

Rensselaer Teaching Assistant Handbook

GRADUATE SCHOOL



Rensselaer

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Introduction

This document is intended as a quick source of information for TA's who are new to teaching at Rensselaer. It begins with a short description of a teaching assistant's duties, followed by a collection of tips for teaching and grading. Though not a comprehensive teaching manual, it will offer some helpful advice. In addition, during the Rensselaer Teaching Assistant Orientation Program, this handbook may serve as class material for some of the lectures and workshops you attend.

For additional information, consult *The Rensselaer Handbook of Student's Rights & Responsibilities* (available from the Dean of Students Office), and ask the people running the Orientation Program for more specific references.

General Hints for Teaching

1. Be clearly and conspicuously organized.
2. Provide a syllabus.
3. Give clear instructions.
4. Recommend significant reading materials.
5. Use diagnostic tests early.
6. Stress major topics and techniques.
7. Give real world examples and/or model assignments.
8. Review material.
9. Encourage discussion among everyone to facilitate active learning.
10. Provide quick and useful feedback.
11. Encourage revision where possible.
12. Use visual aids and handouts.
13. Remember that no one wants to learn from someone they do not respect.

Teaching Assistant Duties

The role of TA is not a simple one to describe, as it is not universal and consistent across all of Rensselaer. The unifying element to all TA duties is reflected in the job title itself: Teaching Assistant. In one way or another, all TA's are helping to teach the undergraduate population, by:

1. Teaching a class
2. Running a laboratory
3. Conducting a discussion or recitation section, or
4. Grading students' work.

In different departments, these duties are divided differently. The science departments use TA's for all of the duties listed above, in about equal measure. Engineering TA's are less likely to be lecturing, concentrating more on discussions and labs. The humanities do not easily lend themselves to laboratory study, so humanities TA's rarely have anything to do with labs. They mostly lecture and run discussion sections. Management TA's time is evenly divided between discussions and labs. In addition, all TA's have heavy grading duties, be it for homework, labs, papers, or exams.

Giving Lectures

Standing in front of a large group of people can be very disconcerting, especially if those people don't seem to be paying any attention. They may yawn, talk, listen to music, or simply look bored. This state of affairs is only natural. As a lecturer, you do not have to be a stand-up comic, and as a student, you cannot be expected to pay attention all the time. There are, however, things a lecturer can do to improve the students' span of attention without resorting to sight gags.

Avoiding Note-Reading

There are significant differences between written and spoken presentations. If you prepare a lecture by writing an essay, and then you read that essay to the class, chances are no one will follow what you are saying. Keeping information in note form on cue cards is helpful, but reading from a script is frequently distracting to you and the students.

Lecture Topics and Sections

The best way to put together a lecture is to organize your topic carefully and divide it up into a manageable number of sections, providing each section with a memorable subject heading. Begin the lecture by writing those section headings on the blackboard. As you do this, explain the general topic for the day, and remind the students about the last lecture and explain how it ties into the present one.

Most writers rely on their readers being able to review things they missed or to pause over difficult ideas. When a person is reading, he or she can read at a personal pace. A lecture is different. The listener has only one chance to comprehend the material. Therefore, as a lecturer you have to take into account differences in learning rates. Repeat yourself by saying the same thing in different ways, and at different times. Because there is no way for your listeners to go back over difficult and abstract ideas, use real life, specific, and memorable examples. The average person has only a 10 to 15 minute attention span, so break up the talk with questions and demonstrations and try to vary the pace. Develop perhaps four different ideas in the space of an hour.

If you do break the lecture into sections, name each section with a clearly descriptive heading and write those headings on the board before beginning the lecture. Indicate to students a change in subject by using clear transitions and, better, by underlining or otherwise checking off the subject heading on the blackboard. This will also help you keep track of where you are and give you a clear way to organize your material.

Multi-Media Aids

Use technology that achieves your objectives – if available and appropriate, use computer technology to help deliver your message. Blackboards and standard overheads are effective learning aids in many situations, and should not be dismissed simply because they may be perceived as passe or “low-tech.” When using standard overheads, it helps to prepare them in advance. If you use the blackboard, write big and give students a chance to copy what you have written down before removing it from the board. Overheads and computer projection systems are available from Multi-Media Services, at 276-8282, Website address: <http://mms.rpi.edu/>. Computer equipment is provided on a rental basis, so the course professor must approve its use.

Lecture Style

Think now and again about your style of presentation, and tailor it to the kind of class you are lecturing to. If you are in a smaller room with only a few students, a conversational tone ought to work well. If you are in a small room with many students, consider talking to your department office about requesting a room change. If you are in an amphitheater and using a microphone, you will probably have to speak more formally, because two-way communication is difficult. Even if you do get an answer to a question, chances are only a few people will hear what is said. Regardless of the size of the room, move around casually, make eye contact with as many students as possible, and vary your tone of voice and rate of speech.

In general, try to make what you have to say interesting, but be sure that what you are saying is clear.

Conducting Seminars

Recitations

Recitations are most commonly held for science, engineering and math courses, and are based on problem sets. The students should be encouraged to talk through their solutions, and everyone should participate in considering answers to the problems, confusions, and questions that arise during the session. Students should realize what place the recitations have within a particular course, that lectures and seminars are integrated and mutually reinforcing activities. Toward that end, TA's should know what is happening in the lecture from week to week. They should gear the discussion so that the students will have a chance to practice the relevant skills, as well as obtain answers to questions that occur to them during the lectures.

