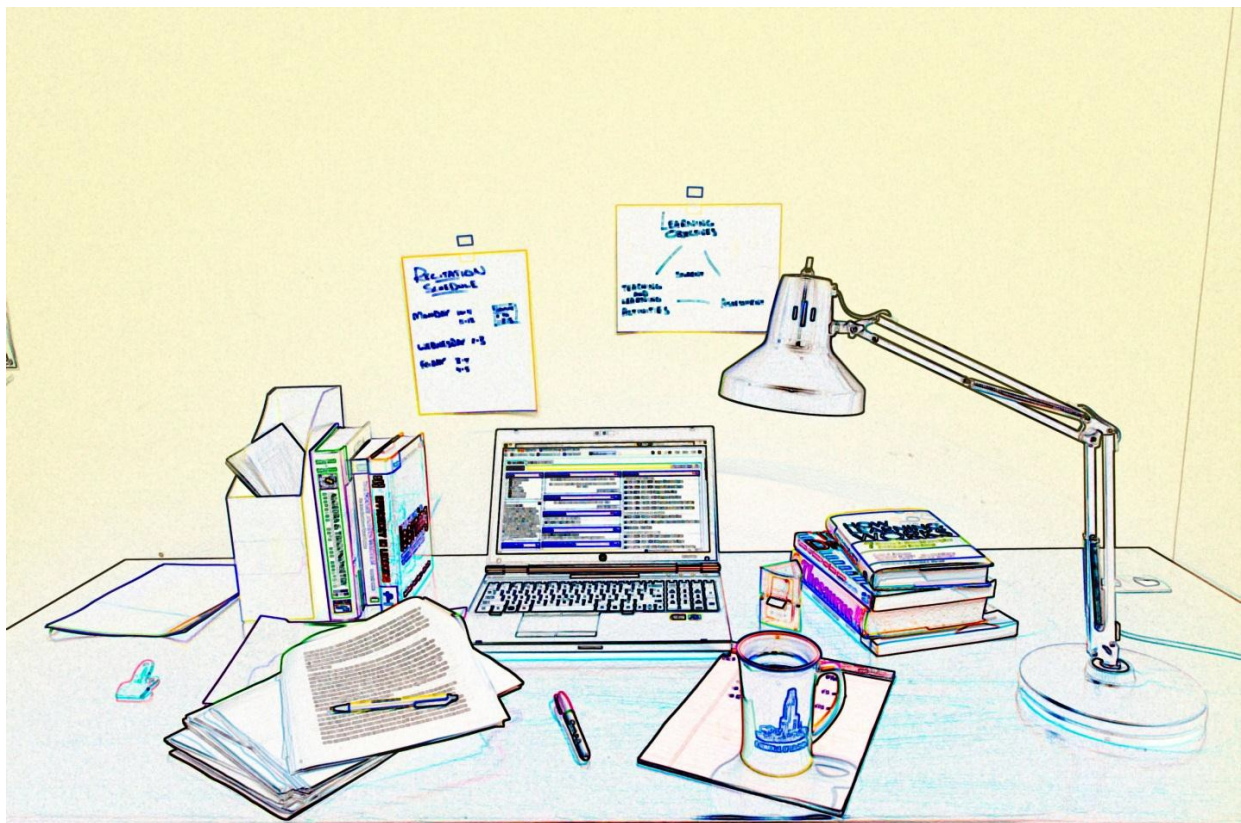


TA Handbook: The Teaching Assistant Experience



Welcome Message from the Vice Provost

Dear Graduate Student,

Teaching is a crucial part of the University of Pittsburgh's mission. Through the University's teachers, students' minds are developed; through quality instruction, the University influences future generations. Your good teaching assists the University in fulfilling its primary mission, and the experience of being a teaching assistant is a key part of graduate school and of your professional development.

Effective teachers share some common characteristics: a dedication to teaching, a love of learning, the ability to communicate effectively and clearly, enthusiasm for sharing knowledge, respect for the ideas of others, and ability to bring out the best in students. Successful teaching comes from careful thought, practice, attentiveness, and evaluation of results.

Teachers, then, become good teachers through hard work. The University is committed to the development of effective teachers and provides opportunities for qualified graduate students to prepare for successful careers as professionals in a wide variety of careers as well as instructors. Learning to teach while working as a teaching assistant offers unique advantages: teaching assistants can rely on the experience and training of the many faculty members and practiced TAs who stand ready, willing, and able to help you become a strong teacher and an experienced communicator.

I urge you to take advantage of the many opportunities available to you to learn as a teacher. This handbook is one of the tools provided to you; I trust it will offer ideas and suggestions to launch you toward excellence.

Sincerely,

Alberta M. Sbragia
Vice Provost for Graduate Studies

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Introduction to the Handbook

Although the specific role that you are expected to fulfill may vary from hour to hour (student, teacher, researcher, and administrator), you are, more than any one thing, an educator in the broadest sense of the word: you nourish. You nourish your career aspirations in graduate classes; you nourish your discipline's body of knowledge when writing and researching; you nourish the minds of your students in the classroom; and, as a primary source of academic support for undergraduates, you nourish the well-being of your students in office hours.

This handbook provides the information and nourishment you will need for your role as a Teaching Assistant. Just as your department and individual mentor support you in your role as a student and researcher, this handbook supports you in your teaching endeavors by providing detailed information about your role as a teacher at the University of Pittsburgh and the pedagogical techniques available to you, culled from the best resources the field of Education has to offer.

Some of the information contained in this handbook is general enough to apply to any Teaching Assistant, regardless of teaching field. This first chapter, as well as sections on course planning, lesson structure, academic integrity, sexual harassment policies, and diversity in the classroom are vital to all TAs, regardless of discipline. Other sections explore the particular challenges and joys of teaching in specific disciplinary and instructional settings: from discussion recitations to labs, from foreign language classes to reviewing problem sets. Please examine the handbook for the information that best suits your needs.

One of the more general principles you will find here is the idea that, in your teaching, you should always clearly define objectives—for both your students and yourself—oriented towards specific goals which you can share with your students. The University of Pittsburgh Dean's Council, for example, has established clear objectives for all University graduates. At the time of graduation, all University of Pittsburgh students should be able to:

- Think critically and analytically
- Gather and evaluate information effectively and appropriately.
- Understand and apply basic, scientific, and quantitative reasoning.
- Communicate clearly and effectively.
- Use information technology appropriate to their discipline.
- Exhibit mastery of their discipline.
- Understand and appreciate diverse cultures.
- Work effectively with others.
- Have a sense of self, responsibility to others, and connectedness to the University.

As you plan courses or lessons, develop assignments and classroom activities, and lead class discussions, consider how your interactions with students fit into the University's wider goals for its students. This handbook is designed to help you to do so.

At the same time, you should also clearly articulate your own goals for yourself, when it comes to your teaching. Your role as a teaching assistant forms an important part of your professional development as a graduate student. Making the most of your graduate student teaching experience can make you more competitive on both the academic and non-academic job markets, whether you plan to go into teaching or into one of the many fields in which the foundations of good teaching (like communication and presentation skills) are highly marketable. What skills do you want to learn and master by the time you have fulfilled your duties as a teaching assistant? It may help you to think about developing your teaching skills in terms of adding items to your teaching portfolio, a collection of materials which represents you, as a teacher, to interested hiring committees. Fortunately, this is one case in which your self-interest coincides with the interests of your students!

Whether you are about to teach for the first time and feel uncertain, anxious, or even bewildered, or you are a seasoned teaching fellow looking to refine your technique, this handbook will provide you with tools and support to help you maximize your teaching assistant experience for yourself, your students, and the University of Pittsburgh.

Teaching and Learning Principles

As a teaching assistant, you have a responsibility to

- the students, to develop new skills, attitudes, or beliefs.
- the University, to teach to goals that support programmatic, departmental, or accreditation standards.
- yourself, to model behavior that is consistent with your own growth in your values and beliefs.

The type of planning that you do prior to entering the classroom can help you meet all of these obligations. Planning also sets the stage for an experience that engages students and results in an environment conducive to learning.

The foundation of good course, lesson, or recitation design is the [Alignment Model](#).

Other valuable tools for thinking about the learning process, developing goals, and encouraging student learning are [Bloom's Taxonomy](#) and Ambrose's [Definition of Learning](#) and [Seven Principles of Learning](#).

The Alignment Model

The Alignment Model is fundamental to the basic structure of a curriculum, a course, or a class.

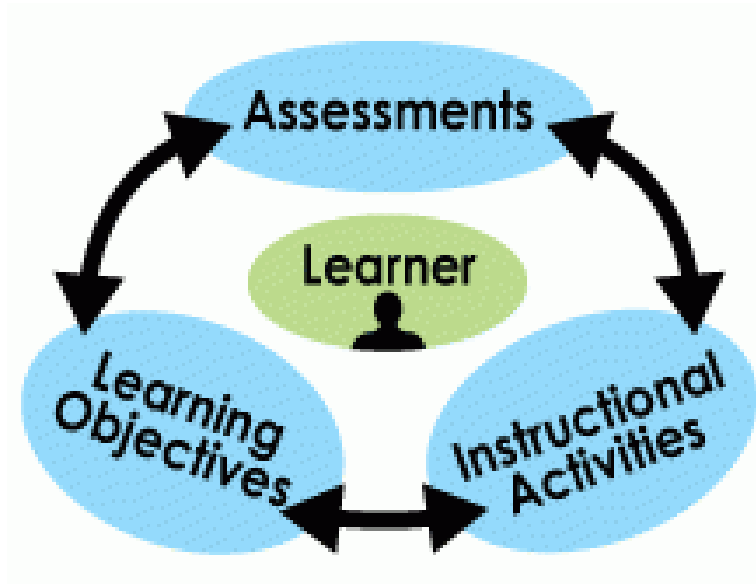
You will see references to the alignment model throughout the handbook. Applying the model is fundamental to the basic structure of a curriculum, a course, or a class. The model provides a foundation for

- developing a course.
- diagnosing problems.
- answering the question, “How do I know if the students have learned?”
- curriculum assessment.

The alignment model emphasizes the cohesiveness among three course components:

1. **Learning Objectives:** The expectations you have for what you want your students to be able to *do* following instruction.
2. **Assessments:** The measurement of how well the students have achieved the objectives.
3. **Instructional Activities:** The content, its delivery, and the classroom activities used to support the students in learning the objectives.

When a course is aligned, students know what skills they are expected to develop, how they will be evaluated on those skills, and how the teaching and learning activities you employ relate to your objectives.



Bloom's Taxonomy

1. **Remembering** Can the student recall or remember the information?: *define, duplicate, list, memorize, recall, repeat, reproduce, state*
2. **Understanding** Can the student explain ideas or concepts?: *classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase*
3. **Applying** can the student use the information in a new way?: *choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write*
4. **Analyzing** Can the student distinguish between the different parts?: *appraise, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test*
5. **Evaluating** Can the student justify a stand or decision?: *appraise, argue, defend, judge, select, support, value, evaluate*
6. **Creating** Can the student create new product or point of view?: *assemble, construct, create, design, develop, formulate, write.*



Bloom's Taxonomy (Levels)

Bloom's Taxonomy (Revised) The Knowledge Dimension

<i>Types of Knowledge</i>				
	Factual	Conceptual	Procedural	Metacognitive
A. Factual Knowledge	The basic elements students must know to be acquainted with a discipline or solve problems in it			
	a. Knowledge of terminology b. Knowledge of specific details and elements	<i>Examples: Technical vocabulary, music symbols</i> <i>Examples: Major natural resources, reliable sources of information</i>		
B. Conceptual Knowledge	The interrelationships among the basic elements within a larger structure that enable the elements to function together			
	a. Knowledge of classifications and categories b. Knowledge of principles and generalizations c. Knowledge of theories, models, and structures	<i>Examples: Periods of geological time, forms of business ownership</i> <i>Examples: Pythagorean theorem, law of supply and demand</i> <i>Examples: Theory of evolution, structure of Congress</i>		

Adapted from: Anderson, Lorin et al., eds. *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives* (abridged edition). New York: Longman, 2001.

C. Procedural Knowledge	How to do something, methods of inquiry, and criteria for using skills, algorithms, techniques, and methods	
	<ul style="list-style-type: none"> a. Knowledge of subject-specific skills and algorithms b. Knowledge of subject-specific techniques and methods c. Knowledge of criteria for determining when to use appropriate procedures 	<p><i>Examples: Skills used in painting with water colors, whole-number division algorithm</i></p> <p><i>Examples: Interviewing techniques, scientific method</i></p> <p><i>Examples: Criteria used to determine when to apply a procedure involving Newton's second law; Criteria used to judge the feasibility of using a particular method to estimate business costs</i></p>
D. Metacognitive Knowledge	Knowledge of cognition in general as well as awareness and knowledge of one's own cognition	
	<ul style="list-style-type: none"> a. Strategic knowledge b. Knowledge about cognitive tasks, including appropriate contextual and conditional knowledge c. Self-knowledge 	<p><i>Examples: Knowledge of outlining as a means of capturing the structure of a unit of subject matter in a text book; Knowledge of the use of heuristics</i></p> <p><i>Examples: Knowledge of the types of tests particular teachers administer; Knowledge of the cognitive demands of different tasks</i></p> <p><i>Examples: Knowledge that critiquing essays is a personal strength, whereas writing essays is a personal weakness; Awareness of one's own knowledge level</i></p>

Adapted from: Anderson, Lorin et al., eds. *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives (abridged edition)*. New York: Longman, 2001.

Bloom's Taxonomy (Revised): The Cognitive Process Dimension

Remember	Understand	Apply	Analyze	Evaluate	Create
A. Remember	Retrieve relevant knowledge from long-term memory				
	<p>a. Recognizing; Identifying</p> <p>b. Recalling; Retrieving</p>	<p><i>Examples: Locating knowledge in long-term memory that is consistent with presented material (e.g., Recognize the dates of important events in U.S. history)</i></p> <p><i>Examples: Retrieving relevant knowledge from long-term memory (e.g., Recall the dates of important events in U.S. history)</i></p>			
B. Understand	Construct meaning from messages, including oral, written, and graphic communication				
	a. Interpreting; Clarifying; Paraphrasing; Representing; Translating	<i>Examples: Changing from one form of representation (e.g., numerical) to another (e.g., verbal) (e.g., Paraphrase important speeches and documents)</i>			
	b. Exemplifying; Illustrating; Instantiating	<i>Examples: Finding a specific example or illustration of a concept or principle (e.g., Give examples of various artistic painting styles)</i>			
	c. Classifying; Categorizing; Subsuming	<i>Examples: Determining that something belongs to a category (e.g., Classify observed or described cases of mental disorders)</i>			
	d. Summarizing; Abstracting; Generalizing	<i>Examples: Abstracting a general theme or major point(s) (e.g. Write a short summary of the event portrayed on a videotape)</i>			
	e. Inferring; Concluding; Extrapolating; Interpolating; Predicting	<i>Examples: Drawing a logical conclusion from presented information (e.g., In learning a foreign language, infer grammatical principles from examples)</i>			
	f. Comparing; Contrasting; Mapping; Matching	<i>Examples: Detecting correspondences between two ideas, objects, and the like (e.g., Compare historical events to contemporary situations)</i>			
g. Explaining; Constructing models	<i>Examples: Constructing a cause-and-effect model of a system (e.g., explain the causes of important 18th Century events in France)</i>				

Adapted from: Anderson, Lorin et al., eds. *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives (abridged edition)*. New York: Longman, 2001.

C. Apply	Carry out or use a procedure in a given situation	
	<p>a. Executing; Carrying out</p> <p>b. Implementing; Using</p>	<p><i>Examples: Applying a procedure to a familiar task (e.g., Divide one whole number by another whole number, both with multiple digits)</i></p> <p><i>Examples: Applying a procedure to an unfamiliar task (e.g., Use Newton’s Second Law in situations in which it is appropriate)</i></p>
D. Analyze	Break material into its constituent parts and determine how the parts relate to one another and to an overall structure or purpose	
	<p>a. Differentiating; Discriminating; Distinguishing; Focusing; Selecting.</p> <p>b. Organizing; Finding coherence; Integrating; Outlining; Parsing; Structuring</p> <p>c. Attributing; Deconstructing</p>	<p><i>Examples: Distinguishing relevant from irrelevant parts or important from unimportant parts of presented material (e.g., Distinguish between relevant and irrelevant numbers in a mathematical word problem)</i></p> <p><i>Examples: Determining how elements fit or function within a structure (e.g., Structure evidence in a historical description into evidence for and against a particular historical explanation)</i></p> <p><i>Examples: Determine a point of view, bias, values, or intent underlying presented material (e.g., Determine the point of view of the author of an essay in terms of his or her political perspective)</i></p>
E. Evaluate	Make judgments based on criteria and standards	
	<p>a. Checking; Coordinating; Detecting; Monitoring; Testing</p> <p>b. Critiquing; Judging</p>	<p><i>Examples: Detecting inconsistencies or fallacies within a process or product; determining whether a process or product has internal consistency; detecting the effectiveness of a procedure as it is being implemented (e.g., Determine if a scientist’s conclusions follow from observed data)</i></p> <p><i>Examples: Detecting inconsistencies between a product and external criteria, determining whether a product has external consistency; detecting the appropriateness of a procedure for a given problem (e.g., Judge which of two methods is the best way to solve a given problem)</i></p>

Adapted from: Anderson, Lorin et al., eds. *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom’s Taxonomy of Educational Objectives (abridged edition)*. New York: Longman, 2001.

F. Create	Put elements together to form a coherent or functional whole; reorganize elements into a new pattern or structure	
	a. Generating; Hypothesizing	<i>Examples: Coming up with alternative hypotheses based on criteria (e.g., Generate hypotheses to account for an observed phenomenon)</i>
	b. Planning; Designing	<i>Examples: Devising a procedure for accomplishing some task (e.g., Plan a research paper on a given historical topic)</i>
	c. Producing; Constructing	<i>Examples: Inventing a product (e.g., Build habitats for a specific purpose)</i>

Adapted from: Anderson, Lorin et al., eds. *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives (abridged edition)*. New York: Longman, 2001.

Definition of Learning

As teachers, our goal is to encourage learning in our classrooms. But what is learning, and what principles or factors affect how our students learn? In this section, we provide you with the very basics of what learning is, how and when it occurs, and how to structure your lessons to maximize student learning.

There are three components to the definition of Learning:

1. **“Learning is a process, not a product.”**

Exam scores and term papers are measures of learning, but they are not the process of learning itself.

2. **“Learning is a change in knowledge, beliefs, behaviors or attitudes.”**

This change requires time, particularly when one is dealing with changes to core beliefs, behaviors, and attitudes. Don't interpret a lack of sea change in your students' beliefs or attitudes immediately following a lesson as a lack of learning on their part, but instead, consider that such a change will take time – perhaps a few weeks, perhaps until the end of the term, or even longer.

3. **“Learning is not something done to students, but something that students themselves do.”**

If you have ever carefully planned a lesson, only to find that your students just didn't “get it,” consider that your lesson should be designed not just to impart knowledge but also to lead students through the process of their own learning (Ambrose 2010:3).

Adapted from How Learning Works by Ambrose et al. (2010), an engagingly written, evidence-based text, well-illustrated by practical examples, and a book well worth your time, as a TA and as a student.

Seven Principles of Learning

From Ambrose et al. (2010:4-5).

1. Students' prior knowledge can help or hinder learning.

Your students come into your classroom with a wide array of background knowledge that they have gained from previous formal education, as well as from their day-to-day lives. If students' prior knowledge of the subject matter is accurate and appropriate, it provides a strong basis for new learning. If it is inaccurate, it can impede new learning.

2. How students organize knowledge influences how they learn and apply what they know.

Experts in any given field tend to organize information in ways that are densely connected, whereas novices tend to have disparate, isolated pieces of knowledge on a topic. Learning that results in higher levels of knowledge closer to those of experts encourages connections between different bodies of knowledge, skills, and practices. Memorizing facts in isolation will not result in expert-level knowledge.

3. Students' motivation determines, directs, and sustains what they do to learn.

Students are motivated to learn when they perceive what they are learning to have value and applicability outside the classroom, when they expect that they will be able to successfully achieve the course objectives, and when they feel that they are supported in the classroom environment.

4. To develop mastery, students must acquire component skills, practice integrating them, and know when to apply what they have learned.

It is common for instructors to forget the steps and processes that they went through as they learned skills that they have since mastered, and hence now take for granted. As such, it is important for instructors to take the time to develop awareness of (a) the component skills and steps involved in any one larger task or skill, and (b) when to apply a particular skill.

5. Goal-directed practice coupled with targeted feedback enhances the quality of students' learning.

Students learn through practice, and learn better when their practice is oriented at a specific goal (being able to play a particular piece of music, for example, or to have a particular kind of conversation in a foreign language). Feedback, in order to be useful, must target concrete aspects of their performances.

6. Students' current level of development interacts with the social, emotional, and intellectual climate of the course to impact learning.

The students in our classrooms are still developing, not only intellectually but also emotionally and socially. Research shows that creating a supportive and positive environment positively

impacts their learning, whereas an environment that they perceive as negative can impede their learning.

7. To become self-directed learners, students must learn to monitor and adjust their approaches to learning.

Effective learners are able to assess what they know and develop strategies for learning and incorporating new skills. Most of our students are not able to do this for themselves yet, but look to us for evidence of their learning (i.e., test, lab, and paper scores). We can encourage our students to be more effective learners on their own by encouraging them to reflect on and evaluate their own learning process in our courses.

Course Design

There is a lot to think about and do before your first day of teaching.

Whether you are teaching your own stand-alone class or leading a lab or discussion recitation for a large introductory class, there is a lot to think about and do before your first day of teaching. This chapter guides you through those preparations, including [building your course around teaching and learning principles](#) such as the Alignment Model and Bloom's Taxonomy, [selecting and ordering course materials](#), and [developing your syllabus](#). The list of [things to do before the first day of class](#) and the [course planning timeline](#) will help you keep your course planning on schedule.

Depending on the specifics of your TA assignment, some of this information may not be specifically applicable to you. For example, you may not be responsible for designing the entire course, or you may not have control over the syllabus. However, particularly if you plan a career in college or university teaching, you can see how the information supplied in this chapter has been applied to the course you are currently teaching and use those observations in planning your own courses in the future. Additionally, this section may help you align your lessons, labs, grading, guest lectures, mentoring, and other contributions to the rationale for the course in which you are a teaching assistant.

Build on Teaching and Learning Principles



The Alignment Model

How and what your students learn is largely shaped by the way you design and teach your course. The Alignment Model encourages you to focus on the interplay of the three major course

components as you design a course that keeps students focused on what they are expected to learn.

Learning objectives specify skills that students should demonstrate after the learning experience that they could not demonstrate before the learning experience. **Assessments** should contain no surprises for the students; instead they should enable students to demonstrate the skills first identified in the objectives.

Instructional activities should be targeted toward meeting the objectives, rather than covering a percentage of a chapter or book, and should encourage students to practice skills and receive feedback prior to being tested.

Keep the Alignment Model and Bloom's Taxonomy in mind as you attempt to:

- [Identify the skills your students should demonstrate](#)
- [Determine how students' progress will be evaluated](#)
- [Identify appropriate teaching and learning activities](#)
- [Select and order course materials.](#)

Identify the Skills Your Students Should Demonstrate

What are reasonable expectations for achievable skills based upon students' current state of knowledge?

What skills do you want your students to be able to perform by the end of the course? What are your learning objectives? Answering that question begins with thinking about your discipline and ends with thinking about your students. Ask yourself, "What role will the course I am going to teach play in my students' University education?" At one level, this means thinking about how the course fits into the curriculum. Is it an introductory class? Is it a prerequisite? What skills and knowledge should a student who is majoring in your discipline gain from taking your class? What skills and knowledge should a student who is not majoring in your discipline gain from taking your class? What are reasonable expectations for achievable skills based upon students' current state of knowledge?

Finally, what do your department and profession expect in terms of skills students should be developing? Does your accrediting body define specific competencies that they expect students to achieve following graduation from the program? How does your course and its objectives contribute to the overall program objectives?

Often your course objectives will consist of fairly simple statements related to your expectations for what you want your students to do by the end of the course. In a Spanish class, for example, you might want your students to comprehend the language and cultural skills necessary to spend a week in Mexico City. In a sociology class, you might want your students to analyze how gender has influenced the development of domestic life. In an engineering class, you might want students to apply principles of physics to bridge building. Preferably, these objectives will address various levels of knowledge. See the list of [sample objectives](#) for more information.

A tool for thinking about which skills and abilities to focus on in your course is [Bloom's Taxonomy](#). Bloom's Taxonomy outlines a hierarchy of thinking skills that are observable and measurable. The taxonomy helps instructors to think about the learning process and to develop goals; it also helps them to think about how students' achievements of those goals can be evaluated.

Determine How Students' Progress Will Be Evaluated

Your course objectives will determine how progress is evaluated. In a Spanish course, it would be unfair to ask students to demonstrate knowledge of Castilian Spanish if you have been preparing them for a trip to Mexico City. Similarly, you do not want to evaluate your students' ability to compose a letter in Spanish if your class has focused exclusively on spoken Spanish. These are obvious examples; nevertheless, not taking into consideration how evaluation corresponds to course objectives is a common mistake for first-time instructors. All too often we ask our students to compare, contrast, analyze, or explain on tests or in papers without first making it explicit that these are the skills in which they will be evaluated, then modeling these skills in our lectures or encouraging them in discussions and other activities. Students need to practice using the course material and think about the course content before being asked to demonstrate skills on an exam or other assignment. For more detailed guidance on evaluation, see [Evaluating Students](#) and CIDDE's [KnowledgeBase](#).

Identify Appropriate Teaching and Learning Activities

Once you have established your broad course objectives and considered how you will evaluate progress, you need to think about the learning activities you will employ to enable students to achieve those objectives. The learning activities you use in teaching should provide students with an opportunity to develop the skills they need to demonstrate their mastery of the material. In addition to alignment with students' knowledge and skills, your teaching and learning activities should also demonstrate alignment in terms of course content, course structure, and instructional approaches (lecture, discussion, demonstration, etc.) and should focus on:

- [Students' Current Skills and Abilities](#)
- [Course Content](#)
- [Course Structure](#)
- [Instructional Approaches](#)

Students' Current Skills and Abilities

Students' prior knowledge, skills, and abilities will play a large role in your selection of activities. The students in your classes may come from a variety of majors, and their academic experiences may vary greatly; to teach your students and to meet your objectives, you need to assess your students. What skills and abilities do they have? What skills will need to be developed so that they will be able to comprehend, apply, and evaluate the material you will present?

In an introductory Spanish class, for example, it is probably reasonable to expect that most of your students have had very little experience with Spanish language or culture (although some of the students may have studied a different language in the past). If your class objective is to prepare your students to spend a week in Mexico City, you will have to teach them basic grammar, help them to develop a traveler's vocabulary, and ensure the accuracy of their pronunciation. You will also need to introduce them to the culture and customs of Mexico and Central America so they can use their language skills effectively and appropriately, as well as discern the subtleties of the language as it is spoken in everyday life.

Talking to experienced faculty members in your department is a good way to get a sense of what to expect from your students. Once you are aware of what your students already know, it becomes clearer what you will need to teach them.

Course Content

Less is More. Fast is Slow.

What material needs to be introduced in order for students to meet the course objectives? What knowledge is required for the students to gain mastery of the subject you are teaching? How will the students use the information you are giving them? Decisions about the content to be covered are discipline specific. Ask your colleagues for copies of their syllabi and course notes (or look for pertinent syllabi on the Web). Also consider the role of your course in both your department's and the University's curriculum. Some departments have specific guidelines (especially for introductory classes) that must be followed. Even if you are not bound by such regulations, you should think carefully about the material that traditionally has been covered and make informed decisions about what students need to learn.

With respect to content, two general rules apply: “Less is More” and “Fast is Slow.” The more content you try to cram into a course and the faster you attempt to cover it, the less students will be able to engage the material at higher levels of learning. As Howard Gardner has noted, “Coverage is the enemy of understanding.” Ask yourself whether it is better for students to have insufficient knowledge of all the material covered in a given course or sufficient knowledge of half of that material. Rather than a predetermined amount of content, let your course objectives--what you want the students to be able to do upon completing the course--determine what you cover. Even in courses with coverage requirements (e.g., introductory courses forming a part of your departmental curriculum), make every attempt, whenever possible, to let your course objectives inform your course content. The same should be true for individual class meetings.

Course Structure

The structure of your course integrates the learning skills and course content that you want to teach. Presenting material in a logical and organized form makes it easier for your students to synthesize it and to recognize the interconnectedness of the content you are presenting. Recognizing such connections is one of the higher skill levels in Bloom’s Taxonomy.

A strong organizational structure will also help you as you consider what material is appropriate for your class and how best to communicate your material to your students. Types of organizational structures include the following:

- **Chronological:** Organizes a sequence of events in time; for example, a history course that moves in temporal order (United States History to 1877)
- **Topical:** Deals with a limited number of topics and sub-topics (Civil War, World War II, Vietnam)
- **Conceptual:** Focuses on the concepts of a discipline (Historiography, Constructivism, Postmodernism)
- **Survey:** Provides extensive coverage of a topic, touching upon a wide range of content (World History)
- **Process:** Emphasizes skills and methods of a discipline (Archival Methods)
- **Regional:** Organizes subjects by geographical region (Africa, South America, Europe)

Every class must have some structure. The structure you choose helps you organize and select material and makes it easier for your students to learn. In addition to a dominant structure that organizes the class as a whole, you may also want to use a variety of substructures to meet certain course objectives. A literature class, for example, might follow a generally chronological organization introducing Chaucer before Chekhov, and Wharton before Walker. The lectures might reflect this structure. Concurrently, however, weekly class discussions may be

conceptually sub-structured, focusing on how literature has addressed social class, cultural conflict, race, and alienation.

Instructional Approaches

Once you've identified your learning objectives and evaluation tools, you are ready to consider instructional approaches that will capture students' interest and help them to meet course objectives. Different instructional approaches include lectures, discussions, labs, foreign language labs, and problem-based recitations. Here is a useful table for aligning instructional approaches with your objectives. Bear in mind, however, that you will usually find yourself employing a combination of approaches.

Instructional Approach	Recommended for...
Lectures	Communicating theories, ideas, and facts to your students; supplementing readings; clarifying student misunderstandings.
Discussions	Encouraging practice and application of course materials; soliciting feedback.
Labs	Linking the theories explored in class with the actual practice of the discipline. Clarifying vague or confusing concepts.
Foreign Language Labs	Encouraging students to feel comfortable using the language publicly without fear of making mistakes.
Problem-Based Recitations	Fostering understanding of the larger theories, rules, or assumptions within a discipline by finding non-obvious solutions to problems.

Sample Learning Objectives

Below you will find a number of sample discipline-specific statements of objectives for student learning. They represent a range of levels of knowledge (as classified in [Bloom's Taxonomy](#)). It is helpful to remember, too, that not all of your objectives need to be discipline-specific. You could, for example, expect that your students would learn how to write a coherent, evidence-based essay. You could ask them to apply their knowledge from the course to a real-world situation. Or you could ask them to use sound debating skills.

Typically, a statement of learning objectives might begin with a phrase like, “Upon completing this course, students will be able to...”

Anthropology

- ... recognize the variability in human behavior across cultures. (Remember)
- ... discuss sociocultural factors that influence human behavior. (Understand)
- ... compare and contrast differences in human sexuality across cultures. (Analyze)

Biology

- ...recognize that genetic data is contained in molecules of DNA. (Remember)
- ...apply their knowledge of the processes and tools of scientific inquiry to investigate problems in biology. (Apply)
- ...classify organisms into groups based on similarities and differences. (Analyze)
- ...evaluate various incarnations of evolutionary theory (Evaluate)

Chemistry

- ...recall a chemical formula. (Remember)
- ...predict the reaction of two elements. (Analyze)
- ...produce a new chemical compound. (Create)

Economics

- ...relate Marx's theory of “alienation.” (Understand)
- ...compare microeconomic and macroeconomic approaches to particular cases. (Analyze)
- ...assess the efficacy of nation-states' domestic economic policies. (Evaluate)

History

- ...recite important historical dates. (Remember)
- ...interpret an historical event in light of its sociopolitical context. (Understand)
- ...evaluate different historiographical schools. (Evaluate)

History of Art and Architecture

- ...label major historical artistic works. (Remember)
- ...classify a painting by artistic style. (Understand)
- ...critique the composition of a painting. (Evaluate)

Information Sciences

- ...recognize key events, names, and dates in the history of photography. (Remember)
- ...break down the processes of acquisition of photographs. (Analyze)
- ...critique various methods of photographic preservation. (Evaluate)

Language

- ...recite 100 important vocabulary words. (Remember)
- ...recall the major declension groups of verbs. (Remember)
- ...use knowledge of Spanish to make basic requests. (Apply)
- ...compose an essay in German. (Create)

Linguistics

- ...identify the major phonemes in several different languages. (Remember)
- ...explain the way in which social context affects syntax in a given language. (Understand)
- ...analyze the way in which the development of literate languages differs from non-literate languages. (Analyze)

Physics

- ...describe the various states of matter. (Understand)
- ...analyze a graph of position vs. time for information about velocity and acceleration. (Analyze)
- ...relate quantum energy transitions to absorbed or emitted radiation. (Apply)

Political Science

- ...recite major issues and challenges facing countries in the transition to democracy. (Remember)
- ...describe major methods of comparative politics. (understand)
- ...apply political theory to analysis of contemporary case studies. (apply, analyze)

Religious Studies

...articulate the connection(s) between doctrine and practice, related to patterns of Buddhist identification. (Understand)

...apply methodologies, themes, and terminology from within the academic study of religion, and more specifically, from within the study of the history of religion, to analyze Christian religious phenomena as a scholarly “outsider” (whether or not one is also an “insider” to a particular religious tradition). (Apply)

...analyze the historical relationships and interactions between various forms of Islam. (Analyze)

Social Work

...recall implications of policy in practice. (remember)

...interpret historical development of social welfare policies. (understand)

...formulate policy alternatives addressing deficiencies in delivery of services. (create)

Sociology

...describe the evolution of sociological theory beginning with August Comte. (Understand)

...analyze the racial preconceptions underlying the Chicago School. (Analyze)

...evaluate the applicability of various theories of social movements. (Apply, Evaluate)

Theatre Arts

...recite a soliloquy. (Remember)

...perform a comedic scene using principles of physical comedy. (Apply)

...write a screenplay. (Create)

Select and Order Course Materials

Readings and other course materials enrich a class by providing in-depth information that could not be presented in class, as well as offering an alternative to the instructor's viewpoint. Moreover, these materials often form the basis for practice assignments that give students hands-on experience with the course content.

The wide variety of resources available in print and online resources mean that you and your students are no longer restricted to a single, expensive textbook that is only partially relevant to your course. Instead, if you plan carefully, you will find readings, video clips, practice exercises, and more that align almost perfectly with your course objectives. With so many course material choices, don't be tempted to go overboard with assignments. Keep your reading expectations aligned with your course objectives and be realistic in terms of time management and workload. Assigning an unrealistic amount of work is seldom productive; often students just stop doing the assignments.

Many [online and library materials](#) are available free. Other materials such as [course packets](#) customized by the instructor and prepared by the University Book Center are available for a nominal fee. If you plan to use selections from books or articles, consult with library staff about what is considered acceptable use—they will help you set up secure electronic course reserves for these materials. Finally both required and optional [textbooks](#) can be ordered through the Book Center. To ensure that your course materials are available in time for the start of classes, follow the specified [ordering procedures and timetable](#).

Online and Library Materials

You may need to refer students who are unfamiliar with accessing such materials to a librarian or provide this procedural information in the syllabus or on CourseWeb.

Many course materials are available to students free of charge, such as electronic items accessible via the Internet, the University Library System's PittCat+, or your CourseWeb site. The University Library System will place course materials on reserve, either as physical texts (i.e., copies of textbooks, and photocopies of assigned articles and chapters) or online through the E-Reserve system, which students can access through PittCat+. Students will appreciate the convenience of texts placed in E-Reserve, particularly if they live off campus, but note that because of copyright law, materials cannot be placed on reserve both in the library and on E-Reserve. Films and other media assigned for the course can also be kept on reserve in the library.

When assigning material located on the Internet, keep the following rules in mind:

- Unless you have uploaded the documents, be aware that Web addresses change, so any links you provide should be routinely checked.
- You should also know that Internet materials are governed by copyright restrictions, as described in the University Library System's [FAQ on Copyright](#) and the University's [Policy on Copying Copyrighted Materials](#).
- One final warning: although each year the number of scholarly sites on the Internet increases, not all of the material available on the Web is accurate or scholarly. You should carefully consider the content and source before assigning online materials.

When assigning readings in journals or e-books which are available digitally to all Pitt users through the library and which do not need to be reserved for a course, you may need to refer students who are unfamiliar with accessing such materials to a librarian or provide this procedural information in the syllabus or on CourseWeb. In the case of a journal, for example, students must know how to search for a journal title in PittCat, and then navigate the journal's online site to locate the proper issue and pages. Frequently, off-campus students initially have problems accessing these materials. While students logged on to Pitt's server automatically have access to these materials, off-campus students must first log into the Library's [Secure Remote Access](#) before attempting to access the material.

Course Reading Packets

Course reading packets are anthologies of selected readings tailored to your course needs. The University Book Center produces reading packets and specialized texts for instructors. These are often more economical than textbooks, since unwanted material is not included.

You must provide detailed citations (including publishing information) and copies of the material to be reproduced. The Book Center arranges copyright permission for articles and chapters in books, and then provides a bound copy of the readings for students. If you put something in your course packet, make sure you use it: your students will take note!

Textbooks

Textbooks and other course readings can be ordered through [The University Store](#). Because students' budgets are limited, please keep the following questions in mind as you select them:

- What is the cost of the books? Will students be able to purchase them?
- Which are *required* texts that students must purchase in order to do the course work, and which are *optional*; e.g., useful to students pursuing more in-depth work or needing a primer before taking the course so that the decision to purchase them is left to the student.
- Can you place books on reserve at the library for some students to use (for a few hours at a time) without cost?

In terms of your own budget, note that publishing companies often make instructor copies of books available to teachers free of charge. Ask your department about ordering instructor copies directly from the publisher.

Procedures for Preparing Ordering, and Distributing Course Materials

As the following table shows, the University of Pittsburgh offers a number of services that assist instructors in preparing and distributing course materials.

Item	Procedure	Order Deadline
Reading Packets	Create a CoursePack via the University Book Center's Online Form You must provide detailed citations (including publishing information) and copies of the material to be reproduced.	3 months prior to the start of the term
Textbooks	Submit orders via forms available in most departments, at the University Book Center, or online .	2 months prior to the start of the term
Reserved Library Material	Follow the University Library Systems procedure for reserving materials All forms of reserve must adhere to copyright law .	1 month prior to the start of the term
Digital Books and Periodicals in the Library	Include a description of the procedure for accessing digital materials in your syllabus.	N/A

Detailed information about [CourseWeb](#) and instruction for its use can be found on CIDDE's Instructional Technology website.

Instructors seeking [hands-on instruction](#) in how to use CourseWeb can sign up for CIDDE's workshops on the software and its various features.

Develop Your Syllabus

You are ready to draft a syllabus once you have:

- Established your course objectives.
- Considered the skills students will need to meet those objectives (that will be your “classes”).
- Decided on the best way to evaluate your students’ mastery of the course objectives.
- Determined what material needs to be presented for your students to meet the class and course objectives.
- Decided the teaching strategies that will help your students learn and practice the skills.

At the most basic level, drafting a syllabus requires that you check the academic calendar to determine when your class will meet, and the most logical way to divide the material. At a more sophisticated level, this requires that you establish a plan for developing your students’ thinking skills systematically while introducing new course material, so that ultimately the students will have achieved the course objectives.

Your first draft can be as formal or informal as you like, but your first draft of a syllabus should:

1. Divide the material to be taught into class topics. The topics, and the skills that fall within those topics, provide the foundation needed for your students to meet the course objectives. Divide the class material based on the structure you have chosen (chronological, topical, etc.) integrated with the academic calendar.
Consider: What is the best way to use a natural break? Should it serve as a review session for an exam, or as a transition between one topic and the next?
2. Clearly state the course objectives
Consider: Are the objectives measurable and aligned with your evaluations?
3. Describe your means of evaluating students
Consider: Are there multiple opportunities for students to demonstrate success in meeting these objectives?

Are assignments, homework or tests planned to coincide with recently acquired skills or skills that build upon previous knowledge? (A lecture on political theory may be followed by a short paper assignment drawing on relevance to current politics). Will the students receive prompt, targeted feedback and have a timely opportunity (or opportunities) for more practice?

Syllabus Checklist

Basic Information: Instructor and Course

- Course title, number, section
- Date (semester and year)
- Course meeting days and times, room and building
- Instructor's name and title
- Instructor's office location & office hours
- Instructor's telephone number, e-mail address, web page
- Course web page
- Space for names and e-mail or phone numbers of two classmates

Course Goals and Objectives

- Course goals
- Learning objectives
- Prerequisites for the course
- Description of the course

Instructional Activities and Materials

- Methods of instruction
- Textbooks, readings and brief description of these
- Where texts are available (campus bookstore? Copycat? library reserve? online?)
- Other required purchases (lab supplies, computer diskettes)
- Calendar of class dates, topics, readings, assignment due dates, exams dates

Assessment of Learning

- Grade breakdown for the final grade
- Brief description of each major requirement
- Due dates for assignments and projects
- Grading standards and criteria
- Quiz and exam descriptions and dates
- Place, date, and time of final exam
- Expectations for in-class participation and group work

Course Policies

- Policy regarding [academic integrity/dishonesty/plagiarism](#)
- Policy regarding attendance
- Policy regarding late assignments & make-up exams
- [Notice to students with disabilities](#) of their right to inform the instructor immediately
- Policy regarding classroom recording

Required Statements

These three statements are required by the University in every syllabus. You may simply copy and paste them.

Academic Integrity

All students are expected to adhere to the standards of academic honesty. Any student engaged in cheating, plagiarism, or other acts of academic dishonesty would be subject to disciplinary action. Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the [University Guidelines on Academic Integrity](#). This may include, but is not limited to the confiscation of the examination of any individual suspected of violating the University Policy.

Disability Services

If you have a disability, contact both your instructor and the Office of Disability Resources and Services (DRS), 216 William Pitt Union, 412-648-7890/412-383-7355 (TTY) as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

Statement on Classroom Recording

To address the issue of students recording a lecture or class session, the University's Senate Educational Policy Committee issued the recommended statement on May 4, 2010. While it is optional, the Committee recommends that faculty consider adding the statement to all course syllabi. "To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use."

Syllabus Components

Your syllabus should include:

- [Course Rationale](#)
- [Course Description](#)
- [Course Requirements](#)
- [Policies and Evaluation](#)
- [Course Schedule](#)
- [Course Materials](#)

Course Rationale

The course rationale is a brief statement that explains the purpose of the course and how its place in either the University's or your department's curriculum.

Course Description

This is your opportunity to share your passion for the discipline you are teaching and the course objectives you have set. In the course description you should express your how your course will be relevant for your students. The tone you establish in your course description will set the tone for the course. The course description should familiarize students with the following:

- **Objectives.** These are objectives for student learning, indicating what skills you want your students to be able to perform upon completing the course. (See: [Identify the Skills Your Students Should Demonstrate](#)) Objectives are so important that you may wish to consider distinguishing them from the rest of the course description (for example, at the end) under the heading "Objectives."
- **Content.** Describe the topics that will be covered and the themes that will be stressed.
- **Structure.** Outline the structure of the course and explain how lectures, discussions, or group work will be integrated into the course.
- **Relevance.** When students are unfamiliar with a topic or material, they may have a difficult time judging whether they are interested in learning about the topic and in deciding whether to add or drop the course. You might demonstrate relevancy in the description by posing question that the course will address:
 - "Have you ever wondered how we maintain water pressure in homes on top of a hill?"
 - "How do archeologists know that an urn is 2500 years old?"
 - "How much of a role has media played in the development of your political orientation?"

Course Requirements

Your course requirements are the evaluations that students complete for grades. They can include quizzes, tests, projects, papers, presentations, participation or anything else that might be graded. Course requirements are NOT your class policies such as “one person talks at a time,” or “attack the argument and not the person.”

Policies and Evaluation

Clearly stating course policies and requirements avoids confusion, false starts, and complaints. Inform your students how grades will be determined. Remember, try to be as fair, objective, and transparent as possible and be sure that any policies you establish are consistent with those of the University and your school or department. You may have greater success convincing students of the importance of these policies if you indicate why they are so important to you and to the class. Course policies also provide an opportunity to establish the tone of the course; for example, firm but respectful, fair, and supportive.

Consider including the following material:

- **Attendance/Tardiness.** If you hate it when students show up late or miss class, let them know your policy and what penalty will be assessed. It can also help to tell them why attendance is so important.
- **Participation.** If your class includes discussions or in-class group work, describe why participation is important and how it is graded.
- **Reading.** What books have been assigned? How will reading assignments be integrated into the class? Will they be tested on the material?
- **Written Assignments.** If students are assigned papers, lab reports, or other written assignments, they will appreciate specific guidelines including the number of pages, font size, and spacing. Lab reports and specialized assignments (such as diaries) may require even more detail. Explain to your students the goal of the writing assignment and how it will be evaluated.
- **Exams.** Let students know what the exams will look like (essays, multiple choice, and short answers), what type of material will be covered, and whether they will be cumulative or not.
- **Other Policies.** Each of the assignments should include the due date and the percentage of the grade allotted to it. You should also include special instructions concerning missed exams, late papers, and academic dishonesty.

Course Schedule

The course schedule offers a calendar of events, which may include the titles (and abstracts) of lectures, special events (films, field trips), assigned readings, homework, and exams. Typically it provides a road map for students around which they may plan their work.

Be aware, that adjusting a syllabus after the start of the semester can create confusion. Therefore, do so only if it is absolutely necessary. Give your students plenty of advance notice (preferably in-class and via CourseWeb/e-mail), and clearly explain any changes.

Things to Do Before the First Day of Class

Now that you've designed your class and created your syllabus, have your class up and running on CourseWeb, and made course materials available to students, make sure that you have taken care of these other basic preparations:

- **Check Out the Classroom.** When the classroom is empty, spend a few minutes “practicing.” Get a sense of how loudly you will have to speak, where the chalkboards are, and what media equipment is available. If you are teaching a lab, check out the storeroom so that you know where supplies are stored and become acquainted with the lab’s safety procedures and equipment.
- **Meet with the Instructor.** If you are a teaching assistant, meet with the course instructor. Ask about the objectives for the course, the grading policy, and what your responsibilities will be. Ask for a copy of the syllabus and any other available course materials. If any parts of the syllabus are unclear, be sure to ask about them.
- **Familiarize Yourself with the Course Syllabus.** Whether teaching a recitation, a lab, or your own class, the first day is often dedicated to explaining the course goals and assignments. Anticipate questions and rehearse your answers. Are the books available in the library or the bookstore? Who does the grading? Are extensions granted for course assignments? How long is the second essay? Be prepared to explain and supplement the syllabus.
- **Gather Together Your Materials.** Assemble any notes, copies of the syllabus, and samples of the textbooks the students will have to buy. Get a package of index cards (some departments provide them for free) which you can use to have students record information about themselves.
- **Observe a Class.** If possible, observe an experienced teaching assistant or graduate instructor teach a class. Observation can be helpful regardless of your experience level, but is especially important if you have no prior teaching experience.
- **Set Your Office Hours.** Many teaching assistants at the University of Pittsburgh are expected to hold office hours for at least two hours a week. Choose times that are convenient for both you and your students. Holding office hours on two different days and at different times will make it easier for students to meet with you.

Course Planning Timeline

As you design your class and create your syllabus, get your class up and running on CourseWeb, and make course materials available to students, keep the following timeline in mind:

Time Period (relative to start of classes)	Tasks
Six Months Prior	Define course goals. Determine course content. Think about appropriate teaching methods. Begin reviewing possible texts. Begin discussing course goals, teaching philosophies, course content, teaching methods, and course policies, as well as specific responsibilities with the instructor.
Three Months Prior	Begin to develop course schedule and syllabus. Develop teaching methods and tools. Determine how you will evaluate student learning: plan assignments and exams. Order text(s) and other materials, including films, videos, or software. If planning to use instructional technology or multimedia equipment, reserve a classroom that has all the necessary components. Contact guest speakers. Arrange field trips and other activities.
One Month Prior	Define course policies. Refine the course syllabus. Begin to compose lesson plans or lecture notes. Seek training on how to use instructional technology and multimedia systems; have any necessary additional software installed. Call bookstore to make sure books have arrived.
During and After	Take a few, brief notes after every class session; these notes will remind you of what went well and what you would like to change after the course has concluded. Review student evaluations. Refine the course design, responding to student evaluations and reflecting on your own evaluation of the course.

In addition to this timetable (adapted from the [Teaching Center](#) of the University of Washington at St. Louis), see the more detailed list of [Things to Do Before the First Day of Class](#).

Course Delivery

As you teach your courses, look for opportunities to apply learning principles and to encourage active learning. The following sections provide you with some suggestions for how to do this through multiple forms of course delivery.

Apply Teaching and Learning Principles

Students' prior knowledge can help or hinder learning.

Do an introductory exercise to remind students of their prior knowledge and to assess its quality and quantity.

This exercise will reorient students to your course content and encourage them to link content from class to class. Example exercises are: no- or low-stakes quizzes based on lectures or readings; opinion polls; brief discussions of real-world examples drawn from the news that relate to the course topics; or concept maps related to the days' topic.

In addition to jogging the students' memories and activating their previous knowledge, such exercises provide an opportunity for you and your students to ask: "What do we already know, or think that we know, about today's topic? Does this prior knowledge help or hinder the learning we hope will take place in class today?"

How students organize knowledge influences how they learn and apply what they know.

Tell your students what the learning objectives for the class session are.

Telling your students what your objectives for the day are motivates them by letting them know what is expected of them. Objectives can be general, i.e., "At the end of today's class, you will be able to discuss the current evidence for the roles of nature and nurture in gender roles," or specific, i.e., "At the end of today's class, you will be able perform a Chi-Square Test." However, they should be goal or action oriented. Objectives for the day should not be a schedule of events, i.e., "Today we will discuss the roles of nature and nurture in gender roles," or "Today we will do a Chi-Square Test," but, rather, should focus on what it is that the student himself or herself will be able to do at the end of the class.

Students' motivation determines, directs, and sustains what they do to learn.

Tell your students how this lesson relates to the previous lesson, give them a hint as to how it will relate to the next lesson, and relate the lesson and course material to real-world applications.

Linking the day's lesson to other lessons helps to build connections between what might otherwise seem like disparate course information, thus building the sort of dense, expert-level knowledge that is our goal. It also orients the students in the course, and helps them understand the purpose of the lesson at hand. Finally, giving real-world examples motivates students by letting them know how they can apply the knowledge they are gaining in your classroom—use news clippings related to your topic, and explain how new knowledge and skills can be used in the workplace or in navigating ones' personal life.

To develop mastery, students must acquire component skills, practice integrating them, and know when to apply what they have learned.

Intersperse periods of lecture with periods of practice.

If you are lecturing, be sure to provide a “break” in the lecture at least every 15 minutes, which is the average amount of time that students can focus on a lecturer before they either reach a point of information saturation or allow their attention to wander. Breaks in lecture are ideal times for students to practice what you are teaching them in the lecture. Practice might include actually performing a procedure, or a component part of a procedure; a short writing or concept-mapping exercise; or a period of question-and-answer or discussion to test student comprehension.

Goal-directed practice coupled with targeted feedback enhances the quality of students' learning.

Scaffold your students' learning in each lesson.

Scaffolding refers to the temporary structure that supports people and materials as a larger, more permanent structure is built. Instructional scaffolding refers to techniques that support students and allow them to practice as they learn before they perform a procedure or display a skill on their own. Consider the larger goals and forms of evaluation in your class and include opportunities to practice accordingly. If your evaluation will largely be in the form of multiple-choice exams, include sample questions in your lessons. If your students will be expected to write a term paper in which they advance their own argument, include short writing exercises in your lessons in which they are asked to write an introductory or concluding paragraph or to outline an argument that you have made in class.

Students' current level of development interacts with the social, emotional, and intellectual climate of the course to impact learning.

At the end of the lesson, help the students to evaluate whether or not the lesson's learning objectives have been met.

This evaluation can take the form of a short practice quiz, asking students to perform a new skill, having students draw a concept map (and compare it to their earlier map of the same concept, if

you used mapping as a warm-up exercise), or simply asking students whether or not they feel the objectives have been achieved. Such exercises cause students to consider whether or not they have learned (or, at least, started the process of learning) in today's class.

To become self-directed learners, students must learn to monitor and adjust their approaches to learning.

Provide the students with a chance to give you feedback.

Consider a short Classroom Assessment Technique (CAT) at the end of your class. Generally, a CAT is a short exercise that asks students to either synthesize information from the lesson or provide feedback on the clarity of the lesson. Examples include: the “minute paper,” in which students are asked to write down the most important point of the day's lesson, as well as the point on which they are least clear; the “one sentence summary,” in which students are asked to summarize the lesson in one sentence; or short no- or low-stakes quizzes. CATs require students to think about the content of the lesson and also let them know that you as an instructor are concerned with their progress and the success of your lessons. Collecting and reading them allows you to understand how successful your lesson was and to identify problems and misapprehensions before exam time.

(Ambrose 2010).

Encourage Active Learning

“The lecture is as effective as other methods for transmitting information. Most lectures are not as effective as discussion for promoting thought.”

—Donald A. Bligh, *What's the Use of Lectures?*

In addition to your learning objectives, your choice of teaching methods will be influenced by factors such as your discipline, students' prior knowledge, class size, and nature of the subject matter. Lectures are particularly suited to large introductory classes and are also a good choice even in smaller classes when you need to build a bridge between students' existing knowledge and new content. Discussions, on the other hand, encourage students to develop reasoning and communication skills by actively grappling with concepts and information. If you are teaching a foreign language, drill and practice in the language lab will help students master skills and gain confidence. In the sciences, laboratory sections and problem sets provide hands-on experience linking the theories explored in class with the actual practice of the discipline.

With any teaching method, you will want to find ways to engage students in activities that encourage them to think about what they are doing; assess their own degree of understanding and

skill at handling concepts or problems; and transition from passive recipients of information to participants actively engaged with new information in a learning environment. In the following sections, you will find tips for fostering this type of active learning.

- [Conventional lectures](#)
- [Activities in Which Students Work Individually](#)
- [Group Work](#)
- [Activities Which Promote General Class Discussion](#)
- [Activities to End a Class](#)

Conventional Lectures

Lectures allow for content control and efficiency of delivery. Traditional straightforward lecturing, however, without any student interaction, can actually inhibit students' mastery of that same material, and thereby negate the advantages of control over content and time. It is true that implementing active learning strategies during a lecture means relinquishing some control over the material and providing more time to cover a particular content area. With practice however, it is possible to synthesize straight lecturing and active learning strategies together while balancing content and time considerations with the most effective learning activities.

- Post questions and handouts relevant to the lecture material in advance to “prep” your students.
- Consider posting skeletal, minimal-text PowerPoint presentations via CourseWeb to help students organize lecture information.
- Begin class by having students brainstorm problems that remained unresolved from the previous lecture or raise questions from the previous class or their reading assignment. You can address these issues while introducing the day's topic. This is particularly useful if students know in advance that you'll be asking for their participation at the beginning of the class.
- Ask yourself which elements of the lecture you can ask your *students* to produce, either from their own knowledge or through guided inquiry, rather than simply tell them.
- Pause for a few minutes several times during an hour to allow students to consolidate notes and develop questions about the material being presented. Use clickers to assess students' understanding of the material.
- Pause and ask students to work in pairs to organize their notes and discuss key points of the lecture.
- During a pause, individuals or pairs can also develop questions based on points they feel are unclear. Ask students to write questions on 3x5 cards and hand them in. Address these questions in the final minutes of the class or use them as the starting point for the next lecture.
- Ask students to close their notebooks a few minutes before the end of class and to reconstruct on a blank sheet of paper as much of the lecture as possible—either in outline form or diagrammatically. This exercise in immediate recall forces students to review and consolidate key points and helps them discover areas for review.

Activities in Which Students Work Individually

- **Individual Exercises:** Labeling, rank ordering, multiple choice, problem solving, true/false and completion exercises provide an opportunity for the students to practice skills. Exercises must be completed in a set time period. The instructor either gives or discusses the correct answers.
- **Role Play:** Students are assigned the role of a character to play in a given situation. Without practice, they act out the events in the situation. Role Play may be used for situation analysis or to provide feedback to the students about their own behavior.
- **Questioning Strategies:** Questions which will be asked of the students are planned by the instructor prior to the class. Each question is written out and is related to a learning objective. In case of no response or incorrect responses, the instructor will also be prepared to ask easier or lower learning level questions which will lead the student to answer the original question.
- **Personal Vignette:** Given a topic or learning objective, the students are asked to relate it to their real experiences (personal or professional) by telling a brief story about it.
- **Progress Quizzes:** Short self-tests which are not graded. Answers are provided to the students.

Group Work

These are activities which involve students working in pairs or in small groups of three. A spokesperson from the group reports to the class at the end of the activity. For all group work, make sure to specify procedures fully and clearly—and check for student understanding—before commencing the activity.

- **Buzz Sessions or Brainstorm Sessions:** A small group of students work within a determined time limit to answer a question to solve a problem and come to some conclusion.
- **Rank/Report:** Given a series of current items/issues, students rank the importance of items or issues and report the results with a justification.
- **Problems:** The group work on given problems within a specified time. The instructor discusses the correct answers at the end of the activity.

- **Complete Case Studies:** These are real world descriptions of problems with all accompanying data. Groups are asked to resolve the problem within a given period of time. Each group makes recommendations while the instructor acts as moderator.
- **Incomplete Case Studies:** Students work together to construct all or part of a hypothetical case which exhibits specified conditions.
- **Diagnostic Sessions:** Groups diagnose a problem, situation, process, etc.
- **Pyramiding (Snowball Groups):** This technique was originally developed at the Open University. Given a problem, students first work alone, then in pairs and finally in foursomes (maximum) during which time they compare, refine and revise their conclusions and recommendations.

Activities Which Promote General Class Discussion

- **Controlled Discussion:** This is used after a lecture. Students ask questions and make comments. Instructor facilitates the process which goes on for a prescribed period of time.
- **Choices:** Given data on an event and several choices, students are asked to discuss all choices. They may select a choice, justify it, and give the consequences.
- **Debate:** This is an organized and civil argument moderated by the instructor.
- **Discussion of Handouts:** These are special documents, reports, pictures, etc. that are discussed.
- **Modeling:** Students are shown an ideal product, situation or person. Through questioning and discussion, they are able to explain why this is a “model” of what it is.
- **Simulation:** This presents cases, problems, scenarios, etc. in which the students must role play. A critical situation is discussed and analyzed and decisions are made about how to resolve the situation.
- **Read and Discuss:** This is a short reading followed by a discussion.

Activities to End a Class

- **Active Review:** After the instructor summarizes the class, students spend two to three minutes quietly thinking or reading through their notes and identifying any points of confusion. They clarify any points of confusion by asking questions of one another and the instructor.
- **The Silent Question:** The instructor asks students to respond to the following question: “A question I still have about this topic but have been afraid to ask is...” Students write their questions on a sheet of paper. Instructor addresses questions then if time permits, or at the next class.
- **Minute papers:** These are short writing assignments which can be completed in brief duration of time (e.g., one minute). They might address questions such as “What was the most important thing you learned today?” or “What was the muddiest point from today’s class?”

Evaluating Students

A low exam score, or a poorly-written paper, is not necessarily proof that a student has not learned.

To assign grades to your students, you will have to evaluate them in some way. The following essays by Dr. Carol E. Baker guide you through the most common methods of evaluation: [Tests](#), [Lab Reports and Problem Sets](#), and [Essays and Term Papers](#). As a TA, you will almost certainly be responsible for grading, and in many cases you will be at least partially responsible for designing exams and other methods of evaluation for your students. Although exactly what you will need to do will vary depending on the type of evaluation, and on the class you are teaching, please bear in mind these general principles of evaluation:

- **The evaluations that your students produce – term papers, essays, reports, exam scores, etc. – are all evidence of learning, but they are not the process of learning itself.** A low exam score, or a poorly-written paper, is not necessarily proof that a student has not learned; it is possible that they are just not able to communicate that learning. As such, you should design your evaluations of students with the following questions in mind: If my students have learned X, will they be able to communicate X using method Y? For example, if your students have spent much of their time in class involved in group discussion of texts, is a multiple-choice exam the best way of evaluating what they have learned? There should be alignment between in-class teaching methods and evaluation methods.
- **Scaffold the skills needed to complete the evaluation.** Your students should have ample chance to practice the skills needed for their evaluation. In a lab setting, for example, you should be sure that they have been taught all of the component parts of a procedure before being graded on the results of that procedure itself. When assigning term papers, require shorter written arguments or evaluations of sources to be turned in as practice before expecting them to write a term paper.
- **Use a rubric.** Students are more motivated when they know exactly how they are being evaluated. If half of a student's score on a paper will result from correct use of grammar and other mechanics of language, it is only fair that they know this ahead of time.
- **Provide multiple opportunities for evaluation in order to assess student learning.** You will not know how much your students have learned, overall, if you assess them based on only one or two exams. Provide students with as many evaluation opportunities, of as many different types, as is feasible.

For additional information of evaluation of students, search for [Assessment](#) in the CIDDE Teaching Support Knowledge Base.

Test Construction and Scoring

Dr. Carol E. Baker, Former Director of the Office of Measurement and Evaluation of Teaching

As Nitko (1996) and others emphasize, the following three principles are important to follow when constructing classroom assessments:

- Focus on your teaching and learning objectives.
- Develop your assessments so that they elicit from your students only the knowledge and performance that are relevant to your teaching and learning objectives.
- Write items that do not inhibit or prevent the student's ability to demonstrate attainment of your learning objectives.

When you construct an assessment, you should ask yourself whether each item measures something that you really think is important for students to know. Even if a test is difficult, students will consider it fair if it covers the learning objectives and content you have stressed. If students have mastered the learning objectives, they should be able to perform well on your tests. Likewise, if students are having difficulty with the learning objectives, these deficiencies should be reflected in their test scores. If items are ambiguously or poorly worded, if directions are not clear, if examples use material that is not familiar to all students, then some students who have attained your learning objectives may still answer items incorrectly. If you are aware of and make an effort to follow the three principles, you will develop tests that have the desired technical properties referred to as reliability and validity.

Planning Your Test

Dr. Carol E. Baker, Former Director of the Office of Measurement and Evaluation of Teaching

The first step in test construction is to develop a test plan. This is sometimes referred to as a “table of specifications” or “blueprint” for your test. It helps to ensure that the test will be a valid representation of your learning objectives and that the various content areas covered by the test reflect the emphasis you have placed on them in your lectures, readings and class discussions. By listing the content areas/topics and the percentage of emphasis each will have, you develop a structure for your test. You may also want to consider the level of understanding you want the students to have about each topic. For example, do you want students to be able simply to recall information, or do you want them to comprehend or apply the information to a novel situation? You can create a matrix by listing your content areas/topics as rows, and levels of the thinking

process (such as recall, comprehend, apply, analyze, synthesize or evaluate) as columns. When you start to write or select items from other sources, you should follow your plan and the resulting sample of items will be representative of your course content and emphasis. This planning before the actual writing of test items is very important, but it can be simplified so that it does not become a burden for you. For example, you could use “recall,” “comprehension,” and “higher levels” as the categories of learning. Each time you teach the course, you can make adjustments and refinements to your test plan.

Developing a test plan also helps you determine the types of items you want to write for your test. Your choice between essay items and objective items depends on the types of objectives you have developed, the level of thinking you wish to test and, practically speaking, on your class size. Essay items are so named because of the need for a written response. The term “objective,” however, refers to the scoring procedures used rather than to the type of response given. If a student receives the same score regardless of who scores the test, the test is said to be objective. You may want to combine several types of items in your test.

- Objective tests allow you to sample adequately from a large amount of course material, thereby increasing content validity. They are easy to score, but it does take time and skill to write effective items. Item formats include true/false, multiple-choice and matching. One common criticism is that these items often test only basic recognition, but test developers have demonstrated that effectively constructed items can also be used to test higher levels of thinking.
- Essay tests include items requiring short answers and/or more extended responses. It takes less time to develop essay test items, and they give students an opportunity to demonstrate skills of synthesis and evaluation as well as organization and expression. However, the scoring of essay items is time-consuming and must follow certain guidelines in order for the test to be reliable (i.e., others reading the essay would assign the same score as you). Remember that it is important to consider your test plan in deciding on the type of test items to use.
- Problems may also be used as test items, depending on your discipline. They may be categorized as either objective or essay items, depending on the scoring system that is used. If the problem is simple and you are scoring for a correct or incorrect response only, it would be considered an objective test item. However, many problems involve complex solutions requiring several steps and perhaps allowing alternative approaches to their solutions. These problems are more difficult to score and they present the same reliability challenges as the essay item.

Writing Test Items

Dr. Carol E. Baker, Former Director of the Office of Measurement and Evaluation of Teaching

It has been said by measurement specialists that writing good test items is a combination of science and art. There are a number of guidelines that should be followed to produce the qualities desired. Even when these suggestions are followed, however, some item writers are better than others at creating clear, concise items that measure their specified learning objectives. Item writing will become easier as your teaching experience increases and you learn from the feedback provided by statistical data generated from your tests and from student feedback. There are entire chapters in measurement textbooks covering the guidelines for writing various types of objective and essay test items. A handout covering these guidelines is available from the [Office of Measurement and Evaluation of Teaching](#). A brief summary of these guidelines is given below.

If you are planning an objective test, you may have several sources of previously written items available to you. Some textbooks supply items that have been developed for each chapter. Other instructors who have taught the course may be willing to share their items with you. In either case you will have to review carefully the items and adapt them to your specific test plan. Published items are not always well written and even those that are may not cover concepts that you consider important. Remember the three principles mentioned above when you adapt or write your items.

Multiple-Choice Questions

The most widely used type of objective item format is multiple-choice, consisting of a stem that poses the question/problem and a series of options, each representing possible answers to the stem. Suggestions for writing multiple-choice items include, but are not limited to the following:

- Select content related to important aspects of the course objectives.
- Have the stem clearly present the problem and include all the words that would otherwise need to be repeated in each option.
- Avoid irrelevant information in the stem or options, unless deciding what is necessary information is part of the learning objective.
- Have only one correct response. (This is essential if your test is going to be [scored electronically by OMET](#)).
- Do not provide verbal clues that might enable students to eliminate options or select the correct one.
- Make all options grammatically consistent with the stem and also parallel in form.
- When there is a logical sequence in which alternatives can occur (such as time or

numbers), use it to structure multiple-choice options; choice “A” might be 1800, “B” might be 1812, and “C” might be 1819.

- Formulate the correct option so that it is not consistently different in appearance from the incorrect options. (Often there is a tendency to include more information in the correct option.)
- Try to have at least four options per item unless doing so requires using implausible options.
- Be very careful in using “all of the above” and “none of the above.” If students perceive one answer to be truer than another answer, they may be reluctant to select an all-or-nothing option. You want your test to reflect accurately your student’s understanding of the material.
- If you use a negative (“Which of the following is NOT . . .”) in the stem, emphasize it by capitalizing and bolding it so students will notice it.
- Vary the position of the correct answer in a random manner and have each position (A, B, C, D) represented as equally as possible.

Make sure that you give yourself enough time to write your test items. It takes time to write good test items, and it is helpful for you to review the entire test after several days have elapsed. It is a good idea to proofread and develop the answer key for your objective test before printing copies. This will allow you to catch errors that might otherwise require writing corrections on the board the day of the test or even having to drop items from your test (if, for example, you discover you have no correct answer or more than one correct answer). Check the numbering of the items as well to make sure it is accurate.

Essay Questions

When writing essay items, do the following:

- Keep in mind whether the learning objective you are measuring requires the higher-order thinking process of analysis, synthesis or evaluation. This will help you with the wording of the question.
- Write the question in such a way that the task is clearly defined for the students.
- Start the essay item with words such as “compare,” “contrast,” “give reasons for,” “give examples of,” “criticize,” “differentiate,” “explain how.”
- Be sure the essay question asks for the specific behavior that you want the student to display.
- Adapt the length and complexity of the question to the level of the students.
- Provide an indication of how questions will be weighted by giving the number of points for each question. (This allows students to plan their time.)
- With essay items, it is also a good idea for you to specify the ideas that you will be looking for when scoring if you are going to use an analytic scoring method (see [Test Scoring](#)). This will assist you in determining the total number of possible points for each question and will enable you to make adjustments if the weighting is not what you had intended. Even if you are going to use a holistic approach to scoring, you can describe the quality of the papers that you plan to put in each scoring category.

Problem Questions

If you are developing problem-based test items, consider the following:

- Develop problems that test students on the strategies and concepts they have been taught in ways similar but not identical to the problems that they have covered in class or homework assignments.
- Don't let the setting for the problem become so complex that your scenario will confuse students who know how to solve the problem.
- Review your problem to make sure that all of the students will have the contextual knowledge assumed.
- Work out the solution yourself to help you decide how conceptually complex it is. If there are a number of sub-problems embedded in the problem, you may want to provide some of the assumed information such as formulas.
- Think about how much time students will need to think through and solve the problem. (This will be longer than the time it takes you to solve the problem since you are much more familiar with the concepts being tested.)

Test Length

In writing test items, you should consider how long the test will take. Consider both the length of the class and the reading level of your students. You do not want students to feel rushed and frustrated because they were not able to demonstrate their knowledge of the material in the allotted time. Some general guidelines regarding time requirements for high school student test takers (as reported in Nitko, 1996):

Task	Approximate Time per Item
True/False items	20-30 seconds
Multiple-choice (factual)	40-60 seconds
Multiple-choice (complex)	70-90 seconds
Matching (5 stems/6 choices)	2-4 minutes
Short-answer	2-4 minutes
Multiple-choice (with calculations)	2-5 minutes
Word problems (simple math)	5-10 minutes
Short Essays	15-20 minutes
Data analysis/graphing	15-25 minutes
Extended essays	35-50 minutes

If you are combining multiple-choice and essay items, these estimates may help you decide how many to include. One mistake often made by first-time teachers is having too many questions for the time allowed.

Once your questions are developed, make sure that you include clear directions to the students. For the objective items, specify that they should select one answer for each item and indicate the point value of each question, especially if you are weighting sections of the test differently. Students must use pencils if they are responding using the NCS optical-scanning sheets provided by OMET for machine scoring. For essay items, indicate the point value and suggested time to be spent on the item. For problems, indicate whether partial credit will be given or only the correct solution will be awarded credit.

If you are teaching a large class with close seating arrangements and are giving an objective test, you may want to consider administering several versions of your test to decrease the opportunities for cheating. Multiple versions have become quite easy to develop with the availability of word-processing software. You simply create versions of your test with different arrangements of the items. It is not even necessary to change the position of the correct response for each item. You can also print these versions on different colors of paper so that it is obvious to students that they have a different test than the person sitting beside them. (Some instructors simply use different colors of paper without changing the order of test items, but it is best to do both.)

Test Administration

Dr. Carol E. Baker, Former Director of the Office of Measurement and Evaluation of Teaching

On the day of a test, it is a good idea to take extra pencils with you if you are using the NCS answer sheets for your objective items. Many departments have pencils available to you for this purpose. If your class is large, try to seat students in every other seat and have every row the same so students are seated directly behind one another. You may also want to talk to faculty in your department who have taught large classes to see how they have handled the potential problem of students taking tests for others. Many faculty members announce that students must present their IDs at the completion of the test when they submit their work. Announcing this in class ahead of time and even including it on your syllabus will deter students from asking others to take the test for them. Even if your class is small and/or you are giving an essay test, taking precautions against cheating and making clear to students that this will not be tolerated will create a fairer situation for all students. Cheating on an exam is unethical and a violation of the [University's policy on academic integrity](#).

Some instructors may wish to post the scores for tests outside their offices or outside of the classroom. You need to be aware that posting scores by name or by social security number is not allowed under federal law unless the student has given you permission. If you have objective tests and use the NCS answer sheets, there is a method that OMET developed to facilitate your posting of scores. It requires students to give permission for scores to be posted by social security number by filling in a specific circle on the answer sheet. A list is then generated only for those students. OMET can give you more information about this. Alternatively, some faculty members use a unique number that they assign to each student.

Scoring Objective Tests

Dr. Carol E. Baker, Former Director of the Office of Measurement and Evaluation of Teaching

If you have given an objective test, you may have your test electronically scored by the [Office of Measurement and Evaluation of Teaching \(OMET\)](#). A description of the service is available at OMET. Answer sheets are provided at no cost to you and can be obtained from OMET any time before your test. (Many departments maintain a supply of OMET answer sheets as well.) After your test, you submit to OMET the student answer sheets and a key that you have recorded on an answer sheet. Multiple versions of the test are submitted separately with a key for each version (but you can complete a form indicating the item order if you would like OMET to combine all versions in the printout described below). You will be asked to complete a cover sheet with

identifying information about your course and the length of your test. Tests submitted by 5 p.m. are available for you to pick up after 10 a.m. the next working day.

In addition to the scores printed on each answer sheet, you will receive an item analysis printout that summarizes the test scores for the class, lists individual scores for your record book, and also provides you with valuable information about each of your test items. By examining the statistics related to item difficulty and item discrimination, you can identify problems students are having with specific items. These test questions can then be revised before you use them again. The OMET report also can include an optional list of the items that each student incorrectly answered, which will help you answer questions that students may have about their performance. A handout explaining the statistics provided on the item analysis printout is available at the office, and the OMET staff can answer any questions you may have. OMET stores a computer record of the actual responses that students made to each item on your test and keeps that record for one year. If you are handing the answer sheets back to students, you may want to mention this to discourage students from trying to cheat by changing answers or filling in items they had left blank while taking the test. Attempts to cheat in this way are never successful because of the computer record.

Scoring Essays and Problems

Dr. Carol E. Baker, Former Director of the Office of Measurement and Evaluation of Teaching

As you can see, scoring of objective tests is quite simple. Scoring of essay tests and problems takes considerably more time and you have to worry about being consistent across student responses. This is why essay items should be limited to those learning objectives that require the essay format. Once you have used an essay item, it is your professional responsibility to score the responses properly and to provide useful feedback to students. There are two methods of scoring essay items, the analytic approach and the holistic approach. To use the analytic method, you develop a list of the major elements you believe students should include in the ideal answer. It was suggested above that this be done before the test is printed so that adjustments can be made if necessary. If you are assisting a faculty member in a course and have been given responsibility for scoring essay items, you will need to meet with him/her to discuss the points to be assigned to the responses. You may find that the analytic approach is easier to employ when the essay item requires a restricted or short answer. You can decide to give partial credit for each element in your list or simply to give full or no points for each item. This may be difficult to do if you are teaching this material for the first time since you will not be aware of the types of answers students will give. You may want to read a sample of the papers to check on your scoring scheme and make necessary adjustments. If you keep track of how students perform on each element in your list, you can identify the points that are weak and need to be reinforced in

your teaching. If you provide the students with the elements of the ideal answer, they can gain information about their strengths and weaknesses.

The holistic approach to scoring essay items involves your reading an entire response and assigning it to a category identified by a score or grade. You can develop a description of the type of response that would illustrate each category before you start, and then try out this draft version using several actual papers. After reading and categorizing all of the papers, it is a good idea to re-examine the papers within a category to see if they are similar enough in quality to receive the same points or grade. It may be faster to read essays holistically and provide only an overall score or grade, but students do not receive much feedback about their strengths and weaknesses. Some instructors who use holistic scoring also write brief comments on each paper to point out one or two strengths and/or weaknesses so students will have a better idea of why their response received the score it did. Again, if you are assisting a faculty member who is responsible for the course, you might check with him/her after both of you have read several papers to ensure that your scoring is consistent.

Regardless of whether you decide to use an analytic or holistic method of scoring, there are several guidelines to consider with respect to the scoring of essay tests:

- Develop scoring criteria or model answers.
- If there are several essay questions, score all of the students' responses to one question at a time. This improves consistency and reduces any "carryover" effects.
- Decide whether you are going to score factors other than content, such as spelling, language usage, and organization. Make sure that your students are aware if you are, and give a separate score for these factors.
- Score essay responses anonymously to avoid any bias resulting from your familiarity with students and their previous work. One idea is to have students write their names on the back of the answer sheet or booklet.
- Periodically check to see whether you have applied the criteria in the same way to later-scored answers as to earlier-scored ones.
- If you have a large number of papers to score, stop when you get tired so that your frame of mind will not cause your scoring to be inconsistent. When you start again, read over the last few papers you scored to be sure that your scoring was objective.
- Provide students with feedback so that the test provides an opportunity for students to learn their strengths and weaknesses. You can provide short written comments or verbal feedback to students in a brief conference.
- It is obvious that you will need to spend a great deal of time and effort to do a thorough job in scoring essay items. You may want to start out by using short-answer essay items and as you feel more comfortable with the process, refining your items to require a more extended answer. Use essay items judiciously; consider whether you can test the learning objective you have set with complex multiple choice items instead. If you decide that

essay items are the best way to test student understanding of your learning objectives, give yourself enough time for the scoring of the test so that your information about students will be as reliable and valid as possible.

Labs and Problem Sets

Math, science, and engineering classes pose special challenges for teaching assistants. Although the general principles outlined in Carol Baker's essay [Test Construction and Scoring](#) apply to almost any assignment, problem-solving exercises (such as math or logic problems and computer language assignments) and lab reports often require the instructor to assign partial credit for process. In both cases, the student may understand how to solve the problem but make a simple mistake that leads to an incorrect answer. Although there are no strict rules for assigning partial credit, graders must have clearly established criteria that are shared with students and applied equitably. Teaching assistants in math and science courses should provide students with a written statement of their grading criteria before the first assignment or lab report is due.

The following sections provide general advice for grading lab reports, problem-solving exercises, or numerical assignments and offer advice on preventing cheating. You are encouraged to speak with your supervising instructor and peers about the specific standards required in your discipline.

Grading Lab Reports

At first glance, lab reports seem easy to grade. Since lab reports follow specific guidelines, it is not difficult to judge whether the basic requirements have been completed. A student who has finished the experiment and submitted an accurate lab report has met the fundamental requirements of a lab. However, not every experiment works out and not every lab report equally distills the larger themes from the experiment. When grading lab reports, consider the following:

- Was the procedure followed carefully and conscientiously?
- Was the theoretical purpose of the lab understood? Was it properly and thoroughly explained in the lab report?
- Was the lab report written in a clear manner and in the prescribed form according the standards of the discipline?
- Did the student explain mistakes and unexpected results, or explore alternative theories and procedures?
-

The real key to grading a lab report is to establish standards in advance (preferably in a written lab syllabus) and to let students know how their work will be graded. Students need to know how much weight has been assigned to each of the following:

- Performing the actual experiment.
- Getting a correct result.
- Exploring alternative approaches and explanations.
- Recognizing the theoretical implications of the experiment (regardless of the success of the lab).

Although lab instructors apply their own standards, keep in mind that the overall objective is for students to experience the scientific method first-hand and to apply the theoretical models that they have learned in the lecture class. While lab grades traditionally are based on two criteria, completion of the experiment and a written lab report, it is possible to grade students on other observed aspects of the lab. Teaching assistants may consider student's preparation, their ability to perform the lab techniques, their understanding of the procedures, and their observance of safety standards. When using observation to assess grades, it is especially important that you establish clear guidelines and keep accurate notes on students' performance.

Grading Numerical Problem Solving

Numerical problem solving—everything from an engineering exam to a math quiz—poses special considerations for teaching assistants. Partial credit is often given to students who follow the correct procedures or use the right formulas even if they ultimately get an incorrect answer. Once again, establishing clear guidelines and making your grading criteria available to your students prevents justified frustration on the part of your students and can make grading easier. The following advice may be helpful:

- Take the exam. Taking the exam has two advantages. First, if you cannot solve a problem, it may indicate that the problem is poorly worded or not appropriate for the class. Keep in mind that questions posed on an exam should reflect the teaching objectives of the course. (For more on objectives, see [Identify the Skills Your Students Should Demonstrate](#).) Second, taking the exam will help you to establish grading criteria. Are the formulas employed simple? If so, how much credit should you assign to a student who identifies the right formula or procedure, but does not know how to use it? Is there only one answer? Does the math (or other task) require multiple steps creating natural divisions to which to assign grades?
- Have one standard. Even before the exam is distributed, you and the instructor should meet to discuss the criteria that will be used for grading. All graders should use the same guidelines so that students are graded fairly.
- Watch out for patterns. As a teaching assistant you may not have written the exam and the grading criteria may not be your own. However, watch out for patterns that may indicate that an exam problem was poorly written. If all of the students in the class are making the same mistakes, bring the situation to the attention of your supervising faculty member. If a disproportionate number of students have come up with the same wrong answer, it is often a sign that the question was poorly constructed or misleading.

- Consider alternate solutions. Your grading criteria will probably be based on how you yourself solve the problem. Often the procedures that you, other teaching assistants, and the professor work out are the most efficient and even most appropriate means of answering the question. However, there may be other acceptable answers. In advance, determine how alternative correct answers will be handled and be alert to creative solutions so that credit can be assigned fairly.
- Take Breaks. Grading 200 problems in a night, or even a week, can be difficult. If you are grading numerical answers, grading fatigue can lead to serious mistakes. Take breaks. Only grade papers when you are alert.

Essays and Term Papers

Written assignments demonstrate students' knowledge of the subject matter, their capacity to evaluate information, and their ability to craft an argument creatively and logically. In other words, papers often test the depth of a student's understanding of the subject matter. The following sections provide guidelines for designing and grading written assignments.

Designing Written Assignments

Be creative but be realistic when writing essay or paper questions.

There are no hard-and-fast rules for designing a written assignment. A writing assignment can be as tightly structured as a lab report, where specific rules guide the students in formatting and presenting information, or as loosely structured as a creative writing assignment where a poem or graphic essay might be considered acceptable. Many written assignments, however, share the same objectives.

Be creative but be realistic when writing essay or paper questions. Consider your teaching objectives and what your students can reasonably be expected to know or to figure out. Keep the language clear, precise, and simple, but include enough information that the student is given a basic outline of your expectations. Avoid using phrases that could be misinterpreted and avoid topics that cannot be answered within the page length and time you have set. For more information on developing paper topics, see Carol Baker's discussion in [Essay Questions](#).

Grading Papers

No matter how well a question is worded and how many guidelines are offered, no two papers are ever alike. Two very good writers may marshal the same facts and come to the same conclusions, but how they present their arguments—the weight given to the evidence and the stress placed upon the conclusions—is bound to be different. Grading written assignments, then, is an inherently difficult chore. Two very different papers may both be A papers. Jim, a

University of Pittsburgh teaching assistant, described his frustration: “I read all the papers before I actually begin to grade them and sort them into piles. All the A’s here, the B’s there, the C’s . . . Usually after reading thirty or forty out of sixty papers, I have a pretty good idea what is a good paper and what is a bad paper. But there is always one quirky paper that spoils my system. It is too short and needs to be edited, but it makes a point, answers the question and does so in a way that no one else in the class has thought of. Now which pile do I put that paper in?”

Most of us feel some discomfort with our own writing; therefore, perhaps it is not surprising that we are reluctant to critique and criticize others. Yet when taken seriously, grading writing assignments is an important part of teaching. Since few of us are born great writers, the feedback we receive on our written work teaches us how to organize, develop, and communicate our ideas. And good writing is not “just an academic concern”; it is a practical skill that will help your students achieve success in almost any field that they explore.

Each discipline has its own style of writing and, as a result, its own standards by which papers are graded. If this is your first time grading, you should sit down with your teaching mentor or a fellow teaching assistant and discuss writing in your discipline and what is typically expected of undergraduates in your department. Bring a few papers along so that you can both read them and then discuss specific issues that the papers raise.

In the following sections, we provide guidelines for grading papers. Although your grading standards should be fitted to the course, your teaching objectives, and the department you are teaching in, this information may serve as a starting place for thinking about what is an appropriate grade.

Guidelines for Grading Written Assignments

- **Establish Clear Criteria for Your Students.** If you do not provide clear grading policies, few students will meet your expectations. Provide a detailed written description of the assignments in your syllabus or in a handout stating your policies. Although you may not have designed the syllabus and the assignments, as the one who is grading their papers, you should let your students know your expectations and guidelines. For more information on grading policies, see Dr. Carol Baker’s comments in [Essay Questions](#).
- **Graders Unite.** If more than one person is grading papers, you need to establish a consistent standard for your grading. One simple way to do this is for each of you to grade five papers and then to trade papers. Would you have given the same grades? If not, why? As you discuss the differences in your grades, outline a rough standard for the rest of your grading. When you are finished, you should each have a set of matching criteria for assigning grades. As you are grading, if you come across a paper that does not seem to fit the criteria you have established, assign a grade and then pass it to your fellow grader for a quick review.

Some instructors believe that when two teaching assistants are grading papers in a class, they should grade each other's recitations. This would seem to establish a greater level of objectivity since you probably do not know the students in your co-teaching assistant's class. But the approach also has some significant disadvantages. Two teaching assistants rarely present exactly the same material. If the material you presented in your recitation is different from the material your coworker presented, you may find it difficult to grade his or her recitations. In addition, your students have adapted their writing (as good writers should) to their audience. The verbal feedback you give in class helps to build students' expectations of how their papers will be graded. Switching graders can put your students at an unfair disadvantage.

- **Read All the Papers First.** Before you start to grade, read all (or at least most) of the papers once. Reading the papers will help you to establish the range of responses and to distinguish the best papers from the worst. Many graders, like Jim, even sort the papers into rough representative piles as they read through them. Then they grab the B paper pile and assign grades with respect to the other B papers. Believing it to be overly time-consuming, many TAs skip this step. However, a preliminary reading of all the papers should actually decrease the amount of time you spend grading each individual paper while increasing overall grading consistency.
- **Be Objective.** Needless to say, you should not allow your personal feelings about a student to influence your grading. What is often more difficult, but less obvious, is that you should not let your personal feelings about the position taken in an essay or paper influence your grading. If you hate capital punishment but your student just wrote a clear, well-argued essay advocating the death penalty, you should give it a good grade. When grading, you should focus on the quality of the argument not the specific values the student advocates. In other words, you are looking at how the student addresses the reader, explains his or her position, establishes the facts, and draws conclusions.
- **Be Consistent.** If one student lost three points for not mentioning new research into the optic nerve, every student who missed that argument should lose three points. Sometimes, after forty or so papers, keeping track of these little deductions can be difficult. A rubric will do wonders at helping you maintain consistency while grading many papers.
- **Provide Clear and Concise Written Comments.** There is nothing more frustrating for a student than to get a paper back with two or three scribbled and indecipherable comments in the margins. The grade then seems arbitrary and the conscientious student is left with very little advice on how to improve his or her writing for the next assignment. Clear, concise comments that offer advice on how to remedy mistakes are the most useful to students.
- **Separate Comments on Style from Comments on Substance.** Place short notes on grammar or style in the margins near the text you are referring to, but save longer notes on the presentation, organization and argumentation for the end of the paper. Until you finish reading the paper, you are not going to be able to make comprehensive remarks.

Many educators believe that “holistic” comments on errors that suggest illogical or incomplete thinking, rather than picky corrections of minor mistakes, are more useful for developing students’ writing skills. If you want to comment on a specific section of the text, place a symbol in the margin and then reference it in your closing comments.

- **Provide Corrective Comments.** It is not enough to tell your students that they made a mistake; you also need to explain to them how to make their writing more effective in the future. Perhaps one of your students has demonstrated a clear knowledge of the subject you are teaching, but in his papers he consistently makes arguments without drawing conclusions. You might do the following:
 - **Explain the problem to the student.** “Joe, you seem to know the material, but you have not drawn any conclusions from the evidence.”
 - **Select an example of the problem and explain why it is a problem.** “This was a problem throughout the paper, but let us look at one example. On page three you provide a number of quotes that demonstrate that Freud had a low opinion of women. Good, but what is the effect of Freud’s bias? Does it mean that we should take Freud’s theories less seriously or can we trust that modern psychology has routed out these biases?”
 - **Offer a solution.** “Joe, the paper is weak unless you draw some conclusions from your analysis. You might, for example, explain how Freud’s bias taints the foundations of his theory. I might conclude the section you wrote by saying: ‘Freud’s bias cannot be simply dismissed as a product of early 20th century chauvinism since it fundamentally influences the psychology that is practiced today. Freud’s entire theory of infant development, a cornerstone of this larger work, is . . .’” Avoid rewriting the entire passage; instead, offer students some direction on how they might rewrite it themselves.

Obviously, time will probably not permit your making such extensive comments about every problem that a student faces. Select the most pervasive problem, the one that you feel the student needs to work on the most. Learning to write is long-term project best accomplished by tackling one problem at a time.

- **Consider the Four Factors of a Good Essay.** First, the essay needs to make clear its purpose. Addressing its audience, it should frame the argument that is being made. Second, the essay should marshal evidence and present that evidence with arguments in a reasoned and logical manner. Third, the arguments should be organized in a persuasive way that builds toward the conclusions. Finally, it must be readable. Let your students know that the use of good grammar, correct spelling and a precise vocabulary make it easier for the reader to understand the argument that they are making. How these four factors (purpose, reasoning and content, organization, and presentation) determine the grade is up to you to decide. Not every instructor places the same weight on spelling as on reasoning. However, in most cases the grade you assign will be determined by looking at these four categories. Communicate this clearly to your students in your comments. If they have organized the paper well but have failed

to draw logical conclusions from the evidence, compliment their organization and then show them how they might have used their evidence more effectively.

- **Provide Positive Feedback.** Your goal in grading papers is to encourage students to perform better on the next assignment. Offering only negative comments merely discourages students. Be sure to comment when the student has made an impressive argument or has demonstrated a clear understanding of the problem being addressed.
- **Allow Yourself Plenty of Time.** Grading papers takes time. After your preliminary reading, allow at least twenty minutes for a three- to four-page paper.
- **Use a Rubric, Grading Sheet or Handout.** Often when grading a stack of papers, you will find yourself writing the same comments over and over. Telling every student to indent quotations is painstaking work with little reward; in fact, such comments often distract you from the longer and more significant comments that you may want to write. One solution is to make a list of common problems that you found when grading a set of papers and to prepare a handout to distribute when you return the papers. Another possibility is to create a grading checklist. A grading checklist is a form attached to each paper with typical comments listed and mistakes checked off. (A grading checklist is not, however, a replacement for in-depth comments. You should use it only to mark consistent grammatical and organizational errors, and you should review it in class so that your students are clear on what the pre-fashioned comments mean.

Grading Standards: A Guide to Assigning Grades to Written Assignments

These grading standards establish four major criteria for evaluating written assignments: purpose, reasoning and content, organization, and presentation. Of course, not every paper will fit neatly into one grade category; a paper may, for instance, have some characteristics of B paper and some of C paper. The final grade it receives depends on the weight the instructor gives each criterion.

Grade	Grading Standards
<p>A Papers</p>	<p>The A paper has not only fulfilled the assignment, but has done so in a fresh and mature manner. It has effectively met the needs of the rhetorical situation, it makes a substantial contribution to the situation, and it likely to move the audience to act as the writer desires.</p> <p>It has effectively met the needs of the rhetorical situation, it makes a substantial contribution to the situation, and it likely to move the audience to act as the writer desires.</p> <p>The evidence is detailed; the sources of information have been used creatively and cited appropriately. The reasoning is valid. Beyond that, the paper is thoughtful, showing hard work, good judgment, and sensitivity to the complexities of the situation or issue.</p> <p>The organization is effective for the audience and purpose. The introduction establishes the context and purpose of the communication. Segments, whether sections or paragraphs, are fully developed and follow logically from what precedes them. Headings and subheadings are appropriately used. The conclusion is suitable in tone and strategy.</p> <p>The prose is not only clear and readable but also occasionally apt and memorable. It contains few errors, none of which seriously undermines the effectiveness of the paper for educated readers.</p>
<p>B Papers</p>	<p>The B Paper has not just followed the assignment but fulfilled it.</p> <p>In taking its stand, the paper shows a clear sense of audience and purpose. It shows more awareness of the implications of what it is saying and of its assumptions about the audience than the C paper does.</p> <p>The writer has not settled for the most obvious evidence. The B paper is characterized by thoroughness. The reasoning is more than adequate. Not only does it make no mistakes, but also it shows thoughtfulness and some awareness of complexities and other points of view.</p> <p>The B paper has an effective introduction and conclusion. The order of information is logical, and the reader can follow it because of well-chosen transitions. Paragraph divisions are logical, and the paragraphs use enough specific detail to make their point tellingly.</p> <p>The expression is competent, more ambitious than that of the C paper, less felicitous than that of the A paper. Not only is sentence structure correct, but it</p>

	<p>also uses subordination, emphasis, sentence length and variety, and modifiers effectively. It would be surprising to find serious sentence errors—comma splices, fragments, or fused sentences—in a B paper. Word choice is idiomatic, vocabulary precise. Punctuation, grammar, and spelling conform to the conventions of edited American English.</p>
C Papers	<p>The assignment has been followed. The paper develops its points with a sense of audience.</p> <p>The information and degree of persuasion in a C paper are appropriate. There is evidence and though the evidence is perhaps obvious and easily accessible, it has been gathered honestly and used responsibly. The C paper may exhibit some minor imperfections or inconsistencies in mapping out the arguments, but there are no major flaws in its reasoning.</p> <p>The organization is clear. The reader could easily outline the presentation. Paragraphs have adequate development and are divided appropriately. Transitions may be mechanical, but they foster coherence.</p> <p>The expression is competent. Sentence structure is generally correct, although it may show limited competence with such elements as subordination, emphasis, sentence variety, sentence length, and modifiers. It relies instead on simple and compound sentences. The paper is generally free of comma splices, unintentional fragments, and fused sentences. Word choice is correct though limited. It may contain errors in spelling, mechanics, and grammar.</p>
D Papers	<p>A D paper attempts to follow the assignment, even if the choice of topic or situation is poor, whether too broad, too narrow, or inappropriate. A D paper often shows a poor sense of audience and purpose. For example, it may over- or underestimate the audience’s prior knowledge or assumptions. Or it may correctly assess the situation, but add little of substance to it.</p> <p>Necessary evidence may be missing, irrelevant evidence present, or the interpretation or evaluation of that evidence may be inadequate. The reasoning may be seriously flawed, resting on an insufficient understanding of the situation or the audience. Or it may rely too heavily on evidence from published sources without adding original analysis.</p> <p>Organization may be significantly flawed in any of the following ways: relevant segments may be missing; topic sentences may be absent or inappropriate to the content of the paragraph; paragraphs are not well developed, divided or arranged; transitions are missing or incorrect; introductions or conclusions are missing or incomplete.</p> <p>A D paper may have numerous and consistent errors in grammar, spelling, and punctuation. The syntax or diction in some sentences may be so flawed that they are incomprehensible. Lack of proofreading can turn an otherwise adequate paper into a D paper.</p>
F Papers	<p>The F paper may have not answered the question posed in the assignment, even if it is correctly and coherently written. (Many instructors require that such papers be rewritten before assigning a grade.)</p> <p>It relates to the assignment but has no clear purpose, or goes off in several</p>

directions. It is missing essential elements of the assigned form of communication.

It falls seriously short of the minimum length requirements.

It may be plagiarized—either it is someone else’s paper or it has used sources improperly or without documentation.

It is plagued by more than one of the organizational deficiencies of the D paper.

Numerous and consistent errors of grammar, spelling, punctuation, diction, or syntax seriously hinder communication.

Checklist for Grading Essay Questions

Grading essay questions on exams requires attention similar to that used to grade papers. Here is a check-list that may help you evaluate essay questions.

Strengths: Argument and Presentation

- Clear thesis.
- Paper is logical and convincing, i.e., solid reasoning throughout.
- Good introduction, i.e., Interesting and anticipates argument.
- Good conclusion, i.e., effectively summarizes argument.
- Well organized.
- Plentiful and well-chosen evidence supports thesis.
- Good grasp of key issues.
- Addresses all aspects of the question.

Weaknesses: Argument

- Essay lacks a clear, specific thesis.
- Arguments are unclear or incomplete.
- Arguments are not substantiated with sufficient evidence.
- Too many facts, citations or quotations without analysis.
- Factual errors.
- Misused key terms or concepts.

Weaknesses: Presentation

- Weak paragraphing, e.g., unrelated ideas are strung together.
- Paper is poorly organized and does not follow a clear outline.
- No/weak introduction.
- No/weak conclusion.
- Insufficient attributions, i.e., sources are used without proper citations.
- Grammatical and/or spelling errors.
- Partially or mostly incoherent.

Advice

- Always proofread or have someone proofread your work.
- Prepare an outline before you begin to write.
- Read the question carefully and address all parts of the question.
- Spend more time preparing your answer; use lectures/books.
- For future assignments, seek the assistance of the Writing Center.
- If checked, make an appointment with your teaching assistant.

Your grade for this paper:

Additional comments are on the back of this page.

Evaluating Participation

We recommend that, if it is your decision, you consider not grading participation. Research has demonstrated that lack of participation by students may be due to factors other than comprehension of or engagement with the course material. These factors include culture, gender, personality types, personal psychology, race, age, even classroom seating arrangements and handedness of the instructor. If you must grade participation, consider grading on the basis of small group activities and in-class writing assignments. At the very least, you should provide many and varied opportunities for all students to participate.

In many classes, particularly those that are discussion-based, TAs are asked to assign a grade for class participation, reflecting how often and well a student contributes to classroom discussions and activities. As with any other form of evaluation, you should provide your students with a rubric for how you will be calculating their participation grade. Some things to consider: Will attendance figure into the participation grade? Do you want to grade quantity of participation,

quality, or a mixture of both? These are questions to be considered by you and your faculty supervisor, but an example of such a rubric, from Villanova University, is provided below.

Class participation deserving of an A grade will be strong in most categories; participation that is strong in some categories but needs development in others will receive a B; a grade of C reflects a need for development in most categories; D work is typically unsatisfactory in several categories; and F work, unsatisfactory in nearly all.

Activity	Strong Work	Needs Development	Unsatisfactory
Listening	Actively and respectfully listens to peers and instructor	Sometimes displays lack of interest in comments of others	Projects lack of interest or disrespect for others
Preparation	Arrives fully prepared with all assignments completed, and notes on reading, observations, questions	Sometimes arrives unprepared or with only superficial preparation	Exhibits little evidence of having read or thought about assigned material
Quality of contributions	Comments are relevant and reflect understanding of: assigned text(s); previous remarks of other students; and insights about assigned material	Comments sometimes irrelevant, betray lack of preparation, or indicate lack of attention to previous remarks of other students	Comments reflect little understanding of either the assignment or previous remarks in seminar
Impact on seminar	Comments frequently help move seminar conversation forward	Comments sometimes advance the conversation, but sometimes do little to move it forward	Comments do not advance the conversation or are actively harmful to it
Frequency of participation	Actively participates at appropriate times	Sometimes participates, but at other times is “tuned out”	Seldom participates and is generally not engaged

The Logic of Grades

Dr. Carol E. Baker, Former Director of the Office of Measurement and Evaluation of Teaching

As you plan your course and develop your syllabus, you should also consider your grading criteria. You will be using various types of assessment during the term to help determine the students' achievement of your learning objectives. At the end of the term, however, you will be required to use a system of letter grades (see the description of the University of Pittsburgh system in the next section). There are several important decisions that you need to make regarding grading so that you can inform students of your grading policies on the syllabus and in class.

Grading is a difficult aspect of teaching for many instructors. Making judgments about others is often uncomfortable, especially since, as teachers, we want to be helpful and motivate students to do their best. There are different philosophies about grading, and these result in different methods of evaluating students. You may want to discuss grading practices with faculty in your department as you develop your own point of view. Students will ask you about this and you need to have a coherent and logically consistent opinion. There are two basic frameworks to consider. One uses a relative scale and the other an absolute scale. Grading that uses a relative scale is sometimes referred to as norm-referenced: grades are assigned on the basis of how a student's performance compares with others' in the class. Those preferring this approach base their arguments on the value of knowing a student's standing compared with others and the reality of competition in life.

Grading that uses an absolute scale is sometimes referred to as task-referenced grading: grades are assigned by comparing each student's performance to a defined set of objectives to be learned or tasks to be done. With an absolute scale, all students in your class could receive grades of A if they all meet the absolute standards you set. The argument for using this approach is that it is of value to know what each student has learned, and each student's grade should be independent of that of other students.

Regardless of which framework you select, the next step in determining your grading system is to decide what will count towards the student's grade. Several types of assessment have been discussed above; you must also decide whether other aspects of the course, like attendance and class participation, will contribute to the course grade. Some may be used only formatively to provide feedback to students; others may be used summatively and count towards the final grade in the course. Deciding this as you plan the course is essential so this information can be included on the syllabus. Changing your grading system during the term or not indicating your grading system is not fair to students, and they will be vocal with their frustration.

After you have determined what is to count towards the grade, you must decide how much weight you will assign to each component. Think about the emphasis of each component in your teaching and learning objectives. Try not to develop too complicated a weighting scheme; what sounds reasonable at the beginning of the course can become a real problem as you are faced with grade deadlines at the end of final exam period.

At the end of the term, after you have recorded the points for the various assessment tasks you have decided to include in your final grades, the procedures you will follow to determine grades will depend on whether you have chosen to use a relative or absolute grading scale.

Assigning Relative-Scale Grades

Dr. Carol E. Baker, Former Director of the Office of Measurement and Evaluation of Teaching

With a relative grading scale, you first develop a composite score for each student and rank the students with respect to this composite score. The problem with simply multiplying weights by scores and adding them is that the components with the largest weights should contribute the most to the final ranking. The complication is that the rank of a composite score is influenced by the standard deviation of the components. Those that have more variability associated with them will contribute more to the ranking. So if you have given an assignment that produces similar scores for all students, the contribution of that component to the overall ranking will be smaller than one in which the scores have a large range.

The solution to this problem is to form “standard scores” for each component before they are weighted and added together. This involves a formula that can be programmed into a spreadsheet or grade book program. It generates composite scores that you can then rank and know that the weights that you have specified will have the desired influence. If you decide to use this method, staff at OMET can provide you with the formula.

Once the rank ordering is done, you must then decide on the percentages of each letter grade that you wish to give. Contrary to what many believe, there are no rules for selecting these percentages! Traditionally, “grading on the curve” refers to dividing the range of the normal curve into five equal-length intervals, producing 3.6% A’s and F’s, 23.8% B’s and D’s, and 45.2% C’s. However, it is very hard to justify that the achievement of the students in your class is normally distributed, and therefore true “grading on the curve” is not recommended. Instead, you should select the percentage of each grade. You may want to ask others who have used relative-scale grades what they have done to determine the percentages.

There is a second relative-scale grading method that uses multiples of the standard deviation of the composite scores to determine limits for each grade. For instance, you might decide that the mean + $\frac{1}{2}$ standard deviation will determine the lower limit for a B. If you have not taught the class before, it is difficult to know how students may do, which makes determining the intervals difficult. Remember that they need to be determined before the class starts so students can be informed.

Assigning Absolute-Scale Grades

Dr. Carol E. Baker, Former Director of the Office of Measurement and Evaluation of Teaching

Two methods can be used to assign grades that are task-referenced. One uses fixed percentages and the other uses assigned total points. To apply the fixed percentage method, the correct percentage is calculated for each assessment entering into the final grade. Then these percentages are multiplied by the weights you have determined for each component, these products are added together, and this sum is divided by the sum of the weights. This gives you a weighted percentage score for each student. Deciding the relationship between these percentage scores and letter grades is arbitrary and varies from instructor to instructor and class to class. What others in your department use, your own experience with the kinds of students you are teaching, and the difficulty of the material will help you in determining the percentage intervals for each letter grade. Some use a 90% - 100%=A, 80 - 89%=B, etc. definition, but there are a number of different grading schemes employed across the University.

The total points method requires that you decide in advance the points that you want to assign to each assessment task that is going to contribute to the final grade. The number of points assigned reflects the weight that you give to each component; if you want your midterm and final exam to be equally weighted, you would assign the same number of points to each. By summing the maximum points for the components, you will have the total possible. If you decide you would like to have a total of 150 points, then your components would be weighted so that they will sum to 150. If you decide that homework is to contribute 10% to the grade, you would assign 15 points to homework. This method also requires you to set the boundaries for assigning letter grades, but here you are using the total points instead of percentages. Perhaps an A would be assigned to the range from 135 to 150 points.

The difficulty of the total points method is that you must decide this ahead of time and then fit your assessments to the points. If you decided to assign 50 points to the midterm, but find you need only 40 items to adequately cover your learning objectives, each item must then be worth 1.25 points. This can create some awkward scoring and is difficult to explain to students.

As you can see, assigning grades is a complex task that is based on different philosophies of grading and different methods within each framework. Some instructors make their task even more complicated by letting students drop the lowest score on the tests they have taken, or

accumulate extra credit by answering additional questions or doing optional assignments. At the beginning of your teaching career, keep your grading method as simple as possible and make sure that it is clearly explained to students on the syllabus. It will never be simple, but as you gain experience, you will become more comfortable with this important part of teaching.

The University Grading System

Consult the University Registrar's website for detailed information on the following:

- [Grading Policy](#)
- [Grade Due Dates](#)

Creating an Inclusive Learning Environment

As instructors we all bring distinctive abilities and perspectives to a classroom. Students also bring their own uniqueness. It is precisely this diversity of perspectives that makes a university education so valuable in a complex society. The challenge is to teach in a way that acknowledges and respects the cultural, political and economic realities of this country while at the same time trying to focus efforts on the needs of individual students.

Different points of view, whether a political stance on abortion or a different method of solving a math problem, tend to make people, including instructors, uncomfortable. Your challenge is to convince students that a certain amount of discomfort is inevitable while at the same time providing the tools and self-confidence necessary for them to stand up for their own points of view.

The following tips are taken from Barbara Gross Davis' chapter entitled "Diversity and Complexity in the Classroom: Considerations of Race, Ethnicity and Gender" in her excellent book, *Tools for Teaching*.

According to Davis, "There are no universal solutions or specific rules for responding to ethnic, gender, and cultural diversity in the classroom.... Perhaps the overriding principle is to be thoughtful and sensitive...." (p. 39). She recommends that you:

- Recognize any biases or stereotypes you may have absorbed.
- Treat each student as an individual, and respect each student for who he or she is.
- Rectify any language patterns or case examples that exclude or demean any groups.
- Do your best to be sensitive to terminology that refers to specific ethnic and cultural groups as it changes.
- Get a sense of how students feel about the cultural climate in your classroom. Tell them that you want to hear from them if any aspect of the course is making them uncomfortable.
- Introduce discussions of diversity at department meetings.
- Become more informed about the history and culture of groups other than your own.
- Convey the same level of respect and confidence in the abilities of all your students.
- Don't try to "protect" any group of students. Don't refrain from criticizing the performance of individual students in your class on account of their ethnicity or gender. And be evenhanded in how you acknowledge students' good work.
- Whenever possible, select texts and readings whose language is gender-neutral and free of stereotypes, or cite the shortcomings of material that does not meet these criteria.
- Aim for an inclusive curriculum that reflects the perspectives and experiences of a pluralistic society.

- Do not assume that all students will recognize cultural, literary or historical references familiar to you.
- Bring in guest lecturers to foster diversity in your class.
- Give assignments and exams that recognize students' diverse backgrounds and special interests.

In addition to the above recommendations, see the list of [campus organizations](#) recognizing the University's diverse population and the following University of Pittsburgh Policies and Procedures:

- [Nondiscrimination, Equal Opportunity, and Affirmative Action Policy](#)
- [Anti-Harrassment Policy](#)
- [Nondiscrimination and Anti-Harassment Procedure](#)

From: Davis, B.G. 1993. *Tools for Teaching*. San Francisco: Jossey-Bass Publishers.

Working with Distressed and Disruptive Students

As a Teaching Assistant, you may have to work with a distressed or disruptive student. Not every distressed student is disruptive, and not every disruptive student is distressed. These two cases do sometimes overlap, however, and we have therefore chosen to deal with both in this section. Levels of both student stress and class disruption can appear in varying degrees of intensity: it is therefore important to exercise discernment regarding the appropriate response(s) to particular cases. One student who is slightly nervous about her mastery of a particular thematic area for a midterm may only require a pep talk and some additional tutoring. Another student who exhibits signs of rage in class may require a referral to the University of Pittsburgh Counseling Center, and it may also be necessary to contact the Student Conduct Officer in Student Affairs.

Of utmost concern is the issue of safety: safety of the student in question, safety of other students in the class, and your own safety. If a situation appears to compromise the immediate safety of any of these parties, call the campus police emergency number at (412) 624-2121 (off-campus) or 811 (on-campus).

Additionally, seriously distressed students should be referred to the University of Pittsburgh [University Counseling Center](#) at (412) 648-7930. If a student appears to be significantly distressed, do not attempt to diagnose or solve that student's problems, yourself. The Counseling Center's [Faculty and Staff Guide for Helping Distressed Students](#) is a very useful booklet for dealing with distressed students, including those with anxiety, thoughts of suicide, substance abuse problems, and anger issues. Because some significantly distressed students may hesitate to seek out help, you may offer to call the Counseling Center for them (for example, while they are in your office) or walk with them to the Counseling Center (in the Wellness Center, 2nd Floor of Nordenberg Hall).

If a seriously disruptive student fails to respond to your requests to stop objectionable behavior, it may be necessary to contact the [Student Conduct Officer](#), under the division of the University of Pittsburgh's Student Affairs, which handles allegations of violations of the [Student Code of Conduct](#). It is helpful for the Student Conduct Officer to know about a seriously disruptive student who does not respond to instructor intervention, because Student Affairs can use prior reports of student disruption to guide how best to respond to a chronic offender.

With this being said, it is much more common for TAs to encounter lesser degrees of student distress and disruption, which do not require referrals to outside support services. Some general principles apply.

For distressed students:

- Listen to the student. Listen to the student's explanation of the issue, and ask questions. Sometimes, students will find simply talking about their problem helps.
- Avoid the temptation to prejudge a student's situation. A student who misses two assignments in a row, rather than being lazy, may have felt anxious to approach you after missing the first assignment. A student who appears not to have taken a writing assignment seriously may have legitimate weaknesses in writing skills. Again, give the student an opportunity to talk to you before you judge the student.
- Recall that your task as a teacher is both to impart knowledge and to provide motivation to learn. A little pep talk—encouraging but realistic—can go a long way toward allaying student anxieties.

For disruptive students:

- Politely, firmly, and specifically identify the undesirable behavior and why it is disruptive. For example, if two students are continually talking to one another during a lecture, you might say, "Excuse me, when you talk to one another during the lecture, it is difficult for your classmates to concentrate on the material. Out of respect for them and me, please refrain from talking unless you have something to contribute to the class."
- Avoid being apologetic. If, for example, a student consistently uses language which is derogatory toward women, you do not need to apologize for politely pointing out that this type of language undermines a respectful class environment conducive to participation of all students.
- Do not be afraid to excuse a student from class if the situation warrants it. If you have repeatedly (for example, two times or more) asked a student to stop texting in class, you are within your rights to simply ask the student to leave for the day.

In cases of distressed or disruptive students, it can be difficult to know the appropriate response. Remember to err on the side of safety, take the student in question and the situation seriously, and do not be afraid to seek outside assistance, including from a senior faculty member, the Counseling Center, or Student Affairs.

Teaching with Technology

In the Phaedrus, Plato describes Socrates's aversion to the newest technology: "[It] destroys memory [and] weakens the mind, relieving it of...work that makes it strong. [It] is an inhuman thing."

The technology in question? Writing. The stylus, and the recording of knowledge that it made possible, was going to destroy the older pedagogical technique of rote memorization. Obviously, the benefits of writing have outweighed the detriments it poses to our memorization abilities, and much (but not all!) resistance to the use of technology in the classroom is unfounded. In this section, you will [find best practices for the use of technology in the classroom](#), [technology services available at the University](#), and a brief discussion of [students' current of use technology](#)—to their benefit and detriment—in the classroom. Although you can be a highly effective teacher without technology, there is no reason not to embrace it for the benefits that it can bring to you and your students.

Best Practices for Using Technology in the Classroom

When using technology for teaching, there are four basic principles to be kept in mind:

1. **Alignment:** Technology should be used for a purpose—not for the sake of being flashy and not as a distraction from other forms of pedagogy. Carefully consider the ways in which video or other media that you share with your class are aligned with your learning objectives. Consider the technology that is most closely in alignment with your teaching skills and the needs of your students—if you don't like to teach with Power Point, consider giving students a handout outlining the main points of your lecture and listing major concepts to assist them in note-taking.
2. **Accessibility:** Be sure that the technology that you intend to use is accessible to your students. While computers are virtually ubiquitous, and students living on campus have ready access to computing labs and other technology on campus, do consider whether or not your students have access to technology that you want them to use. Also, consider your own access to technology: make sure that you are familiar with all of the technology that you use and that media technology in your classroom is functioning correctly before the class. Plan ahead. If you are going to show a film, for example, don't wait until you walk into class to find out if the player in your classroom supports your DVD's regional

format, or you will find yourself scrambling to come up with a lesson plan that does not include the film. By checking the regional format in advance, you will be able to have a matching-format DVD player delivered to the classroom by Technology Services. In addition, make sure your course materials, such as websites and PowerPoints, are accessible to students with disabilities. For more information, go to “[When a Student With Disabilities is in Your Class.](#)”

3. **Assessment:** As with lectures, discussions, and labs, provide your students with guidance when dealing with media technologies. If you are showing them a film, provide them with the learning objectives that you have for them in watching the film. Consider giving them a short assignment to be filled out as they are watching it, for example, to structure their interaction with the media and to assess their learning at the end of it. Likewise, if you are using Tweeting or Blogging as a means to generate discussion on course content online, be clear about how you will grade their online contributions—Do they receive points simply for participating or will they receive different amounts of points for different qualities of contributions? Is there a minimum or maximum amount of participation that you expect?
4. **Reinforcement:** Technology should be used as reinforcement of and supplement to your teaching, but it should not be a simple reiteration of exactly what you have done in another format. For example, PowerPoint presentations can be useful in structuring a lesson, but your slides should not match your lecture word-for-word, such that you are simply reading from the slides. Videos of dangerous or otherwise inaccessible procedures or experiences can be used to augment your lecture or description of them.

For examples of innovative ways University of Pittsburgh faculty have aligned technology with their learning objectives, see the projects chosen for [Innovation in Education Awards](#). Awarded each year, these honors encourage faculty to enhance teaching by developing innovative course materials. Recent projects range from a remote laboratory which allows many more Electrical and Computer Engineering students to conduct experiments and participate in research with faculty to online training modules that help Occupational Therapy students to improve their skills in observational assessment and ultimately test their inter-observer reliability.

Technology Available at the University of Pittsburgh

A wide variety of technological aids for teaching are available through Media Services at CIDDE. The following sections provide detailed information.

Classrooms with Technology

Many, but not all, classrooms at the University of Pittsburgh have DVD and VHS players, projectors that can be connected to your laptop, and Ethernet and wireless internet access in the classroom. To determine the technology capability of your classroom, please see this list of [classrooms with technology](#).

- In order to access the video and imaging technology that may already be in your classroom, you will need to get the key to your classroom's media cabinet from Media Services in B-10 of Alumni Hall.
- If you are plan to use the classroom's projector with your laptop, please check the [Technology Training](#) page ahead of time to make sure you have everything you need.
- Report problems with the media equipment in your classroom using the [problem report form](#). For emergency assistance with technology in the classroom, call 412-648-2831.

Technology Delivery to the Classroom

If your assigned classroom does not have the technology that you need, projectors and DVD and VHS players can be delivered to your classroom or picked up from Classroom Services in B-10 Alumni Hall. A wide variety of other technologies that are not regularly installed in classrooms can also be delivered. Submit delivery requests using the [delivery request form](#). The following technologies are available for delivery:

- Blu-Ray Players
- Clickers (Student Response Systems), hand-held devices that allow students to respond to questions and receive immediate feedback. The SRS, which collects student responses to multiple choice, true/false, and rank order questions, tabulates the results, and presents them for the class in graphic format facilitate student interaction in large classes (maximum of 120) where individual interaction is more difficult; they can also be used with great effect for anonymously polling students on sensitive or controversial topics in both small and large classes. Benefits of SRS include increased student interaction, engagement, and participation, particularly in large classes. SRS is also an excellent way to check student comprehension before the instructor moves on to a new topic, allowing for learner-paced lecturing.
- Document Cameras, which are overhead projectors capable of projecting images of not just transparencies, but also books and other three-dimensional objects that you would like for your class to see. These projectors have replaced traditional overhead or transparency projectors, which are no longer available.
- Laptop Computers
- VHS/DVD Players

How Your Students Are Using Technology

- **Laptops:** Anyone who has been in a college classroom recently knows that laptop use is increasingly common during class, ostensibly for note taking and other classroom-related purposes. Laptops also provide greater freedom in work environment, allowing students to work in any environment of their choosing. However, laptops can also be used for distraction—to check e-mail, Facebook, or other websites while listening to lecture, for example. In addition, being able to work anywhere also means that students are able to work in isolation instead of in computer labs. [CMU's 2006 Laptop Study](#) found that laptop use did not improve students' performance in a variety of educational settings. Among the findings are:
 - Students interacted with a broader audience and received more diverse sources of feedback while using laptops. Instructors saw this increase in diversity of audience and critique as a positive learning experience for students.
 - Students who used laptops spent more time on assignments and worked for longer periods of time than students who did not use laptops.
 - While laptops led students to devote more time to their assignments, this did not translate into higher quality work. Students often interrupted their work to check email and surf the Web, or they spent significant time searching the Web for pictures or diagrams they could have created more quickly themselves.
 - Students with laptops were more likely to work from home and reported home as their preferred place to work.
 - Students with laptops were more likely to work alone than other students.

As such, laptop use allows for greater flexibility, but also greater distraction and isolation. Although you cannot control student use of laptop outside of the classroom, consider whether or not you want to allow their use in the classroom. If you decide that you would rather students not use laptops during class, make penalties for use clear at the outset—and explain your reasoning to your students!

- **Other Wireless Media:** As with laptops, other wireless media, such as cell phones, tablets, and iPads, increasingly allow students access to the internet during your classes. If you prefer to have a policy disallowing these devices, make sure that it is clear and that you communicate it to your students at the outset of the class. During exams, in particular, you should consider a “No Electronic Devices” policy that is strictly enforced in order to prevent cheating via these devices.

Evaluating Your Teaching Skills

The introduction to this handbook advised you to think about your objectives for yourself in your role as a Teaching Assistant. Periodically, it is important to evaluate how well you have met those objectives. Evaluation has always been an important part of teaching. The focus of an evaluation may be a measurement of student performance, an assessment of teaching skill, a review of materials, or an effort to enhance both teaching and learning. In each case, valid and reliable information is needed if you are to make informed decisions about your teaching. Well-designed and carefully conducted course assessments can provide the information you need to make important decisions about how you teach and what you teach.

There are several reasons to evaluate your teaching performance. You might want to know how well a particular lecture was delivered; how students are feeling about a special technique you are using; whether you are providing enough or too much content; if students feel your tests are fair; how useful the textbook and/or readings are; how much material your students have learned; or any of several other questions about the teaching/learning process or its results.

Just as there are many reasons to evaluate, there are also many ways to gather the information. Some evaluation methods are as simple as a casual conversation in which you ask students how things are going, while others require special equipment or techniques (videotaping a lecture or gathering and analyzing student ratings using questionnaires). You can evaluate your performance by paying attention to the non-verbal cues of your students; reviewing student's notebooks; asking for specific, written comments; having a friend, colleague, senior faculty member, or teaching consultant sit in on one or more of your classes; and, of course, by assessing student performance through your tests and/or assignments.

In the following sections you will find detailed information on formal and informal evaluation methods.

Formal Evaluation Methods

Several formal methods of evaluation are available to you at the University of Pittsburgh. The faculty of your department or school may have developed a questionnaire that can be distributed to students and may have established norms for comparative purposes. In addition, many departments require that a supervising faculty member sit in on teaching assistants' recitations and teaching fellows' classes. Take full advantage of your department's mentoring programs. Experienced faculty in your department can offer you advice on both the content and the style of your teaching.

Formal teaching surveys and videotaping provide occasional and thorough feedback. But you do not have to wait until the end of the semester to conduct a survey. You will probably want to survey your class occasionally to see if the techniques you are using are effective so that you can make immediate changes. There are two types of evaluations that you can conduct at any time. One approach is to ask students to complete a short survey or to provide written answers to a few questions at the end of class. You might ask about a specific teaching technique that you employed or you might ask your students to list their favorite and least favorite aspects of the class. This type of evaluation measures your students' opinions of your teaching.

Evaluating your teaching can be a wonderful and inspiring experience. More often than not, you will learn something about yourself that you did not know. It can also be, on occasion, a bit discouraging. Remember that you are engaged in the process of learning how to teach. Telling critiques are not meant to offend, and taken as positive advice, can inspire good teaching.

More detailed information on the following evaluation methods are described in the following sections:

- [Survey of Student Opinion of Teaching by OMET](#)
- [Classroom Videotaping and Other Services by CIDDE](#)
- [Peer Review](#)

Survey of Student Opinion of Teaching

The [Office of Measurement and Evaluation of Teaching \(OMET\)](#) can conduct a survey of students' opinions of your teaching. The results of these surveys are confidential and are returned directly you (although some departments require that supervising faculty review them). Separate survey questionnaires have been developed for a number of different schools; your department may request that you use a particular form if you are teaching a lab or a recitation. Teaching assistants may also add items of their own or select items from OMET's extensive list for inclusion in the survey. Teaching assistants are encouraged to visit OMET for an explanation of the various evaluation options.

To request an OMET evaluation, use the [online instructions and form](#). Please note that requests are for surveys are due early in the term; check with OMET to find out the request due date for the term in which you are teaching.

Classroom Videotaping

[Free classroom videotaping](#) is also available to teaching assistants and teaching fellows. This service, provided by the [Center for Instructional Development & Distance Education \(CIDDE\)](#), allows teaching assistants to watch themselves teach on videotape while receiving direct observation-based feedback from a departmental teaching assistant supervisor or a specially trained CIDDE TA consultant. CIDDE provides personnel and equipment as well as private facilities for viewing the tape. This program gives teaching assistants the rare opportunity to see themselves as their students see them. For more information, see [TA Services](#).

Peer Review

Having a faculty or peer review of your teaching conducted should be as simple as asking a fellow graduate student, or a faculty member in your department, come to your class to observe your teaching. Some departments require that this be done regularly, and have procedures in place to do so. Others will require more planning on your part.

The following links provide handouts and instructions that you can give to the person conducting your review to guide them through the process.

- [Preparation for Peer Review](#)
- [Classroom Observation](#)

Preparation for Peer Review

Preparing for a peer review involves the following:

- Collecting and reviewing course materials
- Meeting with the instructor
- Selecting a method to use in collecting data for the classroom observation

The first step in a peer review of teaching consists of **reviewing the course materials**, as they will provide context for the classroom observation. Contact the instructor to be reviewed to request a copy of all relevant course materials. Provide sufficient time for your review of materials before your pre-observation meeting with the instructor. The material to be reviewed may include, but not be limited to the following:

Course syllabus

The syllabus can be viewed as a “table of contents” for the course, laying out the organization of the course as well as an informal contract between the instructor and the students. The course syllabus should provide a comprehensive view of the course, the faculty’s expectations regarding instructional approach, student outcomes, and the means of assessment. The syllabus generally includes the following:

- **Basic information about the course** includes the course title, meeting times, location of classes, instructor’s name and contact information, and any prerequisites.
- The **course description** may be basic department approved narrative as well as the instructor’s specific description of the course content; topics covered and the themes that will be stressed; outline of the course structure; and an explanation of how lectures, discussions or group work will be integrated into the course.
- The **course goals** describe the overall purpose of the course, e.g., *“This course provides a basic introduction to the field of psychology”* or *“This course will teach advanced principles and methods of systems analysis.”*
- The **course objectives** state specifically what knowledge and skills the student will acquire upon successful completion of the course. For example, an objective in a sociology class might be *“Analyze how gender has influenced the development of home life.”* In a Freshman Studies class, a course objective might be *“Analyze a completed study schedule for its effectiveness and adaptability.”*
- The **course rationale** is a brief statement that explains the purpose of the course, its intended audience, and how the course fits into either the University’s or your department’s curriculum.
- **Course schedules** or calendars of events should include such items as dates assignments are due, the exam schedule and any holidays during the term.
- Any **department/school policies** that relate directly to the course should be explicitly described in the syllabus, e.g., class participation, attendance/tardiness, reading assignment expectations, and cheating/plagiarism policy.
- The **course requirements and grading policy** should be described, e.g., exams, quizzes, projects, papers, and a basic method of assessment the instructor will use to evaluate these requirements.

Textbook

Review how the content of the textbook matches the course goals. Is the text one that is commonly used for this course? Does the publisher provide additional materials to accompany the text that would benefit both instructor and students, e.g., software programs with practice exercises or an instructor’s manual with suggestions for classroom activities?

Reading Lists

These lists, similar to the textbook, could be reviewed for appropriate content and substance. Is there too much, or insufficient, reading for most students?

Assignments

These may be reviewed for their consistency to the course goals and objectives. Are they meaningful? Do they provide practice for the students in applying new information they should have gained from the class sessions and reading assignments?

Assessment

Assessment of students' learning includes exams, quizzes, projects, and papers that are the course requirements. These assessments should be reviewed for their consistency with the course goals/objectives.

As you review materials, you will be looking for consistency among the stated course goals and objectives, the instructional activities, and the student assessments. Also, consider the difficulty level of the content in relation to the target audience. You may review the appropriateness of the instructional methods for the content and the course goals/objectives. Review the clarity of the syllabus information and the effectiveness of the communication of course goals and objectives to the students. Does the syllabus provide students with a clear idea about what the instructor expects from them?

After reviewing the course materials and noting any questions you may have about the course or course materials, **schedule a preliminary meeting** with the instructor to discuss the specific class to be reviewed. This meeting is significant as it sets the stage for the classroom observation that follows. Therefore, it is important to establish a comfortable, collegial relationship during this preliminary meeting. Discuss the goals and intent of the peer review and the benefits for faculty of collaborating on and supporting each other's teaching experiences. If this review is part of formative evaluation, the goals should be especially tailored to the individual needs of the instructor.

This meeting usually includes some discussion of your review of the entire course and course materials, with any questions/comments you noted during your review. The focus of the meeting, however, should be on the class to be observed. This discussion may include the following:

- Background information, such as the topics that were taught prior to this class and a description of the students' background and responsiveness
- Goals for the lesson to be observed—what the instructor wants students to gain from this lesson

- Instructor's plan for activities in the lesson, e.g., lecture, discussion, case study analysis, small group activity
- Lesson materials, e.g., handouts or PowerPoint presentation

Following your discussion about the lesson, you will discuss teaching skills to be observed and how the observation data will be gathered. Generally, you and the instructor will collaboratively identify two or three main teaching skill areas for the focus of the observation. Several examples of these areas include the following:

- Use of questions to encourage active learning
- Use of small groups in a large enrollment class
- Use of examples to explain new concepts/ideas
- Relating homework assignments to class activities

Each instructor should identify particular areas or teaching activities that he or she would like to enhance or teaching skills requiring feedback from you. It might be useful to ask the instructor about what aspects of teaching he or she feels are most and least successful. If this is the first in a series of formative evaluation reviews, you may want this first classroom observation to be a more general one. You and the instructor may agree that your main observation goal will be to identify teaching skills that could be the focus for future enhancement.

Another goal for your meeting is to **select a method to use in collecting data for the classroom observation**. You will want to become familiar with the options available prior to your meeting so that you can review them with the instructor. Several methods are described below with observation instruments included.

Peer Review: Classroom Observation

Classroom observation provides the opportunity to gather data on the teaching/learning activities in a classroom. This component of peer review is crucial because you know, as a researcher, that data must be accurate or all subsequent procedures using these data will be flawed. In peer evaluation, the term *observation* denotes careful, systematic examination of the events and interactions occurring during classroom instruction. The term also applies to the records made of these events and interactions.

One important quality for all reviewers is consistency and fairness in the evaluation. It is important to remain as objective as possible during your classroom observation. Although it is difficult to remain completely unbiased in peer review, being as objective as possible will provide a clearer representation of the classroom events. One way to increase your objectivity is to separate fact from inference during your observation. Your main goal during the observation

is to collect facts; it is not to reach conclusions about the success or shortfalls of the classroom activities. For example, noting, “Students appeared interested in the lesson” is an inference, whereas recording specific instructor questions and noting the number of students responding to each question are observed facts.

As you observe, be inconspicuous in the classroom. Arrive 5-10 minutes before the class is scheduled to begin, and take a seat in a position that will allow you to observe without distracting students. Stay for the entire class period, and speak briefly with the instructor when the visit is over. Remember that the instructor may feel somewhat anxious about being observed and expect some type of indication from you that the teaching session was a success.

While there are various methods that can be used to gather data during your observation, two basic procedures are described here.

You may choose to take complete notes as an **anecdotal record** of the classroom events and note your comments in preparation for your meeting with the instructor (Form A). When using the anecdotal record, you will write down all the dialogue that you feel relates to the area you are observing, including the following:

- Instructor commentary, questions, responses to student questions
- Student remarks, questions, responses to questions
- Nonverbal behaviors of both students and instructor

As you may assume from the description, when taking an anecdotal record of classroom events, you will have many pages of notes. You will find this procedure valuable, however, in your preparation for your consultation with the instructor and the subsequent meeting. If you were successful, the anecdotal record will provide a true representation of the classroom events.

Using the anecdotal record, you may then complete a checklist-type form after the classroom observation, using these data for illustration and example.

A second method used in classroom observation is using an **observation instrument**—a form or checklist with items that direct your attention and responses during the observation. Although most observation forms include areas for specific examples of instructor (and student) activities, they usually do not require the amount of writing that is needed with an anecdotal record. Several forms are included as attachments (Forms B-E) with different areas of focus for observation—lecture, questioning, and group work.

Choose the form that is most applicable to the planned teaching method or strategy that you and the instructor have agreed is the focus of your observation. You or others in your department may wish to modify these forms in order to adapt them to the needs of your specific discipline.

Even if you are using a checklist, take ample notes of specific illustrations that will document your observation and serve as data for a meaningful discussion with the instructor.

It is important that the classroom visitation be perceived as a positive opportunity to enhance teaching—an opportunity that can initiate valuable dialogue between you and your colleague about teaching. Keep in mind this is a single class, a “snapshot” in time of many classes that form a term-long course.

Informal Evaluation

Another approach, a less direct approach, measures what your students have learned and uses that as a basis for evaluating your teaching. Set aside five minutes and have students write a short summary of your lecture or define key concepts from the readings. Follow up a class discussion with a short in-class writing assignment where students list issues that they wished they had raised or inventory the best ideas that were discussed. Let students know in advance that these assignments will not be graded and that your goal is to evaluate your teaching and not their performance. Students are usually eager to participate in these “surveys.” Asking your students to evaluate you empowers them. Whichever method you use to evaluate your teaching, your evaluation should conform to three simple rules:

1. Ask questions with a purpose in mind. What are your teaching objectives? What do you hope students are learning? What are you prepared to change? Choose survey questions and create evaluative assignments that will produce real answers to the questions you have about your teaching. Do not waste your students’ time.
2. Make your surveys anonymous. Although you cannot guarantee perfect anonymity in an informal survey, ask students not to put their names on the surveys or quizzes. Students will feel much more comfortable being forthright if they know that their responses will not influence your opinion of them.
3. Follow up on your in-class evaluations. Read the responses carefully and report the results to your students. Let them know what changes you plan to make and what changes you feel it would be inappropriate to make. If time permits, involve your students in a discussion of the evaluation and the class. You may learn a lot.

Developing a Teaching Portfolio

Information on creating a Teaching Portfolio is found below. More personalized and interactive delivery of the same information can be found by attending one of TA Services Teaching Portfolio workshops, which are held each semester. You might also consider attending the Teaching Philosophy workshop, also held each semester, in which TAs are guided through the writing of a teaching philosophy statement. Lastly, students who enroll in the University Teaching Practicum (FacDev 2200) produce a teaching portfolio as the culmination of a semester-long course on teaching and learning strategies.

Check the [Workshops](#) for this semester's workshops.

University Teaching Practicum (FACDEV 2200)

The Faculty Development seminar (FACDEV 2200) is a graduate seminar designed for teaching assistants and teaching fellows who will be teaching a class independently for the first time. A mainstay of the University's commitment to both graduate and undergraduate education, the Practicum is a practical introduction to teaching. New instructors are encouraged to share concerns and experiences through class discussions, and assignments encourage graduate student instructors to create and improve classroom materials including syllabi, student assignments, and lesson plans.

FACDEV 2200 is recommended for all graduate students instructors teaching for the first time. The Practicum is offered in two formats: a weekly face to face class and an online version with four required face to face workshops. Both versions are offered in the Fall term. The traditional format is offered again in the Spring term, and the online version is offered again during the summer. Due to the practical nature of the course, all students registering for either section must be teaching their own class when FacDev 2200 is offered, or, have the ability to teach two class meetings as a guest instructor.

Portfolios and the Job Search

At the University of Pittsburgh, most teaching portfolios are prepared in anticipation of a job search, so this section will focus primarily on creating a portfolio as part of an application for an academic teaching position. Teaching portfolios are becoming more common in the job

application process, as universities place a higher priority on teaching in response to public demands for quality education.

A teaching portfolio should be tailored to the specific position to which you are applying. Small, predominately undergraduate colleges obviously have different teaching objectives than large research institutions. Make certain you have a clear idea of the school's teaching mission and the type of teaching that will be expected (introductory courses, large lecture classes, seminars, survey courses for non-majors) so that you can maximize the effectiveness of your portfolio in your application. Just as in applying to graduate school, it is a good idea to contact the university or college to find out about the needs and priorities of that particular institution. Most universities advertise that they have a strong commitment to teaching, but you should speak to faculty members or students to get a truer picture of the institution's priorities. Specifically ask about the emphasis placed on teaching abilities in hiring or tenure decisions. Junior or recently tenured faculty members are often good resources for candid information about the "culture" of a particular department or school.

Keep in mind that universities annually review hundreds of applications. As a result, quality, not quantity, is the key to a good teaching portfolio. Not all universities will require a full-length portfolio, but if you have developed a complete portfolio, you will be able to pick and choose the most appropriate material to insert for each position that you seek. Furthermore, some teaching assistants and teaching fellows have found that by taking time to prepare a full portfolio they were better prepared to articulately answer questions during an interview.

A teaching portfolio is a documentary history of your teaching philosophy, experience, and evaluation. Increasingly popular, teaching portfolios are a means of reflecting on your teaching objectives and can be a useful way to record what you have done in the classroom and what you would like to change. Perhaps most important, they are often a significant part of a young academic's job application.

Creating a teaching portfolio is a worthwhile (but time-consuming) process. The earlier in your career that you begin to document your teaching experience the easier the process will be. In the following essay, we introduce the teaching portfolio and suggest how you might present your teaching experience at the University of Pittsburgh to potential employers.

Types of Teaching Portfolios

- **Reflection.** A teaching portfolio can be a systematic means for instructors to reflect on and improve their teaching. The process of articulating teaching goals and then documenting how these goals are met is central to creating a portfolio, and it offers

insight into your teaching approach. Creating a portfolio reveals both those areas in which you excel as a teacher and those in which you might wish to improve.

- **Evaluation.** In some universities, teaching portfolios are used as the basis for evaluating teaching assistants' progress or as part of a tenure review (or post-tenure review). Generally, portfolios designed to highlight teaching accomplishment are prepared by individual instructors and are then reviewed by a committee of colleagues or supervisors.
- **Curriculum Development.** Some departments and/or universities have begun using teaching portfolios as the basis for curriculum development. In this case, instructors prepare and exchange portfolios as a basis for discussion about the department's overall goals for instruction. The portfolio can demonstrate how an individual instructor's teaching style and course content fit into the department's goals.

Organization

Your teaching portfolio should be organized in such a way that a potential employer can carefully peruse the document or quickly scan it. If the college or university to which you are applying does not provide specific guidelines, you should follow a standard format. Typically, this will include five sections:

1. [Your teaching philosophy statement](#)
2. [A list of courses taught](#)
3. [Sample course materials](#)
4. [Student evaluations](#)
5. [Other documentary support](#)

These materials are usually either professionally bound or collated in a three-ring binder with each section separated by a tabbed divider. Each section, except for the teaching philosophy and the list of courses that you have taught, should be preceded by a short summary that lists the supporting documentation you have included. Each introductory summary should also provide some context for and explanation of the material presented. (You may organize the material in any order that you like within the guidelines; the components as listed above are in the order in which they appear in most teaching portfolios.) As applying for jobs becomes an increasingly online venture, it is also advisable to have a PDF version of your portfolio. Having a PDF version of your portfolio will allow you to attach your portfolio to any job application. Just as you would in a binder portfolio, make sure the appropriate bookmarks are saved and the document is easily navigated.

Teaching Philosophy Statement

It is particularly important to tailor this portion of the portfolio for each institution to which you are applying. This statement is generally viewed as a guide or cover letter that introduces both you, the applicant, and the rest of the portfolio. Since it may be the only part of the portfolio that a busy search committee reads, make it memorable. Keep it short (no more than two pages) and concrete. Do not waste space on obvious or vapid generalizations. Everyone, for example, thinks it's important to be a "good" teacher; it's much more significant and memorable to explain why you would include Tony Morrison's novels in a reading list for a course on American slavery or to explain why you feel an introductory Geology class is important for non-majors. You should think of the philosophy statement as a map to the portfolio that follows. The materials that you include in the portfolio should illustrate points that you include in your philosophy.

List of Courses Taught

The portfolio should include a chronological list of the courses you have taught. Each course should be accompanied by a brief description that states the following:

1. Your responsibilities (i.e., teaching assistant, primary instructor, guest lecturer, exam writer/grader, discussion leader, lecture preparer, etc.).
2. The number of students in the course.
3. The audience of the course (i.e., upper division undergraduate, introduction for non-majors, etc.).
4. The goals of the course.

The other material you include in the portfolio may refer to this list as a reference.

Sample Course Materials

This section provides the details of the portfolio. Anything that you created to improve or evaluate your students' performance is fair game, but remember quality not quantity is the key. Do not include the syllabus for every course you have taught; rather, include one or two representative syllabi. You might, for example, include a syllabus from a course that you have taught and one from a course that you would like to teach; or a syllabus that you have used in the past and a revised syllabus for the same course that you have changed based on feedback from your students or colleagues.

Remember that these materials are meaningless without context. The introduction of this section should contain a list of the materials included (with page numbers) and should reference the “list of courses taught” that you have prepared. Either as part of the introduction to the collection of course materials, or as a separate cover sheet for each selection, you should explain how the materials relate to your teaching philosophy and learning objectives (“After completing this assignment, students will be able to...”). You might also add an analysis of the materials in which you evaluate how successfully the teaching materials met your learning objectives and what you would do differently in the future. This section is not only a chance to showcase your best teaching materials; it is also an opportunity to document a commitment to improving your teaching.

These are some materials that you might want to include:

1. Syllabi—of courses that you have taught or that you would like to teach
2. Exams or quizzes
3. Assignments or papers, including samples of students’ work and your feedback (with the students’ permission)
4. The table of contents or selections from a collection of course readings
5. In-class activities, small group assignments, games, or review sheets
6. Grading criteria sheets, exercises on plagiarism or proper citation practices, checklists for lab reports, hints for taking an essay exam, or any other materials designed to help students to become better scholars
7. Student Evaluations

Student evaluations can be either formal or informal. Always take advantage of the formal, end-of-the-semester evaluations offered by the Office of Measurement and Evaluation of Teaching (OMET) at the University of Pittsburgh even if they are not required by your department. If you have not had a formal evaluation done in the past and are currently teaching a course, ask your students to participate in an informal and anonymous evaluation. Have students complete a brief questionnaire or ask them to write brief answers to questions about your teaching. Not only will you get important material for your portfolio, but you will also get some valuable feedback on your teaching during that semester. This technique also works well if you are a guest lecturer and will not have the opportunity to participate in a formal evaluation.

Once again, context is important. You do not want to include all your evaluations and you do not want to let the evaluations speak for themselves. In the introduction to this section of the portfolio, you should show how your evaluations demonstrate that your teaching is above average for your discipline. That does not mean that you should include only rave reviews: too much praise may make your application seem unrealistic. One way to select evaluations for inclusion is to choose only those evaluations that actually had an impact on how you teach. Obviously you will want to include positive comments—especially those that include specific

details about your teaching—but you should also include evaluations that make constructive critiques that you then acted upon. For example, if one of your students complained that “class was boring because the instructor lectured too much,” you might include the negative evaluation and then explain how you addressed the criticism by planning more discussions and group activities the next time you taught the class.

Other Supporting Documentation

Include any additional materials that document your achievements and your commitment to teaching. Some of these materials might include the following:

1. Evidence of your efforts to improve your teaching such as classes or workshops that you have attended.
2. Teaching awards that you have received.
3. Letters from a supervising instructor or department chair documenting your progress.
4. Unsolicited letters or e-mail correspondence from former students. (Be sure to get their permission before including their correspondence in your portfolio.)
5. Documentation that you have served as a mentor for new instructors in your department.

Portfolio Evaluation

The more feedback you receive on your portfolio prior to submitting it to a potential employer, the better. Therefore, if you are using the portfolio as part of your job search, it is important to have as many people as possible review it. To start, make an appointment with Teaching Assistant Services consultant to review your materials. The consultant can offer feedback on the organization of your portfolio and can make suggestions on what material to include and how best to present your teaching experiences.

In some departments, teaching assistants work together preparing portfolios—whether it is discussing which materials to include or critiquing one another’s portfolios. You should also have your advisor or another senior member from your department, preferably someone who recently served on a faculty search committee, review the contents of the portfolio. Finally, if you have a contact at the college or university you are applying to, you might ask if he or she would review the portfolio (but only if the individual feels that it is appropriate).

Do not despair if you feel that as a beginning instructor you do not have enough material to create a worthwhile portfolio. Even if you have taught only a recitation or two, those classes can be a rich source of documentation for your portfolio. If you are concerned about your lack of

teaching experience and would like to get more experience, volunteer to serve as a guest lecturer for a friend's or colleague's course. Also take advantage of any training that your department or the University offers (such as the New TA Orientation, teaching workshops, or the University Teaching Practicum offered by the Center for Instructional Development & Distance Education (CIDDE). See [TA Services](#) for more information. A teaching portfolio that documents a great deal of thought about teaching can be just as effective as one that documents a great deal of experience but little critical reflection. Consider including syllabi and other materials for courses that you plan to teach but have not yet taught. Considering that the hiring schedules of most universities give new instructors little time to prepare for courses, potential employers may appreciate the fact that you are ready to “hit the ground running.”

Policies

The University of Pittsburgh has a number of policies that govern graduate student rights and conduct.

Policy	Description
<u>Teaching Assistant, Teaching Fellow, and Graduate Student Assistant Policy</u>	This guideline explains the role of graduate student instructors and assistants at the University of Pittsburgh, describes their responsibilities to students, department and University, and provides information on employment benefits rights. Here you will find full information on credits required to fulfill your role as a TA, hours that you will be expected to work, and what will happen in the event that you are unable to fulfill your duties as a TA.
<u>Graduate Student Researcher Policy Statement</u>	This guideline explains the role of graduate student researchers at the University Pittsburgh, describes their responsibilities to students, department and University, and provides information on employment benefits rights. Here you will find full information on credits required to fulfill your role as a GSR, hours that you will be expected to work, and what will happen in the event that you are unable to fulfill your duties as a GSR.
<u>Stipends for Graduate Student Researchers</u>	Current rates.
<u>English Language Fluency Policy</u>	Policy governing English language fluency levels for its TAs and TFs, as well as the testing that helps to determine a TAs English language fluency.
<u>Academic Integrity Policy</u>	The University's academic integrity policy documents your obligations and rights as both a student and an instructor with regards to the integrity of the work that you produce as a graduate student, as well as the integrity of the undergraduate work that you will supervise and grade.
<u>Research Integrity Policy</u>	The University's research integrity policy documents ethical and legal obligations concerning research.
<u>Anti-Discrimination Policy</u>	Affirms the University of Pittsburgh commitment to nondiscrimination, equal opportunity, and affirmative action in admissions, employment, access to and treatment in University programs and activities, in accordance with federal, state, and local laws and regulations.
<u>Anti-Harassment</u>	This policy statement will be applied with due respect for the

<u>Policy</u>	University's commitment to equality of opportunity, human dignity, diversity, and academic freedom, and, when constitutionally protected speech is implicated, only to the extent consistent with the First Amendment.
<u>Sexual Harassment Policy</u>	Please also note that the Office of the Provost recommends completion of an online sexual harassment education course .
<u>Policy Regarding Faculty-Student Relationships</u>	University Policy strictly prohibits intimate relationships between faculty and students. Please note that as a TA or TF, this policy governs intimate relationships between both yourself and YOUR faculty supervisors, as well as between YOU and your students
<u>Extreme Weather/Class Cancellation Policy</u>	In the event of extreme weather, the University may cancel classes. A list of TV and radio stations on which this will be announced are included in the policy; you may also call 412-624-4141 to check if classes have been cancelled. Please also consider having an e-mail list for your students, and/or using the e-mail function in CourseWeb to alert your students to any class cancellations.
<u>Regulations Governing Graduate Study at the University of Pittsburgh</u>	Although individual programs and departments have their own specific regulations, the University of Pittsburgh has a set of regulations governing all graduate-level study at the University of Pittsburgh.