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consider the cost of textbooks; if possible, use original sources that can be bought at second-hand book stores, create your own packet of readings, or mention if books are available in library</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establish learning communities in the course to provide students with classmate resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure that all field trips, labs, and educational opportunities outside of the classroom are accessible to all students</td>
<td></td>
<td></td>
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<tr>
<td>Allow for ample time for exams and assignments</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## UID INCLUSION CHECKLIST

### 5. Using teaching methods that consider diverse learning styles, abilities, ways of knowing, and previous experience and background knowledge

<table>
<thead>
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<tbody>
<tr>
<td>Now</td>
</tr>
</tbody>
</table>

- Utilize a constructivist approach to teaching by providing information and having students construct meaning from new information based on prior knowledge and experiences.
- Utilize multi-modal teaching techniques including, lecture, large group discussion, small group discussion, pair and share, role playing, case studies, games, exercises, guest speakers, panels, movies, videos, podcasts, vodcasts.
- Use open captioned videos, DVDs, and video streams.
- Consider the learning styles of your current students and use appropriate teaching strategies.

### 6. Offering multiple ways for students to demonstrate their knowledge

<table>
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<tr>
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<tbody>
<tr>
<td>Now</td>
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</table>

- Offer students the option of papers, presentations, PowerPoint’s, online presentations, team assignments, poster sessions, role playing, websites, games, exercises, case studies, online discussions, individual and group projects.

### 7. Promoting interaction among students and between you and the students

<table>
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<tbody>
<tr>
<td>Now</td>
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</tbody>
</table>

- Be available and encourage conversation and assistance via email, phone, discussion board, chatrooms, and in person.
- Encourage students to develop peer learning communities.

List other ways you might ensure inclusion . . .
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</tr>
<tr>
<td><strong>2. Addressing essential department/program components.</strong></td>
<td>Now</td>
</tr>
<tr>
<td>For example: provide programs and services that meet the department’s intended learning outcomes, discuss with students the components of the programs/services and how they relate to their educational experience.</td>
<td>Future</td>
</tr>
<tr>
<td><strong>3. Communicating clear expectations &amp; providing constructive feedback.</strong></td>
<td>Now</td>
</tr>
<tr>
<td>For example: post comprehensive user-friendly materials online, provide clear written and audio explanations of policies and procedures online, request continual feedback from students.</td>
<td>Future</td>
</tr>
<tr>
<td><strong>4. Provide natural supports (including technology) for learning to enhance opportunities for all learners</strong></td>
<td>Now</td>
</tr>
<tr>
<td>For example: provide all handouts in 12-14 point san serif font, allow for ample time for written work, ensure that all programs, events, and educational opportunities are accessible to all students.</td>
<td>Future</td>
</tr>
<tr>
<td><strong>5. Using presenting methods that consider diverse learning styles, abilities, ways of knowing, and previous experience and background knowledge.</strong></td>
<td>Now</td>
</tr>
<tr>
<td>For example: use open captioned videos, DVDs, and video streams, utilize multi-modal teaching techniques including lecture, large group discussion, small group discussion, pair and share, role playing, case studies, games, exercises, guest speakers, panels, movies, podcasts, and vodcasts.</td>
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</table>

Karen A. Myers, PhD 2010
Universal Instructional Design (UID) ensures an inclusive environment. By following the principles below, students can make a difference in the university community with regard to accessibility for all individuals regardless of learning style, background, culture, age, language, and ability.

1. **Promote an inclusive community grounded in the concepts of Universal Instructional Design and Social Justice.**
   - Advocate social justice through discussion, conversation, and action
   - Offer friendship with all students regardless of background or ability
   - Share cultural experiences and seek out opportunities to learn about diversity through the perceptions of other students
   - Question events and programs that do not promote inclusion in a professional and appropriate manner

2. **Plan and develop student accessible programs and events that welcome all students.**
   - Insure that event, program, and meeting locations allow all students to engage and socialize equally
   - All print materials: Posters, invitations, letters, announcements are in written in accessible formats (Large arial font, high contrast between lettering and background)
   - Support written announcements and posters with audio versions (podcasts, audio blogs and other)

3. **Promote websites, online registration and surveys and other web based student information sites that are accessible for all students.**
   - Images and animation: Use the [alt] attribute to describe the function of each visual.
   - Multi-media: Provide captioning and transcripts of audio and descriptions of video
   - Hypertext links: Use text that makes sense when read out of context. For example, avoid "click here."
   - Page organization: Use headings, lists, and consistent structure. Use CSS for layout and style where possible.
   - Graphs and Charts: Summarize or use the [longdesc] (long description) attribute
   - Tables: Make line-by-line reading sensible. Summarize.
   - Frames: Use the [noframes] element and meaningful titles
   - Scripts, applets, & plug-ins: Provide alternate content in case active features are inaccessible or unsupported.
   - Check your work: Validate. Use tools, checklist, and guidelines at [http://www.w3.org/TR/WCAG](http://www.w3.org/TR/WCAG)
UNIVERSAL DESIGN
FAQS
About UDL

What is Universal Design for Learning?
Universal Design for Learning (UDL) is a framework that provides ALL students equal opportunities to learn. It encourages teachers to design flexible curricula that meet the needs of all learners. Using UDL principles in general education classrooms makes curriculum and instruction accessible and engaging. Curriculum barriers are reduced; learning is supported; students gain knowledge, skills, and enthusiasm for learning; and their learning is validly assessed.

What are the benefits of UDL?
Students come to the classroom with a variety of needs, skills, talents, interests and experiences. For many learners, typical curricula are littered with barriers and roadblocks, while offering little support. UDL turns this scenario around by encouraging the design of flexible, supportive curricula that are responsive to individual student variability.

UDL improves educational outcomes for ALL students by ensuring meaningful access to the curriculum within an inclusive learning environment. In addition, UDL complements existing school reform initiatives, such as Response to Intervention (RTI) and Understanding by Design (UbD).

What are the principles of UDL?
• Provide multiple means of representation to give students various ways of acquiring, processing, and integrating information and knowledge.
• Provide multiple means of action and expression to provide students with options for navigating and demonstrating learning.
• Provide multiple means of engagement to tap individual learners’ interests, challenge them appropriately, and motivate them to learn.

Using the three principles of UDL, teachers can create goals that promote high expectations for all learners, use flexible methods and materials, and accurately assess student progress.

What is being done to promote the implementation of UDL?
The National UDL Task Force works to incorporate the principles of UDL into federal policy and practice initiatives. Recommendations of the Task Force on teacher and faculty preparation to use UDL strategies were incorporated into the recently passed Higher Education Opportunity Act. Recommendations have been made for the reauthorization of ESEA (NCLB) and will also be made for IDEA. In addition, the Task Force seeks increased dissemination of information about UDL by the U.S. Department of Education and other federal agencies. See the UDL Toolkit at www.osepideasthatwork.org/udl/.

The National UDL Task Force is comprised of more than forty education and disability organizations. A complete list can be found at www.udlcenter.org/aboutudlcenter/partnerships/taskforce.
Isn’t UDL just for students with disabilities?
Absolutely not. UDL certainly benefits students with disabilities. However, all students can benefit from the types of supports that curricula designed using UDL provide. For example, video captioning is of great help to students with hearing impairments, because it provides them with a visual representation of speech. This support is also beneficial to English Language Learners, struggling readers, and even students working in a noisy classroom.

In what ways does UDL provide access to grade level curriculum?
Many people think of access in the purely physical sense. For example, a student in a wheelchair might use an elevator to access higher floors in a building. Although, this type of access is very important, access to learning is far more complex. The UDL framework addresses this complexity by encouraging thoughtful planning of flexible curricula (goals, methods, materials, and assessments) from the start, which meet the needs of all learners.

For example, only providing students with paper text could be problematic, but providing students with flexible digital text is one way to make instructional materials more accessible to all students. A student who has difficulty accessing printed text due to a visual impairment or dyslexia could still ‘access’ the same text by using text-to-speech feature. While a student who needs cognitive access could use comprehension supports, such as vocabulary definitions, highlighted abstract literary concepts, foreign language translations, or animated coaches that assist with answering comprehension questions.

An important part of UDL is realizing that these supports are also important for students who might be facile with text. For example, a proficient reader might prefer to listen to the text by using the Text-to-Speech function. In short, lots of students benefit from the flexibility and accessibility built into curricula designed using the UDL framework.

What is the role of educators in UDL implementation?
Educators are key to UDL implementation. They can promote the use of UDL by:

- Serving on curriculum selection committees and encouraging school districts to purchase curriculum materials that incorporate UDL principles;
- Adopting UDL principles in designing and planning curricula for their classrooms;
- Demonstrating and sharing how to use UDL principles with their teaching colleagues;
- Requesting professional development on UDL for all educators in their school or district;
- Collaborating with colleagues on experiences with UDL and how to better implement UDL in the future.

What legislation calls for the use of UDL?
The Individuals with Disabilities Education Act of 2004 and the Higher Education Opportunity Act of 2008 have provisions for Universal Design and Universal Design for Learning. There have also been considerable efforts to include UDL in the reauthorization of the Elementary and Secondary Education Act (ESEA), commonly referred to as No Child Left Behind (NCLB).

Where can I find more information?
Please visit our website at www.udl4allstudents.com or contact Ricki Sabia at rsabia@ndss.org.

The National Center for Universal Design for Learning also contains information about UDL, resources for UDL implementation, and research. It also includes a community section.
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In what ways does UDL promote access in higher education?
Increasing physical access and eliminating physical barriers to educational sites or materials, (e.g., providing accessible textbooks) is an essential step in universal design but genuine learning requires much more than physical access—it requires cognitive (or intellectual) access, too. For example, providing digital text of a novel with built-in comprehension supports is one way to apply the principle of multiple means of representation to instructional materials. A student who has difficulty accessing printed text due to a visual impairment or dyslexia could use the text reader feature, while a student who needs cognitive access could use comprehension supports. These supports could include vocabulary definitions, highlighted abstract literary concepts, foreign language translations, or animated mentors that assist with answering comprehension questions. Using UDL as a framework, faculty, specialized and technology instructional support personnel can ensure that all students have meaningful access to content, valid, accurate assessments and opportunities for meaningful participation. For examples of UDL applications in college classrooms consider additional exploration at [www.elixr.merlot.org/case-stories/understanding--meeting-students-needs/universal-design-for-learning-udl](http://www.elixr.merlot.org/case-stories/understanding--meeting-students-needs/universal-design-for-learning-udl) "or" [www.udlonline.cast.org/home](http://www.udlonline.cast.org/home).

UDL is a natural complement to teaching and learning initiatives in higher education that promote the use of technology in learning, research on how people learn, and good teaching practices (Bransford, Brown & Cocking, 2000 & Chickering & Gamson, 1986). Instructional materials can include textbooks, digital texts and media resources, and web-based tools that encourage student learning and participation. Eliminating time-consuming adaptations and retro-fitting of instructional materials, UDL allows for efficient use of time and resources and the ability to infuse instructional approaches that can reach more learners.

How is UDL articulated in the Higher Education Opportunity Act of 2008 (HEOA)?
The Higher Education Opportunity Act of 2008 (HEOA) provided both a formal definition of UDL and guidelines for providing UDL training to future teacher educators. The HEOA defined UDL as,

Universal Design for Learning (UDL) means a scientifically valid framework for guiding educational practice that — (A) provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and (B) reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient. [HEOA, P.L. 110-315, §103(a)(24)].

Teacher preparation that includes UDL better assures that opportunities are provided to strengthen the course with effective instruction and technology activities. Student performance increases as all students acquire greater knowledge and demonstrate progress when UDL is fully embraced and implemented.

Where can I find more information?
Please visit our website at [www.udl4allstudents.com](http://www.udl4allstudents.com) or contact Ricki Sabia at rsabia@ndss.org.

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RESOURCES
Resources

Journal Articles


www.uw.edu/doit/equal-access-universal-design-instruction


www.ncsu.edu/ncsu/design/cud/about_ud/udprinciplestext.htm


eric.ed.gov/?id=ED423654


Books

State Agencies
State Department of Education
Arkansas Department of Education
Four State Capitol Mall
Little Rock, AR 72201-1071
Phone: (501) 682-4475
Fax: (501) 682-1079
Website: http://www.arkansased.org/

State Higher Education Agency
Arkansas Department of Higher Education
423 Main Street, Suite 400
Little Rock, AR 72201-3818
Phone: (501) 371-2000
Fax: (501) 371-2001
Website: http://www.adhe.edu

Special Education Agency
Special Education Services
Arkansas State Department of Education
Victory Building, Suite 450
1401 West Capitol Avenue
Little Rock, AR 72201-2936
Phone: (501) 682-4221
Fax: (501) 682-5159
Website: http://arksped.k12.ar.us/
Web Sites

Universal Design for Learning in a Digital Multimedia Environment:

http://www.cited.org/index.aspx?page_id=147#shows

Learning with Multimedia Agents:


Learning with Multimedia Materials:


Learning Mathematics with Virtual Manipulatives:


Learning with Computer Games and Simulations:


Learning to Read with Multimedia Materials:
Learning a Second Language with Multimedia Materials:  

Using Multimedia Tools to Help Students Learn Science:  

Multimedia Instruction for Students Who Are Deaf:  

Georgia Tech - College of Architecture: Center for Assistive Technology and Environmental Access:  
http://www.accesselearning.net/

Accessify:  
http://accessify.com/

Tech & Learning:  
http://www.techlearning.com/

National Center on Accessible Educational Materials:  
http://aem.cast.org/

American Sign Language Browser:  
http://commtechlab.msu.edu/sites/aslweb/browser.htm

The National Center on Disability and Access to Education:  
http://www.ncdae.org/

National Center on Accessible Educational Materials:  
http://aem.cast.org

Best Practices for Institution-Wide Wed Accessibility:
Universal Design for Learning

Technologies Supporting Curriculum Access for Students with Disabilities:

Kurzweil 3000 Supports Universal Design for Learning:

Multi-User Virtual Environments for Education:

Multimedia Geography Instruction:

Multimedia Instruction of Social Skills:

Word2Word Language Resources:

Backpack:

TechMatrix:
http://www.techmatrix.org

Discovery Education – United Streaming:
http://www.unitedstreaming.com/index.cfm

LearningInHand:
http://www.learninginhand.com

Blogger:
http://www.blogger.com

PB Wiki:
http://pbwiki.com

Voice Thread:
http://www.voicethread.com

Center for Digital Story Telling:
http://www.storycenter.org

TechAdapt – The Accessible Media Center Company:
http://www.techadapt.com

Accessible Media Producers Directory (AMP):

National Instructional Materials Access Center (NiMAC):
http://www.nimac.us/

Accessibility Standards, Specifications & Guidelines:
Best Practices for Educators & Instructors:
  http://aem.cast.org/creating/best-practices-educators-instructors.html#VyZQSVkrLrc
Creative Captioning for Increased Web Accessibility: Win, Win with Strategies Designed to Decrease Costs and Improve Outcomes:
  http://www.ncdae.org/resources/articles/2012captioning.php
Leading the Charge: Ensuring Your Institution’s Web Presence Works for Everyone
  http://ncdae.org/goals/actionpaper.php
National Universal Design for Learning Task Force:
  http://www.udlcenter.org/advocacy/taskforce
National Center on Accessing the General Curriculum – Technologies Supporting Access for Students with Disabilities:
Access to Electronically-Mediated Education for Students with Disabilities: Policy Issues:
  http://www.ncdae.org/resources/articles/policy.php
Indicators for Institutional Web Accessibility:
  http://ncdae.org/goals/indicators.php
Leading the Charge – Ensuring Your Institution’s Web Presence Works for Everyone:
Gaining Online Accessible Learning through Self-Study (GOALS) Benchmarking and Planning Tool:

http://ncdae.org/goals/planningtool.php

Assistive Technology Industry Association:

http://www.atia.org

Association of Assistive Technology Act Programs (ATAP):

http://www.ataporg.org

Rehabilitation Engineering and Assistive Technology Society of North America (RESNA):

http://www.resna.org

Closing The Gap – Changing Lives With Assistive Technology:

http://www.closingthegap.com

Microsoft Accessibility:


Assistive Technology Products for Windows:

https://www.microsoft.com/enable/enable/enable/default.aspx

4 Center for Applied Special Technology (CAST):

www.cast.org/our-work/about-udl.html

The Center for Universal Design:

www.ncsu.edu/ncsu/design/cud/

The Center for Universal Design in Education:
www.uw.edu/doit/programs/center-universal-design-education/overview

Applications of Universal Design:
  www.uw.edu/doit/resources/popular-resource-collections/applications-universal-design

National Center for Accessible Media (NCAM):
  http://www.ncam.wgbh.org
CITEd is pleased to announce a new set of Research in Brief articles on the use of multimedia materials for instruction, particularly for students with special needs. Please visit www.cited.org to read the full articles.

Multimedia Materials: Their Instructional Potential for Students with Special Needs
This suite of Research in Brief articles takes a look at the research on multimedia materials and offers practical lessons along with guidance on choosing and implementing the materials in classroom instruction. Each article also includes an extensive list of linked resources.

Universal Design for Learning in a Digital Multimedia Environment
This overview article posits that Universal Design for Learning (UDL) can provide a helpful framework for summarizing the research on the use of multimedia materials and demonstrating how a digital multimedia environment can increase the accessibility of materials, scaffold students’ exploration of content, and facilitate their engagement.

Learning with Agents
(http://www.cited.org/index.aspx?page_id=142) Agents are the lifelike characters in multimedia software and online applications that pop up on the screen to explain rules, provide hints, or prompt the user to use the program’s features. They can be human or nonhuman, animated or static. What is their role in learning? This article presents the research behind the use of pedagogical agents and strategies to make the most of their learning potential.

Learning History with Multimedia Materials
(http://www.cited.org/index.aspx?page_id=145) Inquiry-based instruction emphasizes learning how to be a historian, learning to evaluate, corroborate, and synthesize multiple conflicting sources. Digital multimedia materials make the exploration of multiple sources more accessible to students with special needs. In this article, find practical resources and strategies for incorporating digital materials into inquiry-based history instruction.
Learning Mathematics with Virtual Manipulatives

Abstract concepts are essential to understanding and performing mathematics. Manipulatives represent concretely the abstract concepts and link these concepts to prior knowledge. Virtual manipulatives are basically digital “objects” that can be manipulated, usually with a computer mouse, much like the more familiar physical manipulatives. In this article, discover the research support and practical suggestions for incorporating these powerful learning tools into mathematics instruction and find an extensive list of resources.

Learning with Computer Games and Simulations
(http://www.cited.org/index.aspx?page_id=143)

Games and simulations are highly interactive and engaging, with many user-controlled features. But how do educators harness their power to support learning? This article presents an overview of the research as well as guidance on choosing an educational game and helpful resources.

Learning to Read with Multimedia Materials
(http://www.cited.org/index.aspx?page_id=144)

There is a steadily growing body of research showing that digital text and multimedia environments can play a significant supporting role in reading instruction. This article explores the literature base and cutting-edge innovations while identifying implementation strategies, guidance on choosing programs, and resources to power up reading instruction.

Learning a Second Language with Multimedia Materials

Multimedia materials and experiences can boost students’ language learning, whether it is English or a foreign language. Consider how multimedia can support students’ access to comprehensible input, output and interaction. This article presents resources and guidance on choosing an appropriate program or experience.
Using Multimedia Tools to Help Students Learn Science
Scientists routinely use a number of technology tools in their daily practice. Students can use similar technologies and multimedia tools to work like scientists and build their reasoning and scientific inquiry skills. This article provides an overview of the research on and strategies to implement these powerful technology tools in the science classroom as well as an extensive list of resources.

- **Modeling Tools and Multiple Representations**
- **Tools that Facilitate Collaboration and Discourse**
- **Simulations and Virtual Labs**

Supporting Deaf Students with Multimedia Materials
A wide range of emerging multimedia materials and tools can support the learning and communication needs of students who are deaf or hard of hearing. This article includes implementation strategies and resources that support deaf students and their teachers in regular classrooms.

Learning Geography with Multimedia Materials
This article covers the many uses of multimedia materials to address the five themes of geography learning as endorsed by the National Geographic Society: location, place, human-environment interactions, movement, and regions. This article includes implementation strategies and resources to make learning geography more accessible to all students.

Supporting Social Skills for Students with Special Needs through Multimedia Experiences
Multimedia environments offer students and their teachers an opportunity to practice new behaviors and reflect on interactions. This article includes implementation strategies and resources.
Role Playing and Identity Games – What are Students Learning?
(http://www.cited.org/index.aspx?page_id=159)
Researchers and developers are bringing cognitive science to bear on developing online multi-user virtual environments and computer software games for educational purposes. This article includes research directions, implementation strategies, and resources to inform teachers and caregivers about the new generation of educational games.
Performance Indicator Categories

Universally designed curriculum provides students with a wide range of abilities, disabilities, ethnic backgrounds, language skills, and learning styles multiple means of representation, action and expression, and engagement (called Universal Design for Learning by the Center for Applied Special Technology (CAST), www.cast.org/). Listed below are examples of instruction that employ principles of UD. They are organized under eight performance indicator categories, with a general guideline for each (Burgstahler, 2007).

1. **Class climate.** Adopt practices that reflect high values with respect to both diversity and inclusiveness. Example: Put a statement on your syllabus inviting students to meet with you to discuss disability-related accommodations and other special learning needs.

2. **Interaction.** Encourage regular and effective interactions between students and the instructor and ensure that communication methods are accessible to all participants. Example: Assign group work for which learners must support each other and that places a high value on different skills and roles.

3. **Physical environments and products.** Ensure that facilities, activities, materials, and equipment are physically accessible to and usable by all students, and that all potential student characteristics are addressed in safety considerations. Example: Develop safety procedures for all students, including those who are blind, deaf, or wheelchair users.
4. **Delivery methods.** Use multiple, accessible instructional methods that are accessible to all learners. Example: Use multiple modes to deliver content; when possible allow students to choose from multiple options for learning; and motivate and engage students—consider lectures, collaborative learning options, hands-on activities, Internet-based communications, educational software, field work, and so forth.

5. **Information resources and technology.** Ensure that course materials, notes, and other information resources are engaging, flexible, and accessible for all students. Example: Choose printed materials and prepare a syllabus early to allow students the option of beginning to read materials and work on assignments before the course begins. Allow adequate time to arrange for alternate formats, such as books in audio format.

6. **Feedback.** Provide specific feedback on a regular basis. Example: Allow students to turn in parts of large projects for feedback before the final project is due.

7. **Assessment.** Regularly assess student progress using multiple accessible methods and tools, and adjust instruction accordingly. Example: Assess group and cooperative performance, as well as individual achievement.

8. **Accommodation.** Plan for accommodations for students whose needs are not met by the instructional design. Example: Know campus protocols for getting materials in alternate formats, rescheduling classroom locations, and arranging for other accommodations for students with disabilities.