Going Over Key Concepts and Important Skills

Go over the key concepts and the basic principles. Try not to assume that everyone should already have complete control of essentials. Learn the names of each student and try to recognize each as an individual, especially when the lecture class is large and the students feel anonymous.

Cover the problems that require the most important skills, and leave the esoteric for when there is extra time left over. Keep track of particular problems that students are having, and go over them when a test is pending. Keep extra problems on file to provide students with more and varied practice.

Discussion Groups

Discussion groups are usually held for disciplines in the humanities, social sciences, and the school of management. They are generally based on pre-assigned reading, and work best if the number of students is kept down and everyone fully participates. It is a good idea to provide a detailed and written description of what is required prior to the class so that the students can prepare. Have a set of significant questions ready to ask of students, questions that test not only the depth of the students' preparedness, but also the level of their reflection on the matter. Be certain that everyone speaks, but try to create a convivial rather than a competitive atmosphere. Learn everyone's name and use it. Call on people who are reticent. Do not allow one person to dominate the discussion, and encourage students to discuss among themselves what is being said. Do not simply try to get the students to see things the "right" way, but work toward a mutual learning experience. Small group interaction is usually one of the most rewarding experiences of undergraduate study.

Using the Appropriate Tone for Questions

A great deal depends on how you phrase questions. The tone you adopt, whether paternal, sarcastic, Socratic, sincere, probing, encouraging -- when asking questions it will help to shape student attitudes toward the subject, the class, and you. It is therefore best to decide why you are asking questions and then to decide how to ask them. As with all other aspects of teaching, you will probably be trying to accomplish several things at once.

What Kinds of Questions to Ask

Questions help find out what people know about a given subject, how alert they are at the moment, and whether you are making sense to them. When you want to determine what level of information the students have obtained, ask several questions rather than one, and ask specific questions about the material that is being discussed. For example, you might ask: "What is supply-side economics?" "How is this approach to describing economies helpful in ways that demand-side economics is not?" Or, ask a question about a topic that is interesting or important on its own, but ask it in terms that are relevant to the class. "Do you think that the solution to the drug problem lies on the supply or the demand side?" The advantage here is that you provide a context outside of class in which the things they are learning can be helpful. Their answers will therefore tell you whether they have learned what you wanted them to, and if the students can abstract from what they are learning. Another advantage to this approach is that you can borrow their enthusiasm for a current event or a real life situation and invest it in the subject matter you have to teach.

Questions are also good for encouraging students to think independently and for intellectual exploration. Questions designed for these purposes fail to work when they appear to be "Guess what's on my mind?" questions, when the answer is always the same or of the same type. Ask real questions, and use the answers to develop the discussion by building new questions on top of previous answers. "If supply-side economics looks at modes of production, as Rosalind suggests, how might supply-side economics influence demand-side economics?"

What to Do If No One Answers

Try to vary the difficulty and complexity of the questions you ask, and don't panic if no one has an answer right away. Avoid answering your own questions or reposing them continually in different ways.

Making Use of Answers

When listening to answers, pay close attention and let the students know that you are interested in what they are saying. Ask a student to elaborate on an answer that is too compact or to develop an idea that someone else has offered. Do not be afraid to admit that you don't have an answer. If there is no single answer, be sure not to give students the impression that there is. Don't ridicule wrong answers or draw attention to someone who has not done the work they were supposed to have done if doing so will encourage a sense of alienation on the student's part.

Running Laboratory Experiments

Lab Safety

Acquaint yourself with the laboratory in which you will be instructing. Know where the phone is and what the appropriate emergency numbers are. Local 6611 is the number for security and emergency assistance. Locate and know how to operate fire extinguishers, emergency exits, showers and eyewashes, electrical circuit breakers, main gas shutoff, and spill kits.

You should know where the first aid equipment is and know the procedures for any specific accidents which could conceivably occur. You should also have the proper safety equipment for working in labs, including lab coats, eye protectors, safety shoes, and any other appropriate equipment. Do not be cavalier with safety procedures, since students will adopt their teacher's attitudes, and any laxity on your part may be perceived as acceptable procedure.

Keeping the Lab Supplied

Know what equipment the lab has and what materials are available to it. You will also need to know where materials are stored and possibly where to get more if supplies run short.

Lab Reports

Provide explicit, written instructions on how to write lab reports, including what they should contain and what they are expected to accomplish. It is a good idea to provide detailed syllabus at the beginning of the term which explains lab reporting, provides an overview of the experiments, and includes whatever practical information – phone numbers, locations, due dates, etc. – the students will need throughout the year. Provide the name of an excellent and, if possible, discipline-specific guidebook. For example, a biology TA might recommend Jan A. Pechnik's [A Short Guide to Writing About Biology](#). Make sure that the reports come in as scheduled and try to allow students to revise based on your original evaluation of their report. Give specific explanations on improving both the report and the student's laboratory procedures. Writing, remember, is a learning process, not simply a matter of report.

Preparing for the Lab

If you can, perform the experiment before the students do, so that you will know the procedures fully and be prepared to handle any possible difficulties or questions. When answering questions, be careful not to create the impression that there is one single correct answer. They are learning how to think in a particular manner; they are not following a recipe. If, for whatever reason, the experiment cannot be performed ahead of time, work it out in your head or on paper and discuss it with faculty members.

Before they perform the experiment, provide the students with an explanation of the equipment and materials they will be working with. They should not know exactly what to expect, but they should know the basic procedures.

Preparing Tests

Like most other aspects of teaching, testing has two objectives: evaluation and education. Prepare tests, exams, and essays so that student performance accurately reflects each student's understanding of the material. This way, the student will learn something in the process of discovering how much he or she knows about the