Providing Access to Lab and Field Science

1st edition

A Supplementary Unit
Preparing Faculty & Teaching Assistants to Accommodate Students with Disabilities

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ASD Project
Accommodating Students with Disabilities in Higher Education

Department of Special Education and Rehabilitation

Utah State University

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acknowledgments

The development of this unit began with colleagues and partners who requested materials specific to working with students with disabilities in laboratory and field sites. The completed unit came through the teamwork of many professionals. We wish to acknowledge the contributions of these team members. Co-Directors, Dr. Charles Salzberg and Diane Craig Baum brought their vision, invaluable professional knowledge, and expertise to development of materials that would be practical, relevant, and comprehensive. As Project Coordinator, Beth Price provided the coordination and commitment necessary to enable the production of these materials.

We are eager to acknowledge the significant contributions of our partners across the country. In addition to their direction, they contributed ideas beyond our own and enhanced the content and flexibility of these materials. We are especially grateful to our partners Nancy Mott, Director of Learning and Support Services at Villanova University, Stephanie Smith, Director of Disability Services at Mary Washington College, and Virginia Bell, Utah School for the Deaf and Blind, who donated considerable time as expert reviewers for various versions.

We specifically want to thank Sarah Jacobs for sharing her knowledge and years of experience as an interpreter at the Rochester Institute of Technology. Her insight was invaluable to make our case stories real and relevant.

We are also indebted to several faculty for their noteworthy contribution. We thank Dr. Steve Scheiner, Chemistry and Biochemistry Department Head, Dr. William Brindley, Biology Department Professor Emeritus, and Dr. Andy Anderson, Biology Department Principal Lecturer, all of Utah State University. We greatly appreciated the collaborative efforts of Martin Blair, Assistant Director of the Center for Persons with Disabilities and Director of the Utah Assistive Technology Project.

We acknowledge the pioneers in this field whose research and expertise added so much to our knowledge and our collective purpose. Reference to these excellent resources is included in these materials.

Our progress depended on the personal investment and dedication of two key staff members who did the background research and drafted this unit. We thank Becky Keeley for her gift with words, her wisdom and humor, and her desire for excellence. We thank John Navarrette for his knowledge and perspective, his perseverance, and his no-nonsense style. We thank our talented graphic designer, Gail Christensen. Her ability to transform our ideas into a coherent and attractive format allowed the rest of us to freely create instructional materials without being constrained by a rigid design layout. We also thank Adee Reed for her careful editing, for being our critical audience, and for her professionalism.
about this unit

This unit on accommodating students in lab and field science is a supplement to a larger training program for faculty and teaching assistants about working with students with disabilities. Each section in this unit has its own purpose and function.

This unit includes the following sections:

- **Introduction to Providing Access to Lab and Field Science** presents the key principles underlying this unit. It outlines each person's role and responsibilities in the collaborative process of designing accommodations. In this process, instructor's have a vital responsibility to maintain academic integrity while accommodating students with disabilities.

- **Designing Accommodations—A Collaborative Process**, a problem-solving template that offers a step-by-step approach to designing accommodations within the collaborative process.

- **Accommodations at a Glance**, a table listing common accommodations for science courses, serves to generate ideas and provide examples. It also includes a list of frequently asked questions and answers.

- **Case Stories** illustrate the 5 steps of the accommodation process and explore common concerns students and faculty may face. There are 4 case stories, each involving students with differing disabilities in different courses.

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**Universities and colleges vary . . .**

Universities and colleges vary considerably in the way they provide accommodations and in the specific responsibilities of students, instructors, and the Disability Service Office. Please keep that in mind when you use these materials. Adjust for your own institution.
important points to keep in mind — an advance summary

Higher education is changing! One important change is the growing diversity of the students; disability is part of that diversity. Since 1998, one in eleven incoming freshmen in U.S. colleges and universities report having a disability. It is likely, therefore, that you will have students with disabilities in your classes and programs.

Faculty should have basic information about students with disabilities in postsecondary education; that’s what these materials are about. To set the stage, we have encapsulated some of the most important background information in the 6 points below.

1. **You are not alone when it comes to accommodating students with disabilities; neither are you expected to be an expert on disability.**

Almost all postsecondary education institutions have a designated Disability Service Office (DSO) or an individual that designs individualized course-specific accommodations, thereby relieving faculty from making these disability-related decisions.

- First, working with the DSO provides legal protection to the student, the faculty member, and the institution.
- Second, the student receives the support and expertise of the DSO.
- Third, the DSO protects the student’s right to privacy.

**Call on your DSO to request help, to get answers to questions, to raise concerns, or to get clarification on your institution’s policies and procedures relating to students with disabilities (see pp. 10-11).**
2. Two laws mainly govern disability-related services in higher education. Those include Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (see “Glossary,” pp. 125 and 131).

There are four implications of these laws:

a. Students with disabilities have to meet the same admission standards as others (with or without accommodations) and, when they do, they have the same right to be in the postsecondary institution.

Important note: In postsecondary education, students must take the initiative to identify themselves as having a disability. Further, they must provide documentation of their disability to the office designated to make disability determinations at their postsecondary institution (e.g., Disability Service Office). Faculty have neither the responsibility nor authority to decide if a student has a disability as per the law and the policies of the institution; further, in our view, faculty would be well-advised to avoid assuming that responsibility because doing so can expose the faculty member and the institution to unnecessary risk and may unintentionally preclude students from receiving services that are beneficial to them.

b. Once they are admitted, students with disabilities have the same right as others to access all the academic and nonacademic programs and facilities of the institution.

c. Students who are determined by the institution to have a disability are eligible to receive reasonable accommodations that relate to their disability (see Question 8 pp. 46-47 and “Glossary,” pp. 130-131).
d. Students have a right to confidentiality of all disability-related information (see “Glossary,” p. 126).

Be careful about inadvertently singling out someone as having a disability. It is easy to accidentally disclose a student's disability without thinking (e.g., discussing disability-related accommodations in public areas; reminding a particular student about an accommodation in front of other students). Be aware of this as you speak with students. **Remember that the student determines how much disability-related information he/she is willing to disclose** and respect students' right to privacy.

3. **The design and implementation of disability-related accommodations is a collaborative process involving the student, the DSO, and, often, the faculty member.**

Disability-related accommodations are designed individually for each student. Even students with the same type of disability (e.g., a vision impairment) do not necessarily benefit from the same accommodations because there is considerable variation within disability categories (e.g., ranging from poor vision to total blindness) and in the types of accommodations that are useful for different course activities (e.g., presentations, internet-based activities, films & videos, field trips, lab assignments, etc). **Faculty members can be essential during the process of designing accommodations because they understand the requirements, activities, and essential content of their courses and programs** (see pp. 10-12 and pp.15-24).

4. **Students with disabilities are responsible to meet the same academic standards as other students.**

While students may receive some reasonable accommodations intended to mitigate the educational impact of their disabilities, these accommodations should not water down the curriculum,
alter the standards for performance or waive any course or class activity that provides students with essential knowledge or skills. In short, having a disability doesn’t mean getting a “free ride.”

★ Just like other students, those with disabilities determine their own level of academic success based on ability and effort (see p. 12).

5. The process of designing accommodations involves three general strategies: adjusting the pedagogy, modifying the equipment or environment, and using technology.

These strategies may include providing organizational materials, extra time, enlarged text, lab/field partners or aides, tactile materials, environmental alterations, virtual field or lab experiences, video captioning, audio description, assistive listening devices, or alternate materials. The DSO usually assists faculty in determining and providing many of these accommodations (see pp. 13-14).

6. Universal Design for Learning (UDL) strategies may reduce or eliminate the need for some individual accommodations in many cases; however, individualized accommodations will be necessary for some students with disabilities.

The concept of Universal Design for Learning (UDL) refers to the process of making course concepts and skills attainable to a greater number of students, regardless of differing learning styles, physical, sensory, organizational and linguistic abilities.

★ Rather than the “one-size fits-all” approach, UDL stresses flexible delivery of content, assignments and activities. UDL allows the learning process to be more accessible without singling out students with disabilities (see pp. 113-114).
introduction

Student quote —

“When I was in college, I would have liked to have taken more science courses. I stayed away from these classes because I use a wheelchair, and I was unsure about lab and field accommodations. One example: I really wanted to join my friends in a class that explored native plant and animal life. The class included field sessions where the students went out hiking to identify plants and animals. I didn’t enroll because I didn’t think there would be a way for me to participate and I didn’t want to create a problem.”

— Becky, student with cerebral palsy, majored in English
focus of this unit

*Providing Access to Lab and Field Science* focuses on general education and beginning classes in the sciences because all students are required to take some assortment of these classes. If students with disabilities are provided effective accommodations in beginning science courses, we believe that they will be more likely to complete their general requirements and graduate. In addition, should these students decide to major in the sciences, the students and their professors will have a better idea of the accommodations that will be effective later in higher level courses.

collaboration—roles and responsibilities

Students with disabilities often need individually designed accommodations in lab and field sciences. The purpose of these accommodations is to mitigate the impact of the student’s disability-related impairments. Accommodations enable students to acquire the skills and knowledge required in a course and to demonstrate that they have mastered them.

Please note that higher education is very different from public education. Unlike public education, only the student can request disability-related accommodations in higher education. These accommodations need to be individually designed, and the Disability Service Office (DSO) is there to coordinate the process.

Discussion and collaboration among the student, professor, and DSO counselor are essential in designing accommodations. Each collaborator has an important role:

- **Students** bring knowledge about their own limitations and share their experience about solutions that might be workable.
- **DSO** counselors determine eligibility for services and assist in designing specific accommodations based on the student’s functional limitations.
- **Faculty** members determine the essential content and requirements of their courses and help implement many accommodations.

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Throughout this unit, we will be using the terms **accommodation** and **academic adjustment** interchangeably (see “Glossary,” p. 125).

**Academic adjustment:** modification to an academic requirement or procedure to ensure that a qualified student with disabilities receives equal access to education.

**Adjustments should not:**
- alter the academic integrity of the course
- waive essential skills
- allow content to be watered down
The following table illustrates the responsibilities of each collaborator:

<table>
<thead>
<tr>
<th>Student Responsibilities</th>
<th>DSO Responsibilities</th>
<th>Faculty Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voluntarily Identify</strong> their disability-related needs and provide documentation to the DSO.</td>
<td><strong>Provide information and services</strong> so that students with disabilities may participate in all of the activities, services, and programs of the institution.</td>
<td><strong>Provide a statement in their syllabi</strong> informing students about resources available, reasonable accommodations, and alternative format materials.</td>
</tr>
<tr>
<td><strong>Formally request</strong> needed accommodations and services in a <strong>timely manner.</strong></td>
<td><strong>Review documentation</strong> of a disability to <strong>determine eligibility and reasonable accommodations.</strong></td>
<td>Help <strong>provide needed reasonable accommodations</strong> in their classes and labs.</td>
</tr>
<tr>
<td><strong>Use services responsibly</strong> and <strong>follow the policies</strong> of the DSO.</td>
<td><strong>Keep disability-related information confidential</strong> and discuss it only with those who have a legitimate reason to know. <strong>Support the student and faculty member throughout the accommodation process.</strong></td>
<td><strong>Support the policies of the DSO. Keep disability-related information confidential</strong> and discuss it only with those who have a legitimate reason to know.</td>
</tr>
</tbody>
</table>

★ Good communication and collaboration between the student, the faculty, and the DSO counselor are key to success in providing access in lab and field science courses.

The instructor is responsible for any graduate assistants who work under his/her supervision. They will also need to be aware of any specific accommodations for students with disabilities they will be teaching.
indispensable faculty role—essential skills concept

Faculty members have a critical role in the accommodation process. The faculty member brings his/her knowledge of the course, the course requirements and the essential skills taught in the course. Essential skills are the skills that a course is intended to teach. For example in Biology, it might be considered essential for a student to acquire a basic understanding of cell biology, classification of organisms, and simple genetics. However, being able to identify a specific species of fish or fruit fly based on characteristics might serve to demonstrate knowledge but may not be considered essential in and of itself at the introductory level. Using their expertise, professors determine what is essential in a given course or program. However, please note that the professors’ judgments about essential skills should be defensible in light of the standards and programmatic considerations of their disciplines.

Every program of study has a set of essential skills. All students, regardless of the presence of a disability, should master the required competencies. It would not be appropriate to waive or dismiss activities that teach these skills. In fact, doing so would compromise the integrity of the curriculum and undermine the concept of equal access and the intent of the law. The Americans with Disabilities Act (ADA) states that essential skills should not be waived or “watered down.” Otherwise, upon graduation, students with disabilities would find themselves at a disadvantage when compared to their peers.

How to determine essential skills:

• course exists to teach these skills.
• fundamental in preparation for the program for which the course exists.
• essential, based on the experience of those working in similar fields to the program.
• based on the amount of time professionals in this field will perform this task.
• required for certification, or existing standards in the program field.

Faculty quote —
I don’t see many students with disabilities that are lesser students. In fact, in most cases I find most students with disabilities actually to be better students in many ways. The reasonable accommodations that we try to make with them, I think, basically level out the playing field.

— Chuck Stoddard, Professor Instructional Technology
three strategies in designing accommodations

The ASD Project's *Providing Access to Lab and Field Science* was designed to generate a problem-solving approach to accommodate students with disabilities in the sciences. Because accommodations should be fitted to students on an individual basis, there are countless possible combinations of accommodations. We suggest three strategies that underlie the design of individual accommodations: 1) **adjust pedagogy**, 2) **modify equipment and environment**, and 3) **utilize technology**.

1) **Adjusting pedagogy** means finding ways to tailor teaching so that students with disabilities can best access the information. There are two ways to adjust pedagogy. One is to design the instructional procedures from the outset so that they are as accessible as possible to all students. This concept is known as Universal Design for Learning (UDL). For example, the professor might make the overheads/slides available to students prior to the lecture so that students can preview the content. This pedagogical technique helps all students but can be especially useful for students with disabilities. The second way is to design accommodations for individual students. For example, a student who has a visual impairment can be provided detailed written descriptions of essential illustrations in textbooks lab manuals, videos, etc.

**universal design for learning (UDL)**

A faculty member can incorporate many elements into his/her teaching practices from the outset that make the course more accessible to a wide array of students. This process, called Universal Design for Learning (UDL), emphasizes adjusting teaching practices and presentations to meet varying educational needs and learning styles. Rather than taking the “one-size-fits-all” approach, UDL stresses flexible and customizable delivery of content, assignments, and activities. To the extent possible, UDL is a preferred first line of attack to accommodate diverse learners. It allows the learning process to be more accessible without labeling or serving students differently. Please note, however, that while UDL may eliminate the need for some accommodations, no product or instructional method will ever be 100% universal. Individualized accommodations may be necessary to meet some students' needs. See pages 113-114, and the *Universal Design for Learning Supplementary Unit*.
2) **Modifying equipment and environment** is sometimes necessary to provide access in lab and field settings. Wheelchair accessible lab stations can be created with an adjustable table or a table on raised blocks. Adjusting seating arrangements so that a student who is deaf can clearly see the instructor, the sign language interpreter, and the visual aids in the lab or classroom facilitates communication.

3) **Utilizing technology** refers to using computers and other devices to aid in the learning process. Technology can make information and course activities accessible to students with disabilities when other methods are not feasible or are less functional. For example, instructors may allow field lectures to be recorded for those students who have trouble taking notes because of visual, motor, or learning disabilities. Another example is the creation of a “virtual” experience for a student who cannot access the physical terrain of a field activity.

**conclusion**
Providing the right accommodations, especially in lab and fieldwork, can open the door for many students with disabilities to the full array of science opportunities. Working within a collaborative process, students with disabilities, faculty members, graduate assistants, and disability service providers can identify appropriate and reasonable accommodations that provide equal access to education as well as the opportunity to pursue professions in the sciences.
designing accommodations — a collaborative process

Understanding these principles enables you to contribute to the process of designing accommodations and to implement accommodations in your courses.

Student quote —

“One thing I liked is when we worked in partner teams. That helped me a lot . . . . I like going to the supplemental instruction sessions because the TA would go over some of the material that was covered that day. Having known some things beforehand, like what’s going to be covered, especially lecture, is really helpful for me.”

— Trent, student with LD, majored in Physical Education
case story from the student’s perspective
Craig is an incoming freshman at a state university. He is excited about starting college. Like all new students, Craig is unsure about what to expect. His interests vary from computers to politics, and he wants to explore his options. Craig has limited dexterity and fine motor control and uses a motorized wheelchair. He has signed up for a beginning biology course with an associated lab. Because of problems in his high school labs, Craig is worried that he will not be able to use the lab.

Craig will soon be a student in Dr. Ogilvie’s introductory Biology course. Dr. Ogilvie will have a critical role in providing accommodations to Craig. Craig is uncertain how much information about his disability-related limitations Dr. Ogilvie will need from him. What accommodations will Craig need for the lab?
a problem-solving template

case story from the faculty perspective
Dr. Ogilvie teaches an introductory biology course and oversees graduate assistants who teach the course's laboratory sections. At the start of a new term, Craig, a student who uses a wheelchair, came to see Dr. Ogilvie during his office hours to discuss various disability-related accommodations for the introductory course and lab activities. The university’s Disability Service Office (DSO) had already determined Craig’s eligibility for services, and he had the DSO’s accommodation form to give to Dr. Ogilvie. Although Dr. Ogilvie is aware that laws mandate disability-related accommodations, he is uncertain about the accommodation process and his role as the instructor in accommodating Craig.

What is the professor’s role if a student requests disability-related accommodations?

Answer: Instructors should direct students to the DSO for disability-related services for several reasons. First, the DSO has the responsibility to authorize accommodations. Faculty are relieved from making disability-related decisions and the associated liabilities. DSO staff are qualified to evaluate disability documentation. Second, the student needs the support and expertise the DSO staff can provide. Third, this process protects the student’s confidentiality. Finally, remember, faculty members who bypass the DSO expose themselves to legal risk.

Dr. Ogilvie looked over the accommodations recommended by the DSO counselor. Craig would need accommodations designed for his motorized wheelchair and for his limited dexterity and fine motor control. He agreed with the accommodations listed for the lecture portion of the course, such as a note-taker for class and a private room for tests with a scribe and extended time. However, Dr. Ogilvie was not sure what would constitute reasonable and effective accommodations in the lab. What questions might Dr. Ogilvie consider to set up appropriate accommodations for Craig in the lab?

I. beginning questions
   What is the course?
   What are the student’s disability-related limitations?

in summary
In this case, Dr. Ogilvie teaches an introductory biology class with a lab component. Craig has a mobility impairment and will need accommodations in the lab.
II. specific questions about the course

What are the learning activities? (See column 1.)

What are the essential skills acquired through these activities? (see column 2.)

### analysis

<table>
<thead>
<tr>
<th>Faculty</th>
<th>What are the learning activities?</th>
<th>What are the essential skills acquired through these activities?</th>
</tr>
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<tbody>
<tr>
<td>Use microscope for cell ID</td>
<td>Identify cell biology</td>
<td></td>
</tr>
<tr>
<td>Plant collection and identification</td>
<td>Classification into phylogeny</td>
<td></td>
</tr>
<tr>
<td>Dissecting a frog</td>
<td>Physiology and identification of phylogeny</td>
<td></td>
</tr>
<tr>
<td>Use equipment and chemical to extract DNA</td>
<td>DNA structure and replication</td>
<td></td>
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</tbody>
</table>

**in summary**

Dr. Ogilvie's course teaches a basic understanding of cell structures and living organisms, using traditional laboratory equipment and activities. Knowledge of biology and the specific course activities are Dr. Ogilvie’s areas of expertise. This is what he will likely contribute to the collaborative process of deciding accommodations.
III. specific questions about the student’s disability-related limitations

What are the concerns related to Craig’s limitations?
(See column 3.)

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in summary
Craig will need accommodations in the laboratory because of his limitations:

• In some older buildings, Craig’s wheelchair will present access problems in the lab, such as a lack of an accessible workstation and not enough aisle clearance.

• Craig’s limited hand control will affect how he can handle the equipment and perform various procedures.

• Because of the chemicals used, Craig’s lack of fine motor control could pose a safety hazard.

Craig would be expected to contribute his understanding of his own capabilities and limitations to the collaborative process of deciding accommodations.

__________________________________________________________

Student quote —
“The lab aide made it possible to participate in most of the activities in my physics lab.”

— Matt, student with quadriplegia, majored in Statistics
IV. general question about possible accommodations

What are possible accommodations? (See column 4.)

<table>
<thead>
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<td>What are the essential skills acquired through these activities?</td>
<td>What are the concerns related to Craig’s limitations?</td>
</tr>
<tr>
<td>Use microscope for cell ID</td>
<td>Identify cell biology</td>
<td>Wheelchair access</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fine motor limitations to use microscope</td>
</tr>
<tr>
<td>Plant collection and identification</td>
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<td>Wheelchair access</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fine motor limitations to handle plant specimens</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Fine motor limitations to use the equipment and do the procedure Safety in handling caustic chemicals</td>
</tr>
</tbody>
</table>
in summary

Answering the previous questions can help Dr. Ogilvie work with Craig and his DSO counselor to design accommodations for the lab. The DSO counselor would be expected to contribute possible solutions to obstacles that Craig’s limitations will create. Given this expertise, the counselor should orchestrate the steps to provide the decided accommodations. The Accommodation Table starting on page 25 and the three strategies discussed on pages 13 and 14 can be used to help generate ideas for accommodations.

Possible Accommodations for Craig:

- Craig will need an accessible workstation and wide aisle clearance for his motorized wheelchair.
- He will need a student partner or lab aide to help him take notes, handle the equipment, and perform the procedures.

Note: Craig will need to direct his own experiments so it will be clear that he is acquiring the essential skills.

3 strategies in designing accommodations:

1. Adjusting pedagogy:
   Tailor teaching so that students can best access the information.

2. Modifying equipment and environment:
   Make changes to the equipment and surroundings to create better physical access.

3. Utilizing technology:
   Use computers and other devices to aid the learning process.
V. Specific questions about accommodations

Which of the possible accommodations identified are the best choices for Craig in this specific lab? (See column 5.)

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<td>Wheelchair access</td>
</tr>
<tr>
<td>Fine motor limitations to use microscope</td>
<td>Extra time (pedagogy)</td>
<td>Lab aide or student partner (pedagogy)</td>
</tr>
<tr>
<td>Plant collection and identification</td>
<td>Classification into phylogeny</td>
<td>Wheelchair access</td>
</tr>
<tr>
<td>Fine motor limitations to handle plant specimens</td>
<td>Extra time (pedagogy)</td>
<td>Extra time to maneuver around the lab and to handle the plant specimens</td>
</tr>
<tr>
<td>Dissecting a frog</td>
<td>Physiology and identification of phylogeny</td>
<td>Wheelchair access</td>
</tr>
<tr>
<td>Fine motor limitations to do the procedure</td>
<td>Provide a lab aide or use student partner (pedagogy)</td>
<td>Use virtual dissection software program (technology)</td>
</tr>
<tr>
<td>Use equipment and chemical to extract DNA</td>
<td>DNA structure and replication</td>
<td>Wheelchair access</td>
</tr>
<tr>
<td>Safety in handling caustic chemicals</td>
<td></td>
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</table>

© 2006 designing accommodations 23
In summary

At Dr. Ogilvie's university, the older science buildings have been made accessible. However, not all labs have been modified. The DSO counselor provides an adjustable table that will accommodate Craig's motorized wheelchair. With Craig’s help, the DSO counselor, and his graduate assistant, Dr. Ogilvie surveys his lab and makes necessary adjustments such as rearranging furniture, equipment and supplies so that Craig will have better access and mobility within the lab.

Dr. Ogilvie is aware that a lab aide to work with Craig may be the best option because of Craig's dexterity and fine motor limitations. However, he doesn't have the funding to pay for one. Since students always partner in his lab, Dr. Ogilvie decides to partner Craig with another student. The graduate assistant will help out as much as she can and will make sure Craig is a full contributor to the partnership. The graduate assistant will give Craig and his partner adequate time for the various lab activities.

Dr. Ogilvie gives Craig the choice of using a virtual dissecting program or having a student partner. Craig chooses to have a student partner so he will not be singled out and will have the same experience as his classmates.

Can an accommodation plan be revised?

Answer: Sometimes planned accommodations do not go as intended. In these cases, revisions should be considered. Often a quick communication between the student, the professor, and the DSO is all that is needed. If the revision process is prolonged, it is essential that the professor continues to provide the original accommodations until the new accommodations are established.

This case story illustrates the process of determining individual disability-related accommodations. However, to the extent that principles of Universal Design for Learning (UDL) are used from the outset, some of Craig's limitations may already have been addressed. For example, if all the lab tables were adjustable, the DSO counselor wouldn't need to provide a special table for Craig (and all of the students could work more comfortably). If all the students had the choice of using the virtual dissection program of a frog, Craig wouldn't be singled out (see pp. 113-114).
accommodations at a glance

The following table serves as a tool to generate ideas and to provide examples of accommodations that can be used in lab and field activities. The examples are grouped according to the three strategies in designing accommodations: 1) **adjust pedagogy**, 2) **modify equipment and environment**, and 3) **utilize technology**. (See pp. 13-14.)
universal design for learning

Many of these tips for communication can create a welcoming atmosphere for all students.

- Providing web-based materials in accessible formats allows students maximum flexibility in meeting their individual needs.
- Repeating the questions or comments of others during discussions is a helpful practice for all students and is especially helpful in large rooms with inadequate acoustics.

communication and courtesy tips

Suggestions are included to eliminate potential barriers faced by students with disabilities.

general information

Basic communication strategies can diminish the limitations presented by some disabilities. These strategies or courtesies can help students with disabilities be more comfortable and can eliminate barriers to success.

- If you see a student struggling, offer assistance, then wait until your offer is accepted. Ask the student how you can help.
- Provide materials and web-based information in accessible format (see “Resources,” pp. 116-117).
- Whenever you give verbal instructions, make them specific. Avoid personal pronouns such as “this” or “that,” but rather specify what you are talking about. Some students may not be able to watch you point to objects as you give directions.

ideas on accommodation:

learning disabilities (LD)

- When a student approaches with an accommodation form, do not question the validity of a student’s disability or accommodation.
- Respect a student’s confidentiality.
- Do your best to use the recommended accommodations during field activities.

motor impairments

- Listen attentively and patiently to a student who has difficulty talking. Give the student time to respond, avoid finishing his/her sentences.
- Move obvious obstacles. Ask the student for suggestions on how to deal with safety issues and how to make the lab or field site more accessible.
- Place yourself at eye level when speaking with someone in a wheelchair. This may mean pulling up a chair or kneeling next to the student.
- Do not lean against the student’s wheelchair. Remember the chair acts as an extension of the body.

Tip: Support the student’s efforts to find the best location that minimizes distractions.
some accommodation options (continued):

visual impairments

• Address the student by name and remember to identify whoever is speaking (e.g. “Good comment, John. This is Beth.”)
• Respect guide dogs and do not touch, pet, or otherwise distract service animals.
• Give a verbal description of key information on overheads or on other visual material.
• Provide all materials, printed or web-based, in an accessible format.
• Identify yourself and others as the group goes about its activities.
• Make sure someone is available to give a verbal description of experiments and field activities as they are happening.
• Remember to alert the student if it is necessary to make any changes to class activities.

hearing impairments

• Face the students when speaking.
• Use a normal tone when speaking.
• Look directly at the student and speak clearly, slowly, and expressively without exaggerating.
• Keep hands and other objects away from your mouth while talking.
• Speak directly to the individual, not to a companion or sign language interpreter.
• If the student is wearing a hearing aid, don’t assume that he/she can hear your voice.
• Repeat other student’s questions to the whole group. This is important even if an FM system is being used since the mic only picks up the instructor’s voice.
• Tap the student on the shoulder or wave your hand to get his/her attention.
• To make a general announcement or get the attention of the class during an activity, flash the classroom lights.
• If verbal communication is difficult, consider other options, such as writing notes or using e-mail and computers.
• The student and the interpreter find the best position so that the student can observe class activities and still see the interpreter.
• Keep the pace of discussion slow enough for the interpreter to keep up. Glance at the student periodically to see if the pace is appropriate. It can be especially difficult for the interpreter to hear outdoors or translate technical or scientific terminology.
universal design for learning

This can be an effective way to help all students in the class. By providing the class with the notes prior to the session, students have time to review information before coming to lecture. During the lecture, the class is able to follow the discussion more closely, keep notes in a more organized way, and see more clearly the connections between topics.

organizational materials

Digital copies or printouts of lecture notes, presentation slides, and other material can be given in advance.

general information

Notes can be posted to a website and downloaded by students prior to class. This allows time for individualized access and coding systems such as color-coded diagrams, raised line drawings, etc.

- Notes need not be elaborate, merely sufficient to help students prepare for individual needs and anticipate the lecture.
- Be aware that students with disabilities may be required to do several things at once, causing exhaustion or eye strain. Having materials in advance can help the student manage these concerns.

ideas on accommodation:

learning disabilities (LD)

Helps student:

- organize materials.
- learn technical terms that may present difficulties with spelling.
- track important information.

motor impairments

- Helps student who writes slowly organize information and take more effective notes, particularly in field settings.

visual impairments

- Helps student access lecture notes in an alternative format (i.e. Braille, large print, color contrast, raised line drawings, etc.).
- Makes note-taking feasible for some students.
- Helps prepare student for potential obstacles in the field.

hearing impairments

- Providing materials in advance allows the student and the interpreter enough time to decide how to communicate technical terms.

University websites and other online material should be accessible (see “Resources,” pp. 116-117).

Tip: When available, provide color or color-coded copies to students with specific needs.
extra time

In circumstances where a student has difficulty performing or demonstrating knowledge in allotted time limits, extended time periods may be given to enable the student to demonstrate knowledge effectively.

general information

Unless time is essential to one of the objectives of the learning activity, extra time is an appropriate accommodation and may help many students with disabilities to demonstrate knowledge.

- Time accommodations should be reasonable. This means that only the necessary extra time to accommodate the documented disability as it affects the learning process or motor function is given.

ideas on accommodation:

<table>
<thead>
<tr>
<th>learning disabilities (LD)</th>
<th>Example: A student who has a difficult time writing is given extra time to complete field notes while in the field.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allows student to:</td>
<td></td>
</tr>
<tr>
<td>• process information.</td>
<td></td>
</tr>
<tr>
<td>• formulate and record responses.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>motor impairments</th>
<th>Example: A student with a disability that affects moving his hands and arms is given extra time to complete a lab assignment in which measuring is required.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allows student to:</td>
<td>Example: A student in a wheelchair is allowed extra time to collect samples from different areas of a site.</td>
</tr>
<tr>
<td>• manipulate materials and use equipment.</td>
<td></td>
</tr>
<tr>
<td>• work with a partner or scribe, etc.</td>
<td></td>
</tr>
<tr>
<td>• reach a field site and move around within it to collect data and materials.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>visual impairments</th>
<th>Example: A student with a visual impairment is given extra time to use electronic measuring devices.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allows student enough time to become familiarized with the environment and the technology.</td>
<td>Example: A student who uses a guide dog or cane is allowed extra time to navigate or explore a field site.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>hearing impairments</th>
<th>Example: During the field activities, a student using an interpreter is given extra time to communicate with other team members, the professor, or the TA.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enables student to work more effectively with an interpreter.</td>
<td></td>
</tr>
</tbody>
</table>
There are a number of ways to manipulate text to make it more useable by students who require some adaptation. Digitizing text enables these adaptations. However, we do not suggest the exclusive use of digital format as both digital and print formats serve important purposes.

- **Enlarged Text**: Increase font size or enlarge documents to a size more easily readable. A font size of 18 to 24 is generally considered standard for enlarged text.
- **High Contrast Text**: Use strong contrast in color or size to allow people with low vision or learning disabilities to see it more easily.
- **Simple Fonts**: Avoid complicated, calligraphy style fonts. Keeping the font styles, backgrounds, and layouts simple increases readability.
- **Extra Space**: Make sure that text is not crowded on the page. Increasing white space on the paper allows students to more easily track instructions, make notations, and organize their thoughts.
- **Screen Magnification**: Software is available that can magnify the images on the computer screen from 2 to 16 times.
- **Text Reading**: Computer software can read the text aloud as it is displayed on the screen.

**general information**

- Many PDFs are inaccessible to text readers. You may want to avoid them if possible.
- Windows operating system, beginning with Windows ’98 and MacIntosh OSX have screen magnification and high contrast text built into the operating system. These options can be accessed through the Central Panel Accessibility Options. The most recent version of Windows has a text reader built into the system.

**ideas on accommodation:**

### learning disabilities (LD)

- Provide extra space and enlarged text on printed material to facilitate reading and organizing information.
- Many students have identified adjustments that address specific learning needs. Be flexible about formatting so that students can more easily make these adjustments.

**Example**: A student receives a document in a larger text and with extra spacing in order to organize notes and use concept maps.

**Example**: A student downloads laboratory instructions so that he can use a high contrasting font to track procedures during the lab. Later, he memorizes steps and formulas using a text reader.

### motor impairments

- Extra spacing on printed material gives a student with fine-motor impairments more room to write lab, field notes, and diagrams.
- Provide course materials digitally so that a student can use computers and other assistive technology, such as a voice recognition program, to record information when writing is difficult.

**Example**: A student requests a copy of an outline with extra spacing in order to be able to write her notes.

**Example**: A student uses a voice recognition program to complete a lab report downloaded from the course's website.

### visual impairments

- Enlarged text enables a student to track words and columns across the page.
- Digital format enables the student with low vision to manipulate the text to add high contrast text, screen magnification and text reading.

**Example**: A student finds she does not need magnification devices, allowing her to be less dependent on assistive equipment.

**Example**: A student modifies a digital format to use colors with high contrast, maximizing readability and reduce eyestrain.

### hearing impairments

Not applicable.
providing access to lab and field science

★ lab/field partner/aide

Lab/field partner: a student with a disability is sometimes paired with another student in the lab or field setting. Special consideration may be needed in the division of labor. The student with a disability is a full partner or team member and performs the same duties as much as he/she can reasonably do.

Lab/field aide: in certain circumstances, an aide is hired to assist the student with a disability with manual or visual tasks.

general information

• Through this accommodation, some students are able to participate in lab or field activities that would otherwise be difficult or impossible to do.

• Keep the workload distributed between the partners. Advise them to adjust the division of labor based on individual strengths.

• Student participation will vary depending on the circumstances.

• In certain circumstances, it may be necessary to provide an aide to assist with manual or visual tasks. If an aide is necessary, training is critical to clarify expectations as to their individual roles.

ideas on accommodation:

learning disabilities (LD)

• Partner or team member provides support to student who may need instructions given in a different way.

• A partner rather than an aide would likely be sufficient support for the student.

motor impairments

• If the class is divided into teams or groups, allow the student to participate in as many activities as possible while others in the group complete activities the student cannot do.

• Allow the student to direct procedures he/she is unable to do physically, demonstrating knowledge of the concepts and procedures.

• Certain circumstances may require an aide to assist with manual tasks. Guidance or special instruction may be needed to clarify roles of student and aide. The DSO can help with arrangements.

visual impairments

• Instructor can facilitate by providing:
  – Verbal description of visual material as much as possible.
  – Print materials electronically in advance for conversion into alternate formats and pre-study.
  – Adaptive equipment if necessary to allow maximum participation and additional safety.

• Allows the student to direct procedures he/she is unable to do, demonstrating knowledge of the concepts and procedures.

• Certain circumstances may require an aide to assist with visual tasks. Guidance or special instruction may be needed to clarify roles of the student and the aide. The DSO can help with arrangements.

hearing impairments

Communication can be an obstacle in group/team participation. Consider asking the student about what has been helpful in the past.

• Educate students and TA’s about the importance of speaking one at a time and allowing time for interpretation and time for processing.

• Consider assigning the student with a disability as group leader to promote better communication.

• Encourage student to be assertive and to share any information about his/her disability that might help make the group more productive.

• An interpreter, FM system (assistive listening device), or partner rather than an aide would likely be sufficient support for the student.

universal design for learning

• Provide lab instructions or activity guide sheets in advance, when possible.

• Encourage students to speak one at a time.

• Repeat questions from students before responding.
universal design for learning

Many students benefit by having three-dimensional models. Students can use multiple senses and can more easily understand the information.

Tactile models

Three-dimensional models that students can feel are helpful.

general information

Examples of these could include relief maps, models of organs in the body, stick models of molecules, materials showing different textures or hardness, field samples, etc.

Raised drawings can be created from line drawings or graphics by specialized equipment such as the Tiger Embosser.

However, materials such as yarn, hot glue, puff paint, or foil can also be used successfully. Some commercial alternatives are available: wax-formula yarn sticks that stick to surfaces such as Wikki Stix, pegboards, elastics and golf tees can be used for graphs and models.

ideas on accommodation:

learning disabilities (LD)

• Allows the students to access the information using kinesthetic learning methods.

motor impairments

• Helps the student if he/she is unable to get close enough to see the samples or cannot access a physical terrain.

visual impairments

• Simulates the same first-hand knowledge through a tactile experience that sighted students obtain by viewing the experiment.

• Gather equipment and materials on a tray. Allow the student to touch and feel as much as safety allows.

• Line drawings or other graphics can be produced in raised format.

Example: A student with a visual impairment is able to handle a model of an eye while other students are watching a dissection of a cow’s eye.

Example: During the dissection lab, the student can be given the cow’s eye parts for exploration.

hearing impairments

Not applicable.
Adapting the Physical Environment

Arranging the physical environment can be an effective way to make an activity accessible to students with disabilities.

General Information

- Arrange the physical environment and surroundings to keep aisles clear and eliminate barriers for students with disabilities.
- If the physical environment cannot be made accessible, consider moving the lab or field exercise to a more accessible location.

Ideas on Accommodation:

Learning Disabilities (LD)

- Some students may benefit by locating themselves in an area that is less distracting.
- Allow some discretion in student placement or seating arrangement.

Motor Impairments

- Allow the student to work in an accessible lab or environment with fewer obstacles. Consider what modifications need to be made to the existing lab or try to find an alternative site.
- Accommodations must be made for required field sites. Discuss accessible transportation. The DSO can assist.

Visual Impairments

- The student needs orientation to become familiar with a new environment before participating in any lab/field activities. A familiar environment allows the student to focus on learning objectives rather than on the environment itself.
- Accessible labeling and placement of materials and chemicals should be established and maintained.

Hearing Impairments

- Collaborate with the student for best placement of the interpreter, the instructor, and any visual materials.
- Allows the student to choose a location that facilitates lip reading.
- FM equipment may also be helpful (see p. 39).

Universal Design for Learning

If it is necessary to move to an alternate site as an accommodation for students with disabilities, it is preferable to move the entire class to the alternate site.

Note: There are some students with disabilities for whom certain field activities may not be possible without substantial accommodations. In certain cases, a field activity could be redesigned as a comparable lab experience.

Tip: Remember to keep tools and necessary lab materials in a consistent location.
An accessible workstation can benefit many students. It may also benefit those who are too tall or short or have physical characteristics that make a standard workstation uncomfortable.

**accessible workstation**

A workstation and surroundings can be made more accessible to students with disabilities.

**general information**

- Accessibility might include the height of a table, its location in the classroom, its access to materials, clutter surrounding the station, how easily students can reach and operate equipment, etc.
- Space for sign language interpreters, lab aides, or partners needs to be considered for students with sensory or motor impairments. It is important that the student be able to view visuals or instructions from the professor as well as the interpreter.

**ideas on accommodation:**

**learning disabilities (LD)**

- Allow the student to choose a workstation that best meets his/her needs. Some workstations may be better than others. Distractibility may be a concern.

**motor impairments**

- Provide a workstation and equipment the student can successfully and easily use—e.g. adjustable workstation.

  **Basic requirements for a wheelchair accessible workstation:**
  - work surface: 30 inches from floor
  - 29-inch clearance beneath, a depth of at least 20 inches, and a minimum width of 36 inches for leg space
  - utility and equipment controls within easy reach
  - recommended aisle clearance: 42 to 48 inches wide

- Make a workstation accessible simply by using cinderblocks to raise a table. An adjustable workstation is preferable.

**visual impairments**

- Provide opportunity for mobility training in the lab.
- Ensure sufficient lighting in workstation.
- Provide magnifiers.
- Ensure aisle clearance can accommodate white canes and service dogs.
- Label with raised marking, large print, or color coding.

**hearing impairments**

- Provide student a workstation in direct line of sight of the instructor, visual materials, and sign language interpreters.
- Ensure lighting is sufficiently bright to see the interpreter and the instructor.

**Tip:**

- Back lighting from windows can create a silhouetting effect, hindering communication with sign language interpreters.
- Turning down lights to view media presentations and overheads can hinder communication with interpreters.
Safety Tips

Simple adjustments can eliminate many concerns for student with disabilities in a lab or field situation.

General Information

Most concerns for safety can be worked out by communicating in advance with the student or DSO. When working out these provisions, make sure that TA’s and any others who will take part in the activities are made aware of any special provisions. Safety should be considered in both the student’s physical environment and the activities the student is asked to carry out.

Ideas on Accommodation:

Learning Disabilities (LD)

- Students with learning disabilities should be covered by standard safety procedures. However, it may be helpful to minimize distractions and clarify instructions.

Motor Impairments

- Make sure safety equipment, such as eye washes and lab showers, is accessible to students with motor impairments especially students in wheelchairs.
- Keep aisles and emergency exits clear.
- If possible, assign a student to a workstation on an outside row close to an accessible exit and/or safety equipment.
- Some safety clothing may need to be adapted.
- Students should be paired with a safety partner to help them in case of an emergency.
- Lightweight fire extinguishers should be placed in close proximity.

Visual Impairments

- Do a “walk through” of safety equipment and procedures prior to class to allow the student to familiarize him or herself with the environment.
- Keep aisles and emergency exits clear.
- Students should be paired with a partner to help them in an emergency.
- Provide safety rules in an alternative format, such as large print or Braille.
- Label caustic chemicals with a tactile symbol that indicates danger.
- Remember that students with vision impairments identify things using location. Make sure that any caustic chemicals are placed in the same location after every use and are appropriately labeled.

Hearing Impairments

- A visual warning system should be worked out with the student prior to starting the class.
- A partner should be assigned to alert the student in the case of an emergency.

Universal Design for Learning

Many of these adjustments can be used to meet the needs of other students.

Allergies can be a major concern for some students. Here are some tips:

- Encourage students to be alert to possible safety hazards on field trips, etc.
- Since bees, wasps, etc, can be especially deadly, request a student take whatever precautions are available, such as an epipen.
- Carry a field kit with salve and antihistamine.

Note: Students with motor or visual impairments are especially vulnerable to spills of caustic materials. Consider using less caustic alternative chemicals with these students.
alternative materials

These materials can be used to teach the same knowledge and skills, while presenting fewer safety risks to students with disabilities.

Examples include:

- Substitution of experiment chemicals
- Computer simulations
- Virtual experiences
- Models, tactile or raised diagrams

general information

Changed materials should replicate the experience of the other students and not compromise the integrity of the activity.

ideas on accommodation:

**learning disabilities (LD)**

Not applicable.

**motor impairments**

- Allows the student to perform the experiment with alternative materials.  
  Example: A student uses vinegar and baking soda to illustrate acid/base titration instead of strong acids/bases.

**visual impairments**

- Allows the student to perform the experiment with alternative materials and to adjust lab equipment.  
  Example: A TA uses a glue gun to make raised tactile markers on beakers and provides measuring spoons with solid covers to a student.

**hearing impairments**

Not applicable.
virtual experiences

Computer programs can be used to simulate a lab or field activity.

general information

- Many programs exist for chemistry and physics. Students may take advantage of virtual courses from other institutions and transfer the credits.
- Field activities can be videotaped and made into an interactive virtual field trip.

ideas on accommodation:

learning disabilities (LD)

- Allows the student with a specific learning disability time to work through a procedure in a less distracting environment at his or her own pace.

motor impairments

- Allows the student to perform the procedure without the physical obstacles of the disability.

visual impairments

- Allows the student to access and carry out an activity that may otherwise be difficult or impossible to do in the original environment.
- Allows the student to manipulate the program (e.g. modify contrast or size) to facilitate sight so the student can perform the procedure.

hearing impairments

- Allows adaptive technology to translate auditory instructions or information into visual cues.

universal design for learning

Virtual experiences can provide an effective way to help all students conduct and review activities outside of the lab/field activities or can be useful to supplement the procedures. Further, virtual experiences can be used when the real experiences are too dangerous.
universal design for learning

Captioning helps many students by presenting information in verbal and written form. It is especially helpful to students and faculty when the sound is less than ideal or language proficiency is limited.

For your information: All TV’s manufactured after the year 2000 have built-in captioned decoding equipment.

Note: Digital projectors may not have captioned decoding equipment built-in.

captioning

Closed Captioning: Text of spoken word is printed at the bottom of screen. Closed captioning requires equipment that is capable of decoding captioned text; if the equipment (e.g., digital projectors) is not capable of decoding, this text will not be visible.

Open Captioning: Similar to closed captioning, but words are visible at all times. Does not require special equipment.

Subtitles: Many DVDs include a subtitle option. Turning this option “on” functions like open captioning and requires no special equipment.

Video Description: Video images are described in an audible text for the visually impaired.

genral information

• By combining the spoken word and the printed text, students can more easily remember what is said and take notes more efficiently.
• It is important to remember that many internet or online videos, as well as videos produced for your own use (i.e. video recordings of experiments or field trips) are not captioned initially and must be modified accordingly.
• If videos are not captioned, provide a written transcript prior to or in conjunction with the video presentation. Consult the DSO if needed.

ideas on accommodation:

Learning disabilities (LD)

• Allows the student to combine different modes of learning.
• Helps with reading comprehension by combining the spoken word with the printed text.

Example: A student with a learning disability can read the closed captioning to aid in organizing notes.

Motor impairments

Not applicable.

Visual impairments

• Some auditory description of visual information will be needed with media presentations. This is particularly important if key information is presented visually without accompanying narration.

Hearing impairments

• Allows the students to visually access auditory information.
FM audio system (assistive listening device)

FM or audio systems (assistive listening devices) are inexpensive systems that transfer sound from a small microphone worn by the instructor directly to headphones or a hearing aid worn by a student.

general information

• When using an FM audio system (assistive listening device), remember that the student on the receiving end can always hear you unless you turn the system off, even if you are in another room holding a private conversation or using the restroom.

• Repeat or summarize other student's comments. The student may only be able to hear through the system.

• An FM audio system (assistive listening device) can also be connected to a recording device to record lectures for later use.

ideas on accommodation

learning disabilities (LD)

• Helps the student focus if there is considerable noise and distraction in the labs.

Example: A student with a learning disability wears an FM system (assistive listening device) in a noisy laboratory to better focus on the lecture.

• The system can be hooked to a recording device to record lectures held in the field.

Example: A student with a learning disability in a field section records a presentation for later review.

motor impairments

• Allows the student to hear when the student cannot get close to the instructor.

Example: A student uses an FM system (assistive listening device) to hear a professor who is at the head of a group in a field activity.

• Helps the student record lectures to take notes at a later time.

Example: A student with a motor disability is able to record a professor's comments during a laboratory activity for later review.

visual impairments

Gives the student access to information when there is considerable noise and distraction (e.g. falling water, wind). Since the student cannot access information visually, auditory input is essential.

Example: A student uses an FM system for an ecology field assignment located near a river.

hearing impairments

• Allows the student to hear lectures and explanations more clearly in the presence of background noise.

Example: A student with a hearing impairment in a small laboratory with a high noise level can more easily focus on an instructor's presentation.

Example: A student with a hearing impairment is able to focus on an instructor's explanations while in a field setting next to a running river.
frequently asked questions

This is a resource to find answers to commonly asked questions.
frequently asked questions

1. What constitutes a disability?

2. Who has the responsibility to request disability-related accommodations?

3. Will I be notified if a student with a disability is in my class?

4. What is the faculty member’s role in helping students find out about the DSO?

5. Why should a faculty member work with the DSO to provide disability-related accommodations for a student?

6. Who is authorized to review and maintain documentation of a disability?

7. How does the faculty member know what accommodations the DSO and the student have determined?

8. What are reasonable accommodations and why should they be provided?

9. Who is responsible for accommodations carried out in lab and/or field situations by a graduate teaching assistant?

10. Is the professor required to provide transportation to students with disabilities?

11. Is there a way to make learning more attainable for all students while providing access for students with disabilities?
answers to frequently asked questions

1. What constitutes a disability?

Answer: According to the Americans with Disabilities Act (ADA), the term “disability” means a physical or mental impairment that substantially limits one or more of the major life activities of an individual. These activities include caring for one’s self, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning, working, and others. Some disabilities are easily identifiable because of the physical characteristics that accompany them. However, it is important to note that many disabilities, referred to as invisible disabilities, are not easily identified by simply looking at a person. While not as obvious, invisible disabilities may have a significant impact on a student’s ability to perform in a class and may also require accommodations.

2. Who has the responsibility to request disability-related accommodations?

Answer: In higher education, it is the responsibility of the student to request disability-related accommodations. Students should be encouraged to advocate for their own needs.

3. Will I be notified if a student with a disability is in my class?

Answer: Students with disabilities are encouraged to identify themselves to their professors. However, it is the student’s right to decide whether to disclose that information. Often, students have legitimate concerns about social stigma or discrimination and choose to keep their disability confidential. Therefore, you may be asked to provide accommodations for students without knowing their identity or disability. It is important to know that the accommodations you have been asked to provide are appropriately designed by the DSO and will help the student with disabilities in your class.
4. What is the faculty member’s role in helping students find out about the DSO?

**Answer:** Faculty have an important role in helping students find services on campus. Some students may not know that they are eligible for services for a physical, emotional, medical or learning impairment. While faculty should not suggest that a student has a disability, they can inform students about services available on campus. It’s important to include a syllabus statement about your university’s policies on accommodations for students with disabilities. A sample syllabus statement can be found in the “Glossary” on page 136, or consult the DSO. Review this information when you go over your syllabus. Frequently invite students to visit with you during your office hours if they have any concerns. Students who identify themselves as having a disability and who request accommodations should be referred to the DSO.

5. Why should a faculty member work with the DSO to provide disability-related accommodations for a student?

**Answer:** The DSO has the designated responsibility to determine and authorize accommodations, thereby relieving faculty from making these disability-related decisions. DSO staff are qualified to evaluate disability documentation. Going through the DSO provides legal protection to the student, the faculty member, and the institution. First, the student receives the support and expertise the DSO staff can provide to determine appropriate and effective disability-related accommodations. Second, the DSO protects the student’s confidentiality. Finally, going through the DSO provides legal protection for the university and the professor. Faculty members who bypass the DSO expose themselves to legal risk.

6. Who is authorized to review and maintain documentation of a disability?

**Answer:** Faculty members do not have an obligation or the right to review the student’s medical documentation. The student needs to
provide the DSO with documentation and/or a formal diagnostic assessment done by appropriate credentialed professionals that verifies the disability, describing the individual’s functional limitations and supporting the request for accommodations. Some documentation needs can be complex. For example, if a student has more than one disability, each must be appropriately documented. The DSO staff have the resources, the expertise, and the authorization to properly interpret this documentation. They are prepared to file this documentation according to federal guidelines, separately from academic records; faculty are not. This protects the student, the faculty, and the institution.

7. **How does the faculty member know what accommodations the DSO and the student have determined?**

**Answer:** The faculty member will be notified of accommodations through the DSO. In most cases, the DSO will prepare a letter for the professor requesting specific accommodations. This letter might be mailed directly to the professor by the DSO or the student may hand deliver the letter. When receiving an accommodation form, talk with the student in private about how the accommodations will be put into action. Complete and sign the form and return it to the DSO. Remember to keep a copy for future reference. When a faculty member receives a request for accommodations for a student that is not identified by name, the accommodation should be provided and any question regarding the accommodations should be directed to the DSO.

8. **What are reasonable accommodations and why should they be provided?**

**Answer:** Reasonable accommodations are adaptations aimed at mitigating the impact of the disability without compromising the integrity of the academic program or course. Accommodations may include instructional strategies, adaptive technology, or aides such as interpreters. **Providing reasonable accommodations enables students with disabilities to have equal access to education and services as required by federal law.**
Designing reasonable accommodations relies on understanding the concept of essential skills. Essential skills are the skills that a course is intended to teach. Every program of study has a set of essential skills. All students, regardless of the presence of a disability should learn the same competencies at the same level. The concept of essential skills is important because the Americans with Disabilities Act (ADA) states that essential skills should not be waived or “watered down.” The professor has the responsibility and expertise to decide what these essential skills are. However, the professor needs to be able to defend his/her decision based on logic, knowledge of the field, and/or advice from experts. In some situations, determining what are essential skills can be complex. We recommend you consult your DSO.

9. Who is responsible for accommodations carried out in lab and/or field situations by a graduate teaching assistant?

**Answer:** Determining who is responsible depends on who has been designated to oversee the lab and/or fieldwork. In some cases, the professor of the course is accountable to make sure the lab instructors and other teaching assistants provide the disability-related accommodations. In other cases, another professor or instructor is designated to oversee the lab and/or fieldwork. The academic unit and the university are ultimately responsible to ensure that disability-related laws are properly implemented.

10. Is the professor required to provide transportation to students with disabilities?

**Answer:** Yes, if transportation is provided to other students in the class, it must also be provided to students with disabilities. Transportation can be provided in a variety of ways, depending on available resources. If the institution does not have an accessible vehicle, investigate community resources and state motor pool services to see if one is available. Other options include renting one from an agency or using the student’s own vehicle, reimbursing the costs. Contact the DSO for ideas on resources, and ask the student for suggestions.
Professors should be aware of transportation challenges in remote field sites. Some options to get a student with mobility impairments to these sites include:

- Use ATVs or SUVs after obtaining permission from the appropriate agencies.
- Use adaptive wheelchairs designed for off-road use.
- Use equipment designed to move around a small area close to the ground, like creepers used in auto mechanics.

11. Is there a way to make learning more attainable for all students while providing access for students with disabilities?

**Answer:** Yes, sometimes there are ways to make learning more accessible for all students. This concept, called Universal Design for Learning (UDL), refers to the process of making the course concepts and skills more accessible to students with different learning styles or abilities. UDL strategies used to help students with disabilities can often help everyone and seek to accommodate the widest range of students possible. For example, captioning is an absolute necessity for students with hearing impairments. It is also a great help to students who speak English as a second language, those students with learning disabilities and others. Captioning is especially helpful if there is noise from fans, construction, or other distractions. Another example of UDL is to post outlines, lecture notes, copies of overheads, and PowerPoint slides on the Web.

★ While the Web and computer-based materials can make it easier to promote Universal Design for Learning (UDL), it is important to keep in mind that digital electronic materials have to be accessible to students with disabilities. Students with disabilities have the right to access all class materials, including print and digital materials. People who cannot read the screen or use a keyboard or mouse may use screen readers and other devices to retrieve digital information. Use of these devices may have implications for the design of computer-based materials. There are many resources that provide technical information and support to help people create accessible computer-based materials (see “Resources,” pp. 116-117).
case stories

Each case story provides a different example of a student with a disability participating in a science course and concerns the student may face. Information is presented in question/answer format, with a bulleted slide and a detailed narrative answer.
the accommodation process

**step 1: getting to the disability service office (DSO)**
There are a variety of ways that students may come into contact with the DSO once they come to college. Include a statement on your syllabus about your college/university’s policies on students with disabilities and spend some time at the beginning of your course talking about how students can go about getting disability-related accommodations.

**step 2: meeting the eligibility requirements**
In this step, the student brings documentation of his or her disability and sits down with a counselor from the DSO. The counselor then evaluates the documentation to determine whether the student meets the eligibility requirements.

**step 3: deciding on specific accommodations**
In this step, the student and the DSO counselor look at the student’s limitations and take into consideration how these limitations affect the student’s ability to meet the course requirements. The counselor then makes individual recommendations for accommodation for each course the student is taking.

**step 4: implementing the accommodation plan**
The student should provide a letter from the DSO recommending accommodations for your course. If the student has not been to the DSO or does not have this letter, there is very little you should do.

Once the student provides a letter, look it over. If the request seems clear and reasonable, complete the instructor’s portion of the form and return it to the DSO. Be sure to keep a copy of the request for your own files and refer back to it as needed.

**step 5: revising the accommodation plan**
This step is necessary when for one reason or another, there is a need to make adjustments or set conditions on the original accommodation. Not every student will go through the fifth step of the process because most of the time, accommodations go smoothly.

The letter from the DSO will usually state the name of the student and make specific recommendations for accommodations. It will not disclose the nature of the student’s disability.

While institutions vary, these are common steps for the accommodation process.
Esperanza’s case story

This case explores lab accommodations for a student with vision impairments in a chemistry course.
Esperanza’s case story

background
Esperanza has low vision that has stabilized after a period of decline. She can see some text if it is enlarged significantly and printed in high contrast; however, she cannot see the small markings on beakers, measuring devices, or read standard sized labels. Esperanza uses a personal computer with which she can manipulate texts and backgrounds, enabling her to read. She heard of other assistive technology (AT) devices such as a closed circuit television (CCTV) to enlarge texts and “speaking” software for her computer, but she did not have an opportunity to use them in her small high school. Unless the National Library Service for the Blind and Physically Handicapped (NLS) had the textbook in an alternate format (e.g., tape), Esperanza read text with a high-powered magnifying glass. Because this took considerable time, her mother would read her assignments and texts to her when she had a heavy school load.

Esperanza graduated from high school with good grades. However, she did not have a good foundation in the sciences. Her high school laboratory was ill equipped for students with visual disabilities. The high school chemistry teacher did not require her to participate in the lab, but he gave her a good grade anyway.

As a freshman at a state university, Esperanza was focusing on completing her general education requirements. She decided to transfer to Chemistry 101 to be with her friends. Esperanza believed she would do well in chemistry because she understood how invisible objects, such as atoms and molecules, interact and make up the world. Because she had passed chemistry in high school despite having no lab experience, Esperanza did not yet realize what accommodations she would need to participate in the chemistry lab.
step 1: getting to the disability service office (DSO)
Esperanza’s mother was concerned that Esperanza would need some services to succeed academically in college. They researched services and supports provided by the university. They were pleased to find that there was an office that serves students with disabilities.

As they were browsing the university website, Esperanza and her mother found that some web pages were not accessible to people with vision impairments.

Do university websites have to be accessible to students with disabilities?

The right to access computer-based materials

- Students with disabilities have a right to access
- The law requires online materials to be accessible

Answer: Students with disabilities have the right to access computer-based information. On-line materials such as university and course websites are required by federal law to be accessible to students with disabilities.

How do students who cannot read the screen or operate a keyboard or mouse access computer-based materials?

Some students cannot read the screen or operate a keyboard or mouse

- Screen readers or other devices are used for access
- Use of these devices may have implications for website design
- Resources are available for design support
**Answer:** People who cannot read the screen or operate the keyboard and mouse use screen readers or other devices to retrieve digital information. Use of these devices may have implications for the design of computer-based materials. Georgia Research on Accessible Distance Education (GRADE) and AccessIT are two of many resources that provide technical information and support to help people create accessible computer-based materials.

Esperanza had a meeting with a counselor at the DSO. She learned of services that can be provided by the DSO including alternate format textbooks and readers and scribes for tests.

### Who has the responsibility to request disability-related accommodations for students with disabilities?

<table>
<thead>
<tr>
<th>Who has the responsibility to request accommodations?</th>
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</thead>
<tbody>
<tr>
<td>• The student has the responsibility to request accommodations</td>
</tr>
<tr>
<td>• Students should be encouraged to advocate for themselves</td>
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</tbody>
</table>

**Answer:** In higher education, it is the responsibility of the student with the disability to request needed disability-related accommodations. **Students should be encouraged to advocate for their own needs.**

### What is the professor’s role in helping students find out about the DSO?

<table>
<thead>
<tr>
<th>Faculty have an important role in helping students find services</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Inform students about campus services, including the DSO</td>
</tr>
<tr>
<td>• Include a statement on the syllabus about accommodations</td>
</tr>
<tr>
<td>• Spend time reviewing the statement</td>
</tr>
<tr>
<td>• Invite students to discuss their concerns</td>
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</tbody>
</table>
Answer: Faculty have an important role in helping students find services on campus. In some cases, students may be hesitant about being labeled. Sometimes, students aren’t even aware of the services available through the DSO. Some students may not recognize that they may be eligible for services because of a physical, emotional, medical, or learning impairment. Faculty are encouraged to include a statement on their syllabi about the college/university’s policies on accommodations and access. Reviewing this statement at the beginning of the semester provides an opportunity to invite students with questions or concerns to visit during office hours. It may be helpful to do this several times throughout the semester. A sample syllabus statement can be found on page 132 of the “Glossary,” or consult the DSO.

step 2: meeting the eligibility requirements

★ In order for Esperanza to receive services and accommodations, she has to provide documentation of her disability from appropriate, licensed professionals.

What kind of documentation must a student provide the DSO?

<table>
<thead>
<tr>
<th>Documentation for disability services</th>
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<tbody>
<tr>
<td>• Formal diagnostic assessment to verify disability from credentialed professionals</td>
</tr>
<tr>
<td>• Documentation should describe limitations and support the request</td>
</tr>
<tr>
<td>• Each disability is evaluated according to the institution’s guidelines</td>
</tr>
</tbody>
</table>

Answer: The student needs to provide documentation and/or a formal diagnostic assessment done by appropriate credentialed professionals. This documentation verifies the disability, describing the individual's functional limitations and supporting the request for accommodations. Some documentation needs can be complex.
For example, if a student has more than one disability for which accommodations are needed, each must be appropriately documented according to the institution’s guidelines.

In Esperanza’s case, her ophthalmologist provided comprehensive medical information which verified a substantial limitation in her vision and described the limitations which supported her request for alternate format materials.

Who is authorized to review and maintain documentation of a disability?

Documentation maintained by DSO because . . .

- Faculty have neither obligation nor right to review disability-related documentation
- Documentation must be maintained in a separate file
- The DSO files documentation according to federal guidelines
- Confidentiality protects the student, faculty, and institution

Answer: Faculty members have neither the obligation nor the right to review the student’s medical documentation. Confidentiality of the student's disability-related information must be maintained. The DSO staff have the expertise and the authorization to properly interpret this documentation. They are prepared to file this documentation according to federal guidelines, separately from academic records. Faculty are not. This protects the student, the faculty, and the institution. Bypassing the DSO exposes faculty and the institution to liability. If a student hands you his/her documentation, you should hand it back and inform the student that only the DSO can evaluate diagnostic information.

Esperanza has the responsibility to decide how much information about her disability she wants to share with her professors and others.
step 3: deciding on specific accommodations

After Esperanza enrolled in her classes, she met with her DSO counselor to decide on specific accommodations she would need for each class. Many of her classes were introductory level and therefore lecture-based. For these, Esperanza would need the text prepared in an alternate format, such as scanned into a computer so that she could manipulate the text accordingly. As they discussed what had worked best for her previously, Esperanza decided to bring her notebook computer to classes so she could take notes by enlarging the font and manipulating the colors. The DSO counselor also informed Esperanza that the university had many assistive technology (AT) devices that would enhance her ability to access information, such as closed circuit television (CCTV) and “speaking” software on computers. The DSO offered to teach Esperanza how to use the various technologies.

Then, the DSO counselor suggested that Esperanza talk with each professor about obtaining an electronic or hard copy of the lecture notes and PowerPoint presentations in advance of class so that she can use them as a note-taking aid in her preferred format. These kinds of accommodations benefit all students.

Is there a way to make learning more attainable for all students while providing access for students with disabilities?

Universal Design for Learning (UDL)

- UDL strategies make learning more accessible for all students
- Examples:
  - Captioning
  - Recording lectures and demonstrations
  - Posting outlines, notes, overheads on the Web

Answer: Yes, sometimes there are ways to make learning more accessible for all students. UDL strategies used to help students with disabilities can often help everyone. This concept, called Universal Design for Learning (UDL), refers to the process of...
making the course concepts and skills more accessible to students with different learning styles or physical, sensory, or linguistic abilities. UDL seeks to accommodate the widest range of students possible. For example, captioning is an absolute necessity for students with hearing impairments. It is also a great help to students who speak English as a second language, those with learning disabilities and others. Captioning is especially helpful if there is noise from fans, construction, or other distractions. Another example of UDL is tape-recording lectures and demonstrations and making them available outside of class. A few other examples of UDL include posting outlines, lecture notes, copies of overheads, and organizational tools such as concept maps on the Web.

Besides UDL strategies, Esperanza would need individualized accommodations. She would take the exams in a private room with a scribe or reader so that the other students would not be distracted. Esperanza would also be given an appropriate amount of extra time to facilitate these measures.

**Whose responsibility is it to review the course expectations and requirements?**

<table>
<thead>
<tr>
<th>Students have the responsibility to review expectations and requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Students learn requirements and activities from the course syllabus and professor</td>
</tr>
<tr>
<td>• Reviewing expectations in class benefits all students</td>
</tr>
</tbody>
</table>

**Answer:** Students with disabilities, as well as other students, have the responsibility to learn the course expectations and required activities from the course syllabus. In this case, Esperanza assumed that the lab requirements would be waived as they had been in high school. On the first day of class, the professor could have carefully reviewed expectations for the course and included a statement on the syllabus explaining how to request accommodations. This benefits all students.
step 4: implementing the accommodation plan

Esperanza visited all of her professors early in the semester. She explained her limitations and discussed the accommodations she would need. Esperanza and her professors reached an agreement on how disability-related services would be handled in their courses.

What are reasonable accommodations and why should they be provided?

<table>
<thead>
<tr>
<th>Reasonable accommodations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Are adaptations aimed at mitigating the impact of the disability</td>
</tr>
<tr>
<td>• Don’t compromise integrity of the academic program</td>
</tr>
<tr>
<td>• May include learning strategies, adaptive technology, or aides</td>
</tr>
</tbody>
</table>

Answer: Reasonable accommodations are adaptations aimed at mitigating the impact of the disability without compromising the integrity of the academic program or course. Accommodations may include instructional strategies, adaptive technology, or aides such as sign language interpreters. Providing reasonable accommodations enables students with disabilities to have equal access to education and services in higher education as required by federal law.

Esperanza’s chemistry professor told her that she would be required to complete the lab because he viewed it as an integral part of the course. The chemistry professor assumed that Esperanza had some experience because she had taken chemistry in high school.

After the first lab session, the lab instructor approached the professor because she did not know how to help Esperanza. Esperanza could not read the lab instructions on the overhead. She tried to have her friend help her, but this only made her friend fall behind.
too. Esperanza could not see well enough to read the markings on the instruments with sufficient precision, and she spilled the chemical solutions. She was deeply embarrassed. The lab instructor was frustrated as well because she didn’t know how to help Esperanza.

Who is responsible for accommodations carried out in lab or field situations by a graduate teaching assistant?

<table>
<thead>
<tr>
<th>Who is responsible for graduate TAs providing accommodations?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The person responsible for lab / fieldwork</td>
</tr>
<tr>
<td>• The course professor or another lab instructor</td>
</tr>
<tr>
<td>• The institution is ultimately accountable to ensure proper implementation of accommodations</td>
</tr>
</tbody>
</table>

**Answer:** This depends upon who has the designated responsibility for overseeing the lab and/or fieldwork. In some cases, the professor of the course has the responsibility to make sure teaching assistants are providing the disability-related accommodations. In other cases, another professor or lab instructor is designated to oversee the lab and/or fieldwork. The academic unit and the university are ultimately accountable to ensure that reasonable accommodations are properly implemented.

The chemistry professor decided to contact the DSO. A meeting was set up with the professor, the DSO counselor, the lab instructor, and Esperanza. Waiving the lab portion of the class, as the teacher had in high school, was not reasonable to the professor. **He maintained that Esperanza needed to participate in the lab because the lab activities taught essential academic skills required in his chemistry class.**
What are essential skills? Who decides what constitutes the course’s essential skills?

Essential skills of a course

- Skills critical to the purpose of the course
- Should not be “watered down”
- Professors have responsibility and expertise to determine essential skills
- Professors need to be able to justify their decisions

Answer: Essential skills are the skills that the course is intended to teach. The concept of essential skills is important because the Americans with Disabilities Act (ADA) states that essential skills should not be waived or “watered down.” Otherwise, students with disabilities would not be competent to the same extent as their nondisabled peers upon graduation. The professor has the responsibility and expertise to decide what these essential skills are. However, the professor needs to be able to defend his/her decisions based on logic, knowledge of the field, and/or advice from experts. Consult with the DSO about institutional policies if you have questions regarding essential skills.

The DSO counselor suggested that they label the lab equipment in a font that Esperanza could read and that they provide assistive technology devices and equipment, such as a high-powered magnifying lamp. Also, the DSO would provide a lab aide to help Esperanza conduct the experiments. However, the lab aide would be required to strictly follow Esperanza’s instructions. This would ensure that Esperanza would direct the experiments so that she could demonstrate mastery of the required lab skills.
### How is a lab aide a reasonable accommodation?

**Lab aides can be a reasonable accommodation**
- They can perform procedures impossible for the student
- They need training to assist students without compromising course integrity

**Answer:** A lab aide can be a reasonable accommodation by performing skills which are impossible for the student with disabilities to perform. Much like scribes and readers, a lab aide needs training to carry out the specific operations dictated by the student. This allows the student to demonstrate mastery of the essential skills without compromising academic integrity.

Time was arranged for the lab aide and Esperanza to meet and work with the measurement equipment and become familiar with the overall layout of the lab prior to the next lab date. They also determined the placement of the high-powered magnifying lamp. Like the other students, Esperanza could meet with either the professor or the TA during their office hours for a reasonable amount of additional help. Esperanza was also referred to campus tutoring and other services available to all students.

### Does the law require either the professor or the institution to provide private tutors?

**Section 504 and private tutors**
- The law does not require private tutors
- Section 504 requires professors to provide equal access to services available to all students
- Campus tutoring programs may need accessible materials and technology
- Reasonable accommodations are required at study sessions for all students
Answer: No, neither the professor nor the institution is required to provide a private tutor. Section 504 of the Rehabilitation Act of 1973 requires the professor to provide “equal access” to services available to all students. It may be necessary to provide accessible materials and/or technology in campus tutoring programs. In addition, when the professor holds a review study session for all students in the class, reasonable accommodations (i.e. sign language interpreters, accessible materials) must be provided.

step 5: revising the accommodation plan
After a few weeks with accommodations in place, Esperanza was improving in the lab. However, her chemistry professor believed she was still not learning the chemistry principles at the same level as the other students. The professor requested another meeting with Esperanza, the DSO counselor, and the lab instructor to revise the accommodation plan.

* Modifications to some teaching methods were necessary so that Esperanza could have hands-on experience conducting an experiment herself. For example, in a few cases in which dangerous chemicals were used to teach a chemistry principle, Esperanza was given different solutions she could safely handle.

Esperanza said that she was missing information presented in photos, illustrations and graphs. The DSO counselor noted that tactile devices were available to help students with visual disabilities. In addition to viewing chemical equations through a CCTV (closed circuit television), Esperanza could benefit from raised line illustrations. She could then use her fingers to trace the lines on the graphs and diagrams. Esperanza also obtained a tactile atom and molecule kit to better understand the structures and functions of molecules and atomic particles.
outcome
Esperanza finished Chemistry 101 with a B grade and felt prepared to take other science classes such as biology. While Esperanza came to appreciate science and was no longer intimidated by the prospects of participating in labs, she was eager to finish up her general education requirements. Because of her experiences in the accommodation process, Esperanza developed an interest in ways people communicate and work together and is now majoring in communications. **Though she didn't major in chemistry, Esperanza was interested to learn that there are professional associations for scientists with disabilities such as the American Chemical Society Committee on Chemists with Disabilities.**
Stephen’s case story

This case explores the coordination of lab and classroom accommodations for a student with learning disabilities.
Stephen’s story

background
Stephen never liked the “book learning” part of school because he never seemed to understand abstract concepts as fast as the other students. In fourth grade, Stephen was diagnosed with a learning disability. The school system placed Stephen in its resource program to receive services. Stephen showed some progress and really put in a lot of effort to catch up with his peers so he wouldn’t be singled out for “special” services. When Stephen was in the seventh grade, the school decertified him and phased him out of its Special Education program. Stephen worked very hard to compensate for his learning disability and managed to stay up in his classes.

To keep his GPA at a 3.2, Stephen put in twice as much study time in his classes, except in math which came easier to him. Stephen rarely talked about his learning difficulties; as a result, many people had no idea how much effort he put into compensating for his learning disability. Stephen excelled in extracurricular activities. His team members voted him captain of the high school baseball team, and he was the President of Future Farmers of America (FFA). In addition, he worked hard on the family farm, milking cows every morning and evening.

By studying hard, Stephen met the requirements to be admitted to a large, state university. Stephen decided to major in bioveterinary science with an emphasis in large farm animals. Because of his farming experience, Stephen believed he had a good background for this major. In his first semester, Stephen enrolled in “Anatomy and Physiology of Farm Animals,” a beginning course in his major. He was eager to start this class because there would be a field component in which he would get to examine animal specimens and occasionally work with the university’s farm animals. Stephen thought that if he continued to put in twice the time studying, he could handle the “bookwork” as he did in high school.
step 1: getting to the disability service office (DSO)

Stephen struggled with his course load the first few weeks. The only course he wasn’t behind in was math, but then math was his strongest subject. Stephen was having difficulty in his classes, but didn’t want to say anything to his professors.

Why do you think Stephen doesn’t want to say anything to his professors about his learning disability?

Some students prefer not to disclose their disability

- Discrimination related to disability is common in our society
- Physical disabilities are more “socially acceptable”
- Students are concerned they will be stigmatized

Answer: Unfortunately, discrimination related to disability is common, especially pertaining to invisible disabilities. Most people are familiar with physical disabilities. However, individuals with other disabilities, such as mental illness, narcolepsy, HIV, or as in Stephen’s case, learning disabilities, may be concerned that they will be stigmatized if they disclose their disabilities.

Stephen looked forward to the field section of “Anatomy and Physiology of Farm Animals” because he could be doing something with the animals instead of trying to keep up with the lectures. Stephen was having serious trouble in his lecture courses. He couldn’t tell what was important to remember or how to organize his notes. In contrast, when he worked with the farm animals, Stephen could sort out what he needed to know and do.

As the semester progressed, Stephen visited with his professor to clarify some of the concepts from the readings and lectures. The professor was happy to answer his questions. After a few meetings, the professor noticed the difference in Stephen’s skills when working with the specimens and farm animals versus when he was studying the text and lecture materials.
Why might the professor see a difference when Stephen works with animals and specimens versus his performance in the classroom?

Invisible disabilities

- Are not always apparent or observable
- Include many different disabilities
  - Learning disabilities
  - Attention deficit disorder
  - Psychological disabilities
  - Medical/chronic health impairments
  - Traumatic brain injury
  - Some visual impairments
  - Some hearing impairments

Answer: A learning disability could be categorized as an “invisible disability.” This means that the disability is not readily apparent to others, including his professor. When you meet these students, you will not see that they have a disability. Invisible disabilities include learning disabilities, psychological disabilities, many medical or chronic health impairments, most visual impairments and some hearing impairments.

Though the professor had mentioned many of the available services during the first day of class, he reminded Stephen about the tutoring and other services provided by the university. In a tactful way, the professor noted that the university’s Disability Service Office (DSO) worked with students with learning disabilities and that accommodations could sometimes be provided. With mid-terms looming, Stephen was so worried about how he was going to make it through college that he decided to check out the DSO.
What is the professor’s role in helping students find out about the DSO?

Faculty have an important role in helping students find services

- Inform students about campus services, including the DSO
- Include a statement on the syllabus about accommodations
- Spend time reviewing the statement
- Invite students to discuss their concerns

Answer: Faculty have an important role in helping students find services on campus. In some cases, students may be hesitant about being labeled. Sometimes, students aren’t even aware of the services available through the DSO. Some students may not recognize that they may be eligible for services because of a physical, emotional, medical, or learning impairment. Faculty are encouraged to include a statement on their syllabi about the college/university’s policies on accommodations and access. Reviewing this statement at the beginning of the semester provides an opportunity to invite students with questions or concerns to visit during office hours. It may be helpful to do this several times throughout the semester. A sample syllabus statement can be found on page 132 of the “Glossary,” or consult the DSO.
Why should a faculty member work with the DSO to provide disability-related accommodations for a student?

Why should professors work with the DSO for accommodations?

- DSO has the responsibility to determine and authorize accommodations
- DSO protects the professor, student, and institution
- Students need appropriate support and their rights to confidentiality must be protected
- Professors who bypass the DSO are exposing themselves to legal risk

**Answer:** Students need to be directed to the DSO for disability-related services because the DSO has the designated responsibility to determine and authorize accommodations, thereby relieving faculty from making these disability-related decisions. DSO staff are trained to evaluate disability documentation. Going through the DSO protects the student, the faculty member, and the institution from both legal and other problems. First, the student needs the support and expertise the DSO staff can provide to determine appropriate and effective disability-related accommodations. Second, the DSO will protect the student's confidentiality. Finally, going through the DSO also provides legal protection for the university and professors. Faculty members who bypass the DSO expose themselves to legal risk.
**step 2: meeting the eligibility requirements**

When Stephen met with a DSO counselor, he told her that in elementary school he had been diagnosed with a learning disability and that in middle school, he was decertified and fully mainstreamed. He further told the counselor that he got through high school with a good GPA because he worked hard. However, he still struggled with his reading, writing, and organizing information from his classes.

For Stephen to receive disability-related services, he had to provide documentation from credible licensed professionals stating that he does, in fact, have a learning disability. Some students may already have appropriate, recent documentation from their public school years. In Stephen’s case, however, the prior testing was out of date and incomplete.

**What kind of documentation must a student provide the DSO?**

**Documentation for disability services**

- Formal diagnostic assessment to verify disability from credentialed professionals
- Documentation should describe limitations and support the request
- Eligibility is evaluated according to the institution’s guidelines

**Answer:** The student needs to provide documentation and/or a formal diagnostic assessment done by appropriate credentialed professionals. This documentation verifies the disability, describing the individual’s functional limitations and supporting the request for accommodations. Some documentation needs can be complex. For example, if a student has more than one disability, each must be appropriately documented according to the institution’s guidelines.
Faculty have neither the obligation nor the right to review a student’s medical documentation. If a student hands you his/her documentation, you should hand it back and inform the student that only the DSO can evaluate diagnostic information.

The DSO counselor referred Stephen for testing in the areas of aptitude, memory, and sequencing. The results of the testing showed that Stephen had a significant reading disorder and a disorder of written expression. With this diagnostic information, Stephen was eligible for disability-related services.

Who pays for the diagnostic work to determine eligibility for disability-related accommodations?

- Student is responsible to provide diagnostics
- Some universities may offer diagnostic testing at a reduced rate
- State rehabilitation offices may pay if student is a client

**Answer:** It is the student’s responsibility to provide medical or psychological diagnostics. However, some universities are able to offer evaluation at a reduced cost. In some cases, the state rehabilitation office will pay for evaluations if the student is a rehabilitation client.

Stephen received his evaluations from the university counseling center at a reduced cost. The results of the testing showed that Stephen has a significant reading disorder and a disorder of written expression and that he is eligible to receive services according to his institution's guidelines.
**step 3: deciding on specific accommodations**

Stephen met again with his DSO counselor to discuss some reasonable accommodations that would work in his classes. At first, Stephen didn’t understand that reasonable accommodations weren’t special treatment. The DSO counselor explained that reasonable accommodations helped to level the playing field so that Stephen would have “equal access” to an education, as stated in Section 504 of the Rehabilitation Act of 1973.

### What are reasonable accommodations and why should they be provided?

<table>
<thead>
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<th>Reasonable accommodations</th>
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<td>• Are adaptations aimed at mitigating the impact of the disability</td>
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<td>• May include learning strategies, adaptive technology, or aides</td>
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**Answer:** Reasonable accommodations are adaptations aimed at mitigating the impact of the disability without compromising the integrity of the academic program or course. Accommodations may include instructional strategies, adaptive technology, or aides such as interpreters. Providing reasonable accommodations enables students with disabilities to have equal access to education and services in higher education.

Because Stephen had such a hard time taking notes, The DSO counselor and Stephen decided he should take study skills workshops provided by the university’s tutoring services. The DSO counselor also recommended that Stephen bring a tape recorder to class so that he could refer back to the lecture as needed. Further, the DSO counselor suggested that Stephen talk with each professor about obtaining an electronic or hard copy of their lecture notes and PowerPoint presentations in advance of class so that he could use them to direct his note taking, allowing him to focus on the important concepts in class.
Is there a way to make learning more attainable for all students while providing access for students with disabilities?

**Universal Design for Learning (UDL)**

- UDL strategies make learning more accessible for all students
- Examples:
  - Captioning
  - Recording lectures and demonstrations
  - Posting outlines, notes, overheads on the Web

**Answer:** Yes, sometimes there are ways to make learning more accessible for all your students. **Strategies used to help students with disabilities can often help everyone in the class.** This concept is called Universal Design for Learning (UDL) and refers to the process of making the course concepts and skills attainable to students with different learning styles, or physical, sensory, or linguistic abilities. UDL seeks to accommodate the widest range of students possible. For example, captioning is an absolute necessity for students with hearing impairments. It is also a great help to students who speak English as a second language, those with learning disabilities and others. Captioning is especially helpful if there is noise from fans, construction, or other distractions. Another example of UDL is tape-recording lectures and demonstrations and making them available outside of class. A few other examples of UDL include posting outlines, lecture notes, copies of overheads, and organizational tools such as concept maps on the Web.

If the professor decides to use some of these UDL strategies, such as putting outlines and lecture notes on the Web, Stephen will not need them as individual accommodations.
Stephen asked about ways to improve his reading. The DSO counselor offered several suggestions:

- Take advantage of the university’s academic support services.
- Consider assistive technology devices and various software available for that purpose.
- Work with a DSO counselor who has specialized expertise helping students with learning disabilities.

**step 4: implementing the accommodation plan**

Stephen took his accommodation letter from his DSO counselor and met with each of his professors. One professor requested a contract for recording the lectures. Another professor already provided lecture notes on her course website.

**How does the professor know what accommodations the DSO and the student have determined?**

**When a student brings you an accommodation letter**

- Carefully read the form
- Consider how the accommodations will work in your class
- Talk with the student about implementing the accommodations
- If there are no concerns, sign the form and return it to the DSO
- If there are concerns, contact the DSO counselor
- Keep a copy of the form for your records

**Answer:** In most cases, the DSO will prepare a letter for the professor requesting specific accommodations. This letter might be mailed directly to the professor by the DSO or the student may hand deliver the letter. When receiving an accommodation form, talk with the student in private about how the accommodations will be put into action. Complete and sign the form and return it to the DSO. Remember to keep a copy in a place where you can refer to it as needed.
With the accommodations in place, Stephen began to show real progress and an increased confidence in his academic abilities. Since most of the accommodations dealt with lecture courses, Stephen didn’t think about how his learning disability would affect the field component of the course, “Anatomy and Physiology of Farm Animals.” Though Stephen excelled in the hands-on parts of the lab and handling animals, the field instructor noted that he had difficulty integrating the lecture-based information with the hands-on elements of the course. The field instructor brought his concerns to the professor and the professor decided to talk with Stephen.

**Who is responsible for accommodations carried out in lab or field situations by a graduate teaching assistant?**

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<th>Who is responsible for graduate TAs providing accommodations?</th>
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<tr>
<td>• The person responsible for lab / fieldwork</td>
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<tr>
<td>• The course professor or another lab instructor</td>
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<tr>
<td>• The institution is ultimately accountable to ensure proper implementation of accommodations</td>
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**Answer:** This depends on who has the designated responsibility for overseeing the lab and/or fieldwork. In some cases, the professor of the course has the responsibility to make sure the lab instructors and other teaching assistants are providing the disability-related accommodations. In other cases, another professor or instructor is designated to oversee the lab and/or fieldwork. To the extent that the didactic and lab portions of a course are working together, there is a clear need for communication and coordination. The student also is responsible to communicate his/her needs and the effectiveness of the accommodations in place. The bottom line is that the academic unit and the university/college are ultimately responsible to ensure that reasonable accommodations are properly implemented.
Stephen had trouble organizing detailed information about the various physiological systems in farm animals and applying those details when he worked with the animals. Stephen rarely lagged behind in accomplishing the field procedures; however, when asked to identify the learning objectives, he couldn't elaborate on the concepts and theory behind the field research. The field reports and class assignments remained a challenge for Stephen and reflected the difficulties he was having. As expected, both the field instructor and his professor maintained that Stephen needed to demonstrate he had mastered the essential skills by integrating the lecture information with the hands-on components of the course.

**What are essential skills? Who decides what constitutes the course's essential skills?**

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**Answer:** Essential skills are the skills that a course is intended to teach. The concept of essential skills is important because the Americans with Disabilities Act (ADA) states that essential skills should not be waived or “watered down.” Otherwise, students with disabilities would not be competent to the same extent as their nondisabled peers upon graduation. The professor of the course has the responsibility and expertise to decide what these essential skills are. However, the professor needs to be able to defend his/her decision based on logic, knowledge of the field, and/or advice from experts. Consult with the DSO about institutional policies if you have questions regarding essential skills.
step 5: revising the accommodation plan
The professor arranged a meeting with Stephen, the DSO counselor, and the field instructor to see if they could come up with ways to help Stephen better integrate the lecture information with his field lab. The professor recommended that Stephen continue to meet with him during his office hours and attend the supplemental instruction sessions.

Because Stephen had a hard time translating text to conceptual models, he asked the professor if there were more learning aids like the course’s anatomy workbook, *Anatomy of Farm Animals: A Pictorial Approach and Coloring Atlas*. Stephen found that he could learn and retain the information better when he color-coded the illustrations of farm animals and their various anatomical systems. The professor gave Stephen several references so that Stephen could purchase the workbooks.

Since Stephen seemed to learn best from doing things rather than taking notes from the lecture, the field instructor suggested that Stephen help him demonstrate procedures for the rest of the class. This way Stephen would learn by practicing the procedures rather than listening to how the procedures should be done. He also paired Stephen with a lab partner who was nervous around animals but did well integrating the concepts from the lecture. This enabled both students to benefit from each other’s strengths. Stephen liked this idea because he could help another student rather than always being the one receiving support.

Will a student who receives accommodations in college succeed in the workplace after graduation?

Will students who have accommodations succeed after graduation?

- Employers are required by the ADA to provide reasonable accommodations
- Accommodations in employment are based on individual situation and needs
- Accommodations in education are based on employment law
- Performance standards are not lowered in employment or education settings

- If accommodations are done appropriately as per the law, students with disabilities will likely acquire the same competencies at the same level of skill as other students
- Research (National Center for Education Statistics [NCES] 1999) has shown that college graduates with disabilities are as likely to be employed in their chosen field as others, secure the same salaries, and are as likely to return to school for advanced degree training.
Answer: Research indicates that when students with disabilities graduate they are as successful as other graduates. Accommodations are designed to level the playing field so that students can have equal access to education. Employers are also required under the ADA to provide reasonable accommodations. Accommodations in the educational arena are similar to those in the workplace: both are tailored to fit the individual according to the situation and need. Performance standards should not be lowered for individuals with disabilities in employment or educational settings.

outcome
Stephen worked very hard through his first years of college. Over time, he found he developed learning strategies that improved his efficiency. By his senior year he seldom needed accommodations. Stephen plans to apply to graduate school.
Marc’s case story

This case explores mobility accommodations, including transportation, for a student with physical impairments in the field portion of a course.
Marc’s story

background
When Marc was a senior in high school he was involved in a motorcycle accident that left him paralyzed from the waist down. Marc now uses a wheelchair to get around. Due to the timing of the injury, Marc never received accommodations for his disability in high school.

Marc has always been fascinated with anthropology, finding the study of cultures stimulating. He had been involved with several volunteer programs throughout high school that have exposed him to this field. Since his accident, Marc’s father and school counselors raised concerns whether his restricted mobility might be an obstacle to his becoming an anthropologist.

Marc considered their concerns, but believing in his capability, he decided to pursue his aspirations. He registered for “Introduction to Anthropology” his first semester and listed his major as anthropology.
step 1: getting to the disability service office (DSO)
Marc had been introduced to many of the services for students during his initial recruiting visit to campus. This included the Disability Services Office (DSO). However, since he did not yet view himself as a person with a disability, Marc paid little attention to the DSO.

When Marc heard about the required field trips, he became concerned and approached his anthropology professor during the first week of the semester. After visiting for a few minutes, the professor referred Marc to the DSO and offered to help him make an appointment. Marc went to the DSO to discuss accommodations for the field trips. At first, Marc was a little concerned about going to the DSO because he was worried about how other students would view him.

What is the professor’s role in helping students find out about the DSO?

Marc Slide 1

<table>
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<th>Faculty have an important role in helping students find services</th>
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<td>• Inform students about campus services, including the DSO</td>
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Answer: Faculty have an important role in helping students find services on campus. In some cases, students may be hesitant about being labeled. Sometimes, students aren’t even aware of the services available through the DSO. Some students may not recognize that they may be eligible for services because of a physical, emotional, medical, or learning impairment. Faculty are encouraged to include a statement on their syllabi about the college/university’s policies on accommodations and access. Reviewing
this statement at the beginning of the semester provides an opportunity to invite students with questions to discuss their concerns. A sample syllabus statement can be found on page 132 of the “Glossary,” or consult the DSO.

**step 2: meeting the eligibility requirements**

Even though it was clear that Marc had a disability, he was still required to meet the documentation guidelines of the institution. To do this, he met with the DSO and submitted his medical documentation. The DSO staff determined that he was qualified for disability-related services according to the policies of the institution.

What kind of documentation must a student provide the DSO?

### Documentation for disability services

- Formal diagnostic assessment to verify disability from credentialed professionals
- Documentation should describe limitations and support the request
- Each disability is evaluated according to the institution’s guidelines

**Answer:** The student needs to provide documentation and/or a formal diagnostic assessment done by appropriate credentialed professionals. This documentation verifies the disability, describing the individual’s functional limitations and supporting the request for accommodations. Some documentation needs can be complex. For example, if a student has more than one disability, each must be appropriately documented according to the institution’s guidelines. In Marc’s case, a report from his doctor would probably suffice.
Who is authorized to review and maintain documentation of a disability?

**Marc Slide 3**

**Documentation maintained by DSO because . . .**

- Faculty have neither obligation nor right to review disability-related documentation
- Documentation must be maintained in a separate file
- The DSO files documentation according to federal guidelines
- Confidentiality protects the student, faculty, and institution

**Answer:** Faculty members have neither the obligation nor the right to review the student’s medical documentation. Confidentiality of the student’s disability-related information must be maintained. The DSO staff have the expertise, and the authorization to properly interpret this documentation. They are prepared to file this documentation according to federal guidelines, separately from academic records. Faculty are not. **This protects the student, the faculty, and the institution.** Bypassing the DSO exposes faculty and the institution to liability.

**Marc Slide 4**

**step 3: deciding on the specific accommodations**
To decide on Marc's accommodations, Marc, the DSO counselor, and the professor discussed the implications of his disability for the specific course. They evaluated whether the course locations, including the field sites, were accessible.

**How are accommodations designed?**

**Designing accommodations through collaboration**

- List all important course activities (including field trips and other requirements)
- Evaluate the student’s situation in light of the course activities
- Design accommodations to give student access to essential skills of the course
Answer: Collaboration between the professor, the student, and the DSO counselor is essential to design individual accommodations. Accommodations can be designed to address the student’s limitations in relation to the specific course activities. List all the activities required for the course and discuss possibilities that give the student access to the essential skills of the course. For more detailed information, see page 15, “Designing Accommodations: A Collaborative Process.”

Both Marc and the professor had concerns about two field trips to local archaeological sites that would be critical to this class. On these trips, students were required to hike several miles and look at rock art and cave paintings along the way. However, the trip would be nearly impossible for a student in a wheelchair. Marc would require some significant but reasonable accommodations for the field assignments.

What are reasonable accommodations and why should they be provided?

Reasonable accommodations
- Are adaptations aimed at mitigating the impact of the disability
- Don’t compromise integrity of the academic program
- May include learning strategies, adaptive technology, or aides

Answer: Reasonable accommodations are adaptations aimed at mitigating the impact of the disability without compromising the integrity of the academic program or course. Accommodations may include instructional strategies, adaptive technology, or aides such as sign language interpreters. Providing reasonable accommodations enables students with disabilities to have equal access to education and services in higher education.

The professor stated that the field trips were essential elements of the course. The professor, the counselor, and Marc brainstormed ideas. The DSO counselor asked if there was any way that the field
trips could be recorded. The professor had never considered that. Together, they decided that making a video of the field trips would be a reasonable accommodation.

What are essential skills? Who decides what constitutes the course’s essential skills?

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**Answer:** Essential skills are the skills that the course is intended to teach. The concept of essential skills is important because the Americans with Disabilities Act (ADA) states that essential skills should not be waived or “watered down.” Otherwise, students with disabilities would not be competent to the same extent as their nondisabled peers upon graduation. The professor of the course has the responsibility and expertise to decide what these essential skills are. However, the professor needs to be able to defend his/her decision based on logic, knowledge of the field, and/or advice from experts. Consult with the DSO if you have questions about essential skills.

The professor wanted the videos of the field trips to be available to all students, realizing that these films would be good review tools.
Is there a way to make learning more attainable for all students while providing access for students with disabilities?

**Universal Design for Learning (UDL)**

- UDL strategies make learning more accessible for all students
- Examples:
  - Captioning
  - Recording lectures and demonstrations
  - Posting outlines, notes, overheads on the Web

**Answer:** Yes, sometimes there are ways to make learning more accessible for all your students. **Strategies used to help students with disabilities can often help everyone in the class.** This concept is called Universal Design for Learning (UDL) and refers to the process of making the course concepts and skills attainable to students with different learning styles, or physical, sensory, or linguistic abilities. UDL seeks to accommodate the widest range of users possible. For example, captioning is an absolute necessity for students with hearing impairments. It is also a great help to students who speak English as a second language, those with learning disabilities and others. Captioning is especially helpful if there is noise from fans, construction, or other distractions. Another example of UDL is recording lectures and demonstrations and making them available outside of class. A few other examples of UDL include posting outlines, lecture notes, copies of overheads, and organizational tools such as concept maps on the Web.
step 4: implementing the accommodation plan

Marc, the professor, and the DSO counselor set up a time to discuss how these accommodations would be implemented. The TA would take a video camera to record the same elements that would be pointed out to others on the field trips. The professor would then develop narration to accompany the videos that described the essential highlights.

The professor and the TA met to discuss the details. The field trips would be recorded, the narration added, and then posted on the class internet site. This way Marc and the rest of the students could review the video and narration as often as they choose.

Who is responsible for accommodations carried out in lab or field situations by a graduate teaching assistant?

Who is responsible for graduate TAs providing accommodations?

- The person responsible for lab / fieldwork
- The course professor or another lab instructor
- The institution is ultimately accountable to ensure proper implementation of accommodations

Answer: This depends upon who has the designated responsibility for overseeing the lab and/or fieldwork. In some cases, the professor of the course has the responsibility to make sure teaching assistants are providing the disability-related accommodations. In other cases, another professor or lab instructor is designated to oversee the lab and/or fieldwork. The academic unit and the university are ultimately accountable to ensure that reasonable accommodations are properly implemented.
step 5: revising the accommodation plan
As with any plan, there is the possibility that the accommodations will not go as smoothly as intended. If either Marc or the professor were unsatisfied with an accommodation, they should revisit it.

Can an accommodation plan be revised?

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<tr>
<td>• Professor should continue providing original accommodations until revisions are agreed upon</td>
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Answer: Yes, accommodation plans can be revised as needed. When accommodations do not go as intended, small adjustments can be handled between the professor and the student. Other revisions may require the help of the DSO. In either case, the DSO should be notified of any revisions made to the accommodation plan. It is also important that the professor continue to provide the original accommodations until an agreement is reached.

Marc expressed a desire to experience a field trip first hand. After further discussion, the professor remembered that he had seen accessible trail markings and roadside stops on a visit to a nearby state park. Once it was clear that the adapted field trip would work, the details were arranged.
Is the professor required to provide transportation to students with disabilities?

Transportation is required if offered to other students

Where to look for accessible vehicles:

• Check the institution or state motor pool
• Rent from private automobile rental agencies
• Use student’s accessible vehicle and reimburse

Answer: Yes, if transportation is provided to other students in the class. Transportation can be provided in a variety of ways, depending on available resources. First, if the institution does not already have an accessible vehicle, investigate community resources and state motor pool services to see if one is available. Another option is to rent one from a rental agency. Yet another option might be to use the student’s own accessible vehicle and reimburse the costs. Contact the DSO for ideas on resources, and ask the student for suggestions.

outcome

Marc successfully completed “Introduction to Anthropology,” earning a B+ grade. He decided to major in anthropology with an emphasis in cultural resource management. The professor liked the video idea so much he asked the faculty development office to help him make a more refined version of the field trip. As a result, all students would potentially benefit by having the video on the Internet that they could view it at their leisure. The professor also posted a transcription of the narration on the Internet that students could print or view online.
Breanna’s case story

This case explores field accommodations for a student with hearing impairments in an environmental science course.
Breanna’s story

background
Breanna has a hereditary hearing loss. With hearing aids, she is able to take advantage of her residual hearing. In Breanna’s family, her father and two younger brothers are also deaf while her mother and sister are not. At home, the family uses American Sign Language (ASL), which Breanna considers her first language. Breanna’s parents have encouraged Breanna and her brothers to use their residual hearing as much as possible. Because of this, Breanna attended speech therapy where she learned to lip read, use her residual hearing, and speak well enough to be understood by most people. Breanna’s parents chose a mainstream program for their children in a school that had both hearing and deaf students. Breanna and her brothers also received sign language interpreting and note-taking services.

Breanna liked school and did well academically, earning a 3.7 GPA. She participated in many extra curricular activities with students who were both hearing and Deaf. Breanna was the president of the art club and a member of the tennis team. Though Breanna used sign language interpreters for her classes, she depended on her hearing friends and sister to interpret during extra curricular activities. Some of her hearing friends could sign but their signing was very basic, so Breanna relied on other communication strategies, such as lip-reading, gesturing, and writing.

Breanna wanted to pursue her interests in art and photography after high school, so she chose a liberal arts university with strong programs in these areas. To fulfill one of her general education requirements, Breanna enrolled in an environmental science course, thinking the knowledge from the course would be useful in nature photography.
step 1: getting to the disability service office (DSO)
Breanna knew she would need sign language interpreting and other services at college; however, she didn’t know how to get these services. In public schooling, her parents had requested sign language interpreting and note-taking services for her.

Who has the responsibility to request disability-related accommodations for students with disabilities?

Who has the responsibility to request accommodations?
• The student has the responsibility to request accommodations
• Students should be encouraged to advocate for themselves

Answer: In higher education, the student with the disability must request needed disability-related accommodations. Students should be encouraged to advocate for their own needs.

Before high school graduation, Breanna met with her guidance counselor to discuss how she would get services at the university when she moved out of state in the fall. The guidance counselor told her that the university would have a Disability Service Office (DSO) that would provide the disability-related services she would need. Breanna found out about the DSO through her high school guidance counselor; however, many students with disabilities learn about these services via faculty.

What is the professor’s role in helping students find out about the DSO?

Faculty have an important role in helping students find services
• Inform students about campus services, including the DSO
• Include a statement on the syllabus about accommodations
• Spend time reviewing the statement
• Invite students to discuss their concerns
Answer: Faculty have an important role in helping students find services on campus. Some students aren’t aware of the services available through the DSO. Others may not know that they are eligible for services because of limitations from a physical, emotional, medical, or learning impairment. They may also be hesitant about being labeled. For all these reasons, faculty should include a statement on their syllabi about college/university policies on accommodations and access and review this statement at the beginning of the semester. This provides an opportunity to invite students with questions or concerns to visit during office hours. A sample syllabus statement can be found on page 132 of the “Glossary,” or consult the DSO.

step 2: meeting the eligibility requirements

When Breanna attended campus orientation in the fall, she met with a DSO counselor. In order for Breanna to receive services and accommodations, she had to provide documentation of her disability from licensed professionals appropriate to her disability.

What kind of documentation must a student provide the DSO?

Documentation for disability services

- Formal diagnostic assessment to verify disability from credentialed professionals
- Documentation should describe limitations and support the request
- Each disability is evaluated according to the institution's guidelines

Answer: The student needs to provide documentation and/or a formal diagnostic assessment done by appropriately credentialed professionals. This documentation should verify the disability, describe the individual’s functional limitations, and support the request for accommodations. Some documentation needs can be
complex. For example, if a student has more than one disability for which accommodations are needed, each disability must be appropriately documented according to the institution’s guidelines.

In Breanna’s case, her audiologist provided comprehensive medical information that verified her substantial hearing loss and described her limitations, supporting her request for accommodations.

Who is authorized to review and maintain documentation of a disability?

**Documentation maintained by DSO because . . .**

- Faculty have neither obligation nor right to review disability-related documentation
- Documentation must be maintained in separate file
- The DSO files documentation according to federal guidelines
- Confidentiality protects the student, faculty, and institution

**Answer:** Faculty members have neither the obligation nor the right to review the student’s medical documentation. Confidentiality of the student’s disability-related information must be maintained. The DSO staff have the expertise and the authorization to properly interpret disability documentation. They are prepared to file this documentation according to federal guidelines, separately from academic records. Faculty are not. **This process protects the student, the faculty, and the institution.** Bypassing the DSO exposes the faculty member and the institution to liability. If a student hands you his/her documentation, you should hand it back and inform the student that only the DSO can evaluate diagnostic information.
**step 3: deciding on specific accommodations**

After Breanna enrolled in her classes, she met with her DSO counselor to decide on specific accommodations she would need for her classes. Breanna would need a sign language interpreter and a note-taker. She would also need captioning on video and other media presented in her classes.

Breanna took her accommodation letter from her DSO counselor and met with each of her professors. They agreed that these were reasonable accommodations and signed the accommodation letter.

**Students with disabilities are entitled under federal law to “reasonable” accommodations. But what are reasonable accommodations?**

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**Answer:** Reasonable accommodations are adaptations intended to lessen the educational impact of the individual’s disability without compromising the integrity of the academic program or course. Accommodations may include instructional strategies, technology, and/or aids. **Providing reasonable accommodations enables students with disabilities to have equal access to education and services as required by federal law.**
step 4: implementing the accommodation plan
With a sign language interpreter and note-taker, Breanna had equal access to the lectures in class. In fact, one of her professors noted that having his videos captioned seemed to help most students.

Is there a way to make learning more attainable for all students while providing access for students with disabilities?

Universal Design for Learning (UDL)
- UDL strategies make learning more accessible for all students
- Examples:
  - Captioning
  - Recording lectures and demonstrations
  - Posting outlines, notes, overheads on the Web

Answer: Yes, sometimes there are ways to make learning more accessible for all students. **Some strategies used to help students with disabilities can often help everyone.** This concept, called Universal Design for Learning (UDL), refers to the process of making the course concepts and skills more accessible to students with differing learning styles or physical, sensory or linguistic abilities. UDL seeks to accommodate the widest range of students possible. For example, captioning is an absolute necessity for students with hearing impairments. It is also a great help to students who speak English as a second language, those with learning disabilities and others. Captioning is especially helpful if there is noise from fans, construction, or other distractions. Another example of UDL is posting outlines, lecture notes, copies of overheads and PowerPoint slides on the Web.
Breanna and her sign language interpreter met with each professor to discuss possible places to position the interpreter in the classroom. Breanna was able to choose seating that had the best line of sight for both the lecturer and the interpreter and enabled her to use her residual hearing and lip-reading skills.

Because of the accommodations she received, Breanna was doing well in her lecture courses. However, she experienced some difficulties in the field activities of her environmental science course. Once a week, the professor organized field trips so the students could identify local flora and fauna and discuss in small groups the environmental principles covered during the lectures. During these field activities, Breanna and her sign language interpreter had run into problems facilitating communication. Unlike in a classroom, positioning the interpreter in the field wasn’t as straightforward. Breanna and the interpreter decided to walk side by side along the trail and the interpreter would sign as they walked along.

At first, this arrangement seemed to be working. However, as the professor went further along the trail, the more plants and animals he wanted to point out and discuss. Soon he wasn’t stopping and facing the students when talking. Breanna couldn’t rely on her lip-reading to help understand what was being said. Because of the wind and the sounds of people moving out in the open, she couldn’t rely on her residual hearing helping either. Not only did she have to watch the interpreter, Breanna had to look to see what plant or animal the professor was talking about, while watching out for the rough spots along the trail. Breanna wasn’t the only one having trouble hearing. Other students, especially those in the back of the group, didn’t hear everything the professor was saying. In addition, they were trying to keep up with the group and take notes at the same time. The sign language interpreter apologized to Breanna for the words she wasn’t catching. The scientific names of the plants and animals were especially difficult because there were no signs for them; so the interpreter had to try and finger-spell them for Breanna.
step 5: revising the accommodation plan

After the first field trip, Breanna realized that some things would have to change for her to succeed in the course. Breanna contacted her DSO counselor to discuss the problems. The DSO counselor set up a meeting with the professor, so they could all work out solutions.

Can an accommodation plan be revised?

<table>
<thead>
<tr>
<th>Accommodation plans can be revised at any time</th>
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<tr>
<td>• Small adjustments can be handled between professor and student</td>
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<tr>
<td>• DSO should receive notification of any revisions made</td>
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<tr>
<td>• Professor should continue providing original accommodations until revisions are agreed upon</td>
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Answer: Yes, accommodation plans can be revised as needed. When accommodations do not go as intended, small adjustments can be handled between the professor and the student. Other revisions may require the help of the DSO. In either case, the DSO should be notified of revisions made to the accommodation plan. It is also important that the professor continue to provide the original accommodations until an agreement is reached.

At the meeting, Breanna described the difficulties she was having out in the field. The professor hadn’t realized that the interpreter and others weren’t hearing his descriptions and concepts as they were hiking the trails. The DSO counselor assured everyone there were simple solutions. The counselor then suggested that the professor stop walking and face the students when he wanted to lecture. He should then make a specific reference to the plant or animal so that Breanna could see which specimen the professor was pointing out.
In addition, the professor said he could give Breanna the scientific names of the plants and animals before the field activity so that she and her interpreter could establish signs for some of these terms. Learning the scientific names was an essential skill in the course.

**What are essential skills? Who decides what constitutes the course’s essential skills?**

<table>
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<th><strong>Essential skills of a course</strong></th>
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<td>• Skills critical to the purpose of the course</td>
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<tr>
<td>• Should not be “watered down”</td>
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<tr>
<td>• Professors have responsibility and expertise to determine essential skills</td>
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<tr>
<td>• Professors need to be able to justify their decisions</td>
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**Answer:** Essential skills are the skills that the course is intended to teach. The concept of essential skills is important because the Americans with Disabilities Act (ADA) states that essential skills should not be waived or “watered down.” Otherwise, upon graduation, students with disabilities would not be competent to the same extent as their nondisabled peers. The professor has the responsibility and expertise to decide what these essential skills are. However, the professor needs to be able to defend his/her decisions based on logic, knowledge of the field, and/or advice from experts. Consult with the DSO about institutional policies if you have questions regarding essential skills.

The professor decided to have his graduate teaching assistant (TA) come along on the field activities and help direct small group activities. The TA also helped the students with hands-on identification. The professor would make the TA aware of Breanna’s needs and have him help her and the interpreter find the best locations to hear the field lectures.
Who is responsible for accommodations carried out in lab or field situations by a graduate teaching assistant?

Who is responsible for graduate TAs providing accommodations?

- The person responsible for lab / fieldwork
- The course professor or another lab instructor
- The institution is ultimately accountable to ensure proper implementation of accommodations

Answer: This depends on who has the designated responsibility for overseeing the lab and/or fieldwork. In some cases, the professor of the course has the responsibility to make sure teaching assistants are providing disability-related accommodations. In other cases, another professor or lab instructor is designated to oversee the lab and/or fieldwork. The academic unit and the university are ultimately accountable to ensure that reasonable accommodations are properly implemented.

Once these changes were made to the accommodations during the field activities, the professor noticed that all the students were following his lectures better. Because the professor now stopped and faced the students, they were more focused and could take better notes.

The graduate TA found that Breanna was doing well in her small group. Taking the initiative, Breanna spoke with the members in her group about what would help her participate more actively. In a friendly way, Breanna reminded everyone to speak directly to her and not to her interpreter. She asked the other group members to speak one at a time and, if possible, to face her when speaking. Following a suggestion from the DSO counselor, Breanna also asked the members of her group to pass a small ball to the person who was speaking. This acted as a visual clue, allowing Breanna to follow the conversation more easily. It also reminded other group members to speak in turn. The TA was impressed that the group members became very conscientious about taking turns, speak-
ing clearly, and making sure everyone had the idea before they moved on to another topic or discussion. This made it very easy for the TA to present material and to help with any questions or problems that the students were having. Most of the group members were able to score higher on quizzes and tests, simply as a result of learning basic communication rules and using them in their group. Because of this, Breanna’s group became more organized and her classmates were more aware of how to communicate with deaf individuals.

**outcome**

Of the courses she had to take for her general education requirements, Breanna considered the environmental science course to be her favorite. She received an “A-” in the course and the knowledge she gained influenced her skills in nature photography. Breanna has graduated and started her own photography business and art studio, specializing in nature photography, portrait photos, and outdoor portraiture.
resources

- **Cross Index for Questions** from the four case stories.

- **Universal Design for Learning (UDL) vs. Individual Accommodations** explains the concept of universal design and relates it to providing accommodations for students with disabilities.

- **Online and Print Information** is a list of available internet and print resources. One important note: web addresses are not provided in the text, as these frequently change. You can use a description of key words and phrases to locate these and other sites through an internet search engine (e.g. Google).

- **References** are resources consulted in the preparation of this unit.

- **Glossary** has definitions of common terms relating to disability.
# Cross Index of Key Questions

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universal design for learning (UDL) vs. individual accommodation

Universal Design for Learning (UDL) is a way to make learning more attainable for all students, including students with disabilities. It may also reduce the need for some individualized accommodations.

Universal Design for Learning (UDL) refers to the process of making course concepts and skills attainable to a greater number of students, regardless of their differing learning styles, physical, sensory organizational and linguistic abilities. **Rather than the “one-size fits-all” approach, UDL stresses flexible delivery of content, assignment and activities.** UDL allows the learning process to be more accessible without singling out students with disabilities.

Drawing on the principles of universal design in architecture and product design, UDL aims to accommodate the widest spectrum of students possible. The process emphasizes adjusting teaching practices and information presentation to meet varying educational needs and learning styles.

**how UDL works:**

- UDL removes barriers to the learning process without watering down academic standards.
- UDL provides flexible and customizable delivery of content, assignments, and activities.

**for example:**

- Using a variety of teaching strategies, such as models, animations, field trips, discussion groups, offers students opportunities to master information through discussion, application, and experience.
- Using captioning is a necessity for students with hearing impairments; it also reinforces concepts and vocabulary for most students. Captioning can eliminate confusion when auditory systems are less than optimal. It is especially helpful to students who speak English as a second language.
• Providing digital copies of overheads, lecture outlines, and PowerPoint slides allows many people to read more easily because they can enlarge the text, change the font, etc. Having digital copies also enables students to use assistive devices, such as screen readers and voice activated programs, to access the information.

**examples in science:**

• Using measuring devices with digital readouts enables students who have fine motor impairments and students with visual impairments to take precise measurements. This new technology and others like it benefit all students by providing an easier way to conduct experiments.
• Using alternative materials, such as substituting dangerous chemicals for less caustic solutions, presents fewer safety risks to all students, especially students with disabilities. Alternative materials should replicate the experience and not compromise the integrity of the activity.
• Incorporating virtual experiences into the curriculum provides an effective way to help all students conduct and review activities outside of the lab/field sessions or can be useful as a supplement. Further, virtual experiences can be used when the real experiences are too dangerous.

**One qualifier:** While UDL may eliminate the need for some accommodations, individualized accommodations will still be necessary for some students. **Individualized disability-related accommodations are vital to some students with disabilities when their needs cannot be met another way.** In these cases, Section 504 of the Rehabilitation Act of 1973 (see below) and the Americans with Disabilities Act (ADA) (see below) require reasonable accommodations to be made.

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* **Section 504 of the Rehabilitation Act of 1973:**
Requires that institutions of higher education provide students with disabilities the same opportunities as non-disabled students.

** Americans with Disabilities Act (ADA):**
Civil rights legislation prohibiting discrimination against individuals with disabilities in:
• employment,
• state and local government,
• public accommodations and services, and
• transportation and telecommunications.
online and print information

online information

Information Specific to Science Courses:

Chemists with Disabilities of the American Chemical Society
Chemists with Disabilities (CWD) is a sub-group within the American Chemical Society (ACS). This website has useful information about chemists with disabilities and links to on-line publications about accommodations for students with disabilities taking chemistry courses.

Inclusive Curriculum Project of The Geography Discipline Network
The University of Gloucestershire’s Geography Discipline Network (GDN) developed the Inclusive Curriculum Project (ICP) to enable students with disabilities to participate in geography courses. The website has a series of faculty guides designed to support students with disabilities and offers ideas for accommodations and case studies searched by different types of disabilities. These accommodations can be applied to a variety of science courses with field activities.

General Information for Faculty:

DO-IT Prof—University of Washington
The DO-IT Prof program has compiled a resource page called “The Faculty Room” for faculty and administrators in postsecondary institutions. It is designed as a ready resource for quick or comprehensive information on topics such as accommodation strategies, universal design principles, rights and responsibilities of students with disabilities and faculty, etc.

Fast Facts for Faculty Publications
This Ohio State University site is designed to increase faculty knowledge and awareness. The “Fast Facts for Faculty” are consolidated information sheets for faculty and administrators on the accommodation process, rights and responsibilities, technology’s role in effective teaching, designing of accessible syllabi, and universal design for learning concepts.

George Washington University National Clearinghouse on Postsecondary Education for Individuals with Disabilities—HEATH
The home page for the HEATH Resource Center holds a number of publications that closely examine a broad range of topics on postsecondary education and disability. It also offers answers to FAQs and provides links to other sites.
Testing Accommodations:

The Journal of Technology, Learning and Assessment—JTLA
The JTLA was established in response to a growing interest in computer-based technology, learning, and assessment. The JTLA provides an interdisciplinary forum where initiatives that combine these topics are shared. The JTLA is housed jointly in the Technology and Assessment Study Collaborative (inTASC) and the Center for the Study of Testing, Evaluation and Educational Policy (CSTEEP) at Boston College.

Universal Design:

Center for Applied Special Technology—CAST
The CAST Website uses Universal Design for Learning as a blueprint to combine research and technology with effective teaching strategies. It contains information on the development of innovative, technology-based educational resources and strategies.

FacultyWare—University of Connecticut
FacultyWare is an online resource for faculty on Universal Design for Instruction. This website displays examples of inclusive practices, instructional techniques, or “products,” used by faculty to incorporate these principles. Faculty can view instructional products submitted by other faculty members or submit one of their own.

Universal Instructional Design Project—UID
This University of Guelph website provides valuable knowledge for faculty and graduate teaching assistants in higher education. The site includes links to information on universal design principles, the application of these principles and other suggestions that can benefit students.

Principles of Universal Design
This site is hosted by the Center for Universal Design at North Carolina State, the birthplace of universal design concepts in architecture. This overview illustrates the main principles of universal design and describes how they can be applied to any setting.

Creating Accessible Websites:

Georgia Tech Research on Accessible Distance Education—GRADE
GRADE provides research, training, technical assistance, and information on improving the accessibility of distance education for students with disabilities at universities and colleges. A free, ten-module online tutorial on making distance learning accessible for students with disabilities is available.
National Center on Information Accessibility in Education—AccessIT

Access IT, at the University of Washington, works to increase access to information technology in higher education for individuals with disabilities. AccessIT’s website offers many resources for faculty, such as an information technology accessibility checklist, a web course, and a searchable database about accessible electronic and information technology in higher education.

Center for Applied Special Technology—CAST

The CAST Website contains information on the development of innovative, technology-based educational resources and strategies. An evaluation program can also be found here that will check your website for accessibility.

Web Accessibility in Mind—WebAIM

WebAIM seeks to expand the potential of the Web for people with disabilities by providing direct services, knowledge, technical skills, tools, and organizational leadership strategies to make web content accessible.

Web Accessibility Tool—WAVE

In conjunction with WebAIM, WAVE Accessibility Tool Online Web Service is an online tool to help make online materials and websites more accessible. WAVE evaluates Web accessibility by exposing possible errors in website content and structure via icons and codes. Once these errors are detected, changes can be made for better Web access.

Web Accessibility Initiative—WAI

The Web Accessibility Initiative strives to ensure equal access of all Internet sites. This site contains information on legal policies for access, tips on constructing a site, news about universal access, and resources for website evaluation.

Assistive Technology:

ABLEDATA

Maintained by the National Institute on Disability and Rehabilitation Research, this site provides information about assistive technology products and rehabilitation equipment available from domestic and international sources. ABLEDATA does not sell any products, but acts as a resource information guide.

EnableMart

EnableMart is a company that markets, promotes, and distributes innovative technology-based products and services that promote independence and enhance productivity for individuals with disabilities. They act as a link between assistive technology and assistive living devices and the products available.
**Job Accommodations Network**

The Job Accommodation Network’s Searchable Online Accommodation Resource (SOAR) system is designed to let users explore various accommodation options for people with disabilities in work and educational settings. Individuals can learn about free consulting service designed to increase employability, accommodation issues, innovative employment practices, and the ADA.

**Microsoft—Accessibility**

Microsoft gives information about accessible computer technology and products available to people with disabilities. This accessible technology and other products are intended to increase opportunities to use computer technology in a variety of ways.

**Apple—Special Needs**

Apple Computer hosts this site to give information on computer technology that meets the special needs of children and adults with disabilities. These products are intended to increase independence, self-expression, participation, choices and self-esteem.

**Legal Issues:**

**Americans with Disabilities Act—ADA**

The homepage for the ADA through the Department of Justice gives information on Federal standards along with links to federal resources, publications, etc.

**Specific Disabilities:**

**Learning Disabilities**

**LD Online**

This site is an interactive community for parents, teachers, and students to share information on learning disabilities. The sections include first-person perspectives and message boards with emerging issues to date. There are several suggestions for teaching techniques and ideas on how to assess a student with Learning Disability. Overall, the site gives background information on Learning Disabilities and provides collaboration for those that work with Learning Disabilities.

**Attention Deficit Disorder—ADD/HD**

**Attention Deficit/Hyperactivity Disorder**

Children and Adults with Attention-Deficit/Hyperactivity Disorder (CHADD) This site is an excellent resource for learning about Attention Deficit/Hyperactivity Disorder (ADHD). It provides access to numerous helpful resources as well as legislative information.
Deafness and Hearing Impairments

Class Act: Access for Deaf and Hard-of-Hearing Students
This website, called Class Act, is administered through the National Technical Institute for the Deaf (NTID) at Rochester Institute of Technology. It is intended to improve existing teaching practices regarding “access” to learning for Deaf and hard-of-hearing students in postsecondary courses.

Postsecondary Education Programs PEPNet Online Network
This is the home page for Postsecondary Education Programs Network. It is a compendium of resources and information on deafness or hardness of hearing and also provides links to other websites.

Directory of National Organizations of and for Deaf and Hard of Hearing People
This site is a directory of national and nonprofit organizations that provide information on deaf and hard of hearing people and/or specific professional or consumer areas of interest.

Vision Impairments

Blindness Resource Center
This website, sponsored by the New York Institute of Special Education (NYISE), provides links to varied resources and organizations for people with visual disabilities, including medical information, research, Braille and assistive technology.

National Federation of the Blind
This is the official website for the National Federation for the Blind (NFB), an advocacy organization for people with visual disabilities. The website has useful information about blindness and visual impairments, and it is an excellent resource for access to alternate formats, including Braille and other accessible on-line material.

Mental Health

National Alliance for the Mentally Ill—NAMI
National Alliance for the Mentally Ill (NAMI) is a national non-profit organization for advocates of people with mental illness. The site is an excellent resource for information on mental illness and its treatment. It also gives updates on legislative advocacy and the various education and training programs being carried out by the organization.
Brain Injury

Brain Injury Association of America
This is the home page for the Brain Injury Association of America. It is an excellent resource for general information about causes of brain injury, prevention, treatment, and rehabilitation. It also provides accessibility to public policy, legislative law, and resources for more information on brain injury.

Epilepsy

Epilepsy Foundation
This homepage for the Epilepsy Foundation provides related information and resources. It covers general aspects like first aid and also discusses the requirements of federal law regarding higher education institutions providing education to people with epilepsy.

Mobility and Chronic Health Impairments

Cornucopia of Disability Information—CODI
CODI serves as a community resource for consumers and professionals by providing disability information in a wide variety of areas. Supported by the Western New York Regional Triad center at the University of Buffalo, the site consists of both a directory of information and a repository of electronic documents dating back to the early 1990s.

General Information for Students and Parents:

ThinkCollege.net
This website is funded through the Department of Education. It provides information and links to students with intellectual disabilities, parents, and professionals interested in finding out more about preparing for college. The site includes a searchable database, listserv and discussion groups, and other resources. Personal experiences from students help to personalize the information.

Parent Advocacy Coalition for Educational Rights—PACER
This website is an extensive resource for parents and students with disabilities on a wide variety of topics. Therefore, to reach the specific information on post-secondary information, check the ASD Website for an updated page address.

references consulted for preparation of this unit


Center for Applied Special Technology—CAST, 40 Harvard Mills Square, Suite 3 (Foundry Street), Wakefield, MA 01880-3233


glossary

**Academic adjustment:** A modification to an academic requirement or procedure to ensure that a qualified student with disabilities receives equal access to education. Adjustments should not alter the academic integrity of the course, waive essential skills, or allow content to be watered down.

**Accessibility:** For purposes of these training materials, accessibility is defined as making courses available to all students. To do this, it is important to consider the pedagogy, the equipment, and the physical environment. Providing information in digital format and use of assistive technology may be required for some students.

**Accommodation letter/form:** A letter/form prepared by the DSO that explains the approved accommodations to faculty and identifies the role of the faculty member in the provision of these accommodations.

**Accommodation process:** 1) Getting to the DSO, 2) meeting the eligibility requirements, 3) deciding on specific accommodations, 4) implementing the accommodation plan, and 5) revising the accommodation plan.

**Alternate format materials:** The production of print materials in a format that enables a person with a vision impairment to read the materials using adaptive skills or technologies. Alternate format materials may include large print, audio tapes, electronic text, and Braille.

**Americans with Disabilities Act (ADA):** Civil rights legislation signed by President George Bush on July 26, 1990. Prohibits discrimination against individuals with disabilities in the areas of employment, state and local government, public accommodations and services, transportation, and telecommunications.

**Architectural accessibility:** The application of design principles and construction that allows persons with disabilities to use facilities such as buildings, sidewalks, entryways, elevators, restrooms and water fountains with maximum independence and in accordance with current building codes.
Assistive/Adaptive technology (AT): Equipment or software items designed or used to compensate for areas of disability or impairment. It allows persons with disabilities the same access to information and production as their peers.

According to Technology-Related Assistance for Individuals with Disabilities ACT of 1988 (Tech Act; P.L. 100, 407), an AT device refers to “any item, piece of equipment or product system, whether acquired commercially off-the-shelf, modified, or customized, that is used to increase, maintain or improve the functional capabilities of individuals with disabilities.” Raskind and Bryant (1996) note that in some instances the device may assist, augment, or supplement task performance in a given area of disability; while in others, it may be used to circumvent or bypass specific deficits entirely.

Attention deficit hyperactivity disorder (ADHD): A neurobiological disorder that interferes with a person's ability to sustain attention or focus on a task and to control impulsive behavior.

Auxiliary aids: Services, equipment, and procedures that allow students with disabilities access to learning and activities in and out of the classroom. They include, but are not limited to, sign language interpreters, real-time captioning, adaptive technology, alternative media (braille, tapes, scanned text, enlarged print), readers, and scribes.

Captioning: A process that allows individuals who have hearing impairments to have access to audio information in video or film presentations. Captions are printed scripts of the audio information that appear on the bottom of the screen. Captioning is accomplished with various technologies, including stenography and specialized software.

Closed circuit television (CCTV): An enlarging device, used by persons with vision impairments or learning disabilities, composed of a zoom lens and a television screen or computer monitor to enlarge print or visual materials.

Confidentiality: Refers to privacy of medical and academic information. Students in higher education have the right to confidentiality of disability-related information. DSO offices may not release medical information to faculty or others without a signed release of information. Faculty should use caution not to disclose information shared by students regarding their disability or accommodations with colleagues or other students.
**Deafness**: A hearing impairment that results in little or no residual hearing with or without a hearing aid. An individual who is deaf uses vision as the primary modality for learning and communication. Many people who are deaf use American Sign Language (ASL) as their primary language, which has its own unique linguistic characteristics and is a distinct language from English. Note: People who are Deaf (capitalized) often identify themselves as a cultural, linguistic minority. Individuals who view themselves as a part of Deaf culture do not perceive hearing loss and deafness as a disability, but as the basis of a distinct cultural group. See hearing impairment/hearing loss.

**Direct threat**: A significant risk or substantial harm to the health and safety of the individual or others that cannot be eliminated or reduced by reasonable accommodation.

**Disability (person with)**: “Any individual who has a physical or mental impairment that substantially limits one or more of the major life activities of such an individual; any individual who has a record of such an impairment; and any individual who is regarded as having such an impairment” (ADA, 1990). Major life activities may include, but are not limited to, walking, hearing, seeing, learning, caring for oneself, breathing, performing manual tasks, and working.

**Disability-related/functional limitations**: Restrictions resulting from a disability that prevent an individual (without accommodations or auxiliary aids) from participating in major life activities including, but not limited to, walking, learning, seeing, hearing, and learning.

**Documentation**: Comprehensive written validation of a person’s disability and the functional limitations of the disability provided by an appropriate professional qualified to make a specific type of diagnosis. The documentation must be given to service providers before services, accommodations and auxiliary aids can be approved. Faculty generally do not have access to this medical information. (See Confidentiality.)

**Dyslexia**: One of several distinct learning disabilities. A specific language-based disorder characterized by difficulties in single-word decoding. Dyslexia is manifest by difficulty with different forms of language, including problems with reading and acquiring proficiency in writing and spelling. (Adapted from the International Dyslexia Association.)
Eligibility for disability-related services: In order to be eligible for accommodations under the Americans with Disabilities Act, students must have a documented disability that severely limits the performance of a major life activity as compared to the average person. The documentation must be professionally credible, comprehensive, and support the necessity of the requested accommodations (see Documentation).

Essential functions/requirements: Refers to job duties of the employment position that the person with a disability holds or desires. Within the scope of the ADA, essential functions of the job are those “basic job duties that an employee must be able to perform, with or without reasonable accommodation” (U.S. Equal Employment Opportunity Commission [EEOC], 1991, p. 3). Evidence whether a particular function is essential is based on a number of sources including, but not limited to “an employer’s judgment, written job descriptions, amount of time performing the function, collective bargaining agreements, work experience of past and/or present employees in similar jobs.” Essential functions in higher education are discipline specific.

Essential skills: The skills that a course is intended to teach. Essential skills are critical to the purpose of the course, should not be “watered down,” and are the responsibility of the instructor to determine.

Guide dog/service animal: An animal, such as a dog, which has been trained to assist individuals with visual, physical, or hearing impairments. Guide dogs are legally permitted to accompany their owners into all places of public accommodation.

“Has a record of”: ADA provisions protecting those who may experience discrimination based on a history of disability. For example, an individual who has a history of cancer is protected from discrimination.

Hearing impairment/hearing loss: A disability that affects the ability to hear. Hearing impairment as generally used denotes that there are different degrees of hearing loss, which may be mild, moderate or severe. Individuals with hearing impairments may or may not use hearing aids. Though individuals have a hearing loss, they still use auditory means for learning and communication. See deafness.

Interpreter: A trained professional who assists individuals who are Deaf with a variety of communication services, including sign language and tactile or oral interpretation of verbally expressed communication.
**Invisible or hidden disability:** Disabilities that are not readily apparent or observable. Invisible disabilities include learning disabilities, attention deficit disorder, psychological disabilities, medical or chronic health impairments, visual impairments, and hearing impairments.

*“Is regarded as having”:* ADA provisions protecting individuals who may not have a disability as defined by ADA, but is treated or subjected to discrimination as if they do. For example, a person who has a chronic medical condition but is not limited in any way is protected under ADA from discrimination and harassment.

**Lab aide:** A person who performs skills which are difficult or impossible for the student with disabilities to carry out. Much like scribes and readers, a lab aide is trained to carry out specific operations as dictated by the student. He/she needs to receive training in ways to assist the student without compromising the academic integrity of the lab and/or fieldwork, allowing the student to demonstrate mastery of the essential skills of the course or lab.

**Learning disability:** A permanent disorder that interferes with integrating, acquiring, and/or demonstrating verbal or nonverbal abilities and skills. Frequently, there are some processing or memory deficits. Individual may have difficulty with reading, spelling, written expression, mathematics, problem solving, listening, and oral expression. The disorder is often inconsistent, and each individual has his or her unique set of characteristics.

**Learning styles:** The different ways that individuals perceive and process information.

**Legally mandated services:** Section 504 of the Rehabilitation Act of 1973, as amended, requires that postsecondary institutions provide services and accommodations to qualified students including interpreters for the Deaf, note-taking assistance, readers, accommodated testing, extended time to complete program requirements, and other reasonable modifications as determined on a case-by-case basis.

**Major life activity:** Basic activities that the “average person” could perform with little or no difficulty, including caring for oneself, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning, and working.

**Medical disability:** A disability resulting from a medical condition. An individual with a medical disability may exhibit several functional limitations. Conditions that may fall under this category are multiple sclerosis, diabetes, seizures disorder, chronic fatigue, multiple chemical sensitivity, and respiratory conditions.
Mobility impairment: A disability that limits an individual’s ability to move; walk independently without the aid of a wheelchair, walker, or other assistive devices; or walk long distances due to limited energy or chronic pain.

Professional licensure/certification: The requirements of obtaining a license or certification to practice a trade or profession which is regulated by the profession and applicable legislation in order to provide assurance of the individual’s competency to practice.

Psychiatric disability: Individuals with a diagnosed mental illness may have difficulty functioning well in their academic, personal, or social environments. These conditions may include depression, pervasive anxiety, schizophrenia, bipolar disorder, and stress-related conditions. Many of these conditions are successfully treated with medication and therapy.

“Qualified individual with a disability”: In employment: An individual with a disability who satisfies the qualifications for employment and can perform the essential functions of such a position with or without reasonable accommodation. In higher education: Individual who meets the academic and technical standards for admission to or participation in an education program or activity and can, with or without accommodation, perform the essential tasks involved in the course or program.

Raised line drawings: Indented traces or tactile graphics of maps, charts, tables, graphs, etc. which are traced by the finger in place of a visual image. There are various ways to create raised drawings from printed drawings using materials such as yarn, glue, puff paint, or foil. Specialized equipment such as the Tiger Embosser is also available.

Real-time captioning: An auxiliary aid for students with hearing and other impairments that allows them instant visual access to lectures. The lecture content is typed verbatim by a trained professional as the lecture occurs. Students view the typed captions on a monitor or other display device.

Reasonable accommodations: An adjustment made to assist a student and/or employee that allows equal participation in a public service, program, and/or employment opportunity. The Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act of 1973 require that reasonable accommodations be made for individuals with disabilities.
In the workplace, examples of reasonable accommodations include (a) modification or adjustment to a job application process that enables a qualified applicant with a disability to be considered for the position he or she desires; (b) modifications or adjustments to the work environment or to the manner or circumstances under which the position is customarily performed that enables qualified individuals with disabilities to perform the essential functions of that position; or (c) modifications or adjustments that enable the employee with a disability to enjoy equal benefits and privileges of employment as are enjoyed by other similarly situated employees without disabilities.

In the educational setting, reasonable accommodations may involve modification or adjustments that provide equal access to programs, services and activities of the institution, including classroom access, internships and field experiences, housing facilities, and recreational programs. Access may be achieved through the provision of auxiliary aids, assistive technologies, and modification of instructional and examination practices.

Reasonable accommodations do not include lowering of academic standards, alteration of the fundamental nature of programs, personal services, or accommodations that result in undue financial or administrative burden. Undue hardship is determined based on the total resources of the institution, not the individual resources of a program or department (see Undue Hardship).

Rehabilitation Act of 1973: This law prohibits discrimination on the basis of disability in federally funded programs and activities and in programs and activities conducted by the federal government. Section 504 of the law states: No otherwise qualified handicapped individual in the United States... shall…, solely by reason of his/her handicap, be excluded from the participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving federal financial assistance.

Scribe: A person provided as an accommodation to assist in transferring verbally expressed communication to a written form. This is generally used for persons who are unable to write due to their disability.

Section 504 of The Rehabilitation Act of 1973: The first law to specifically address the needs of students with disabilities. It is a civil rights statute intended to prevent discrimination on the basis of disability. Section 504 requires that institutions of higher education provide students with disabilities the same opportunities as nondisabled students.
**Service animal/guide dog:** An animal, such as a dog, which has been trained to assist individuals with visual, physical, or hearing impairments. Service animals are legally permitted to accompany their owners into all places of public accommodation.

**Syllabus statement:** A statement included in the course syllabus regarding your college/university’s policies on providing services and accommodations to students with disabilities.

**Example** from Utah State University:
“In coordination with the Disability Resource Center, reasonable accommodation will be provided for qualified students with disabilities. Please meet with the instructor during the first week of class to make arrangements. Accommodations and alternative format print materials (large print, audio, diskette or Braille) are available through the Disability Resource Center, located in the basement of the University Inn, phone number 797-2444.”

**Substantial limitation:** Inability or significant restriction in the condition, duration, or manner in which a person is able to perform any basic/major life activity. Factors that may be considered in determining whether there is a substantial limitation include (a) the nature and severity of the impairment, (b) the duration of the impairment, (c) the permanent or long-term impact of the impairment (29 C.F.R. § 1630.2[j]).

**Tactile graphics embosser:** Equipment that prints Braille and embosses text and graphics directly from existing files. Color in visual text is displayed as dots of varying heights. Through variation of texture, shape, and line thickness, maps, illustrations, and other graphics can be produced in 3-D. The Tiger Embosser is a brand of this kind of equipment.

**Technical standards:** All nonacademic criteria that are found to be essential to participate in a course or program.

**Telecommunication relay service (TTY, TRS):** Instruments or services that allow individuals with hearing or speech impairments to communicate over the telephone using a keyboard device or computer. Telephone relay services, required in each state under ADA, assist callers with hearing impairments via an operator-assisted program.
**Unadulterated curriculum:** Refers to curricula that have the same expectations and impose the same standards of performance on students with disabilities as other students. Disability accommodations must not water down the curriculum, lower standards, or waive essential skills or knowledge.

**Undue hardship:** Refers to an accommodation request requiring significant difficulty or expense in the nature and cost of the accommodation in relation to the size, financial resources, and type of employment situation. This is in determining whether an accommodation is reasonable and, whether it must be implemented (see Reasonable Accommodations). Denial of an accommodation based on “undue hardship” must be made by the institution’s legal counsel, not by faculty or departmental leadership.

**Universal design for learning:** As used in education, universal design for learning refers to the process of making the goals of learning attainable by all students regardless of learning style or physical, sensory, organizational, or linguistic abilities. It emphasizes meeting the unique needs of each student by providing a variety of ways for students to access and engage the learning process.

**Video Description:** An audio narration of visual media, i.e. television and film, for viewers who are blind or visually disabled. This narration consists of verbal descriptions of key visual elements in a media presentation such as settings and actions not reflected in dialogue. The descriptive narration is inserted into the presentation during the natural pauses in the audio (and sometimes during dialogue if deemed necessary).

**Video relay service:** Uses a qualified interpreter as a relay operator to translate spoken word to American Sign Language (ASL). A Deaf person, via a webcam, signs to the interpreter who then voices to the hearing person. Communication is returned via the interpreter.

**Visual impairment:** A disability that involves either total lack of sight or limited sight.

**Web accessibility:** Defines standards for promoting access to electronic and information technology, including computers, software, and electronic office equipment. It provides technical criteria specific to these technologies and states requirements for making these products accessible to people with disabilities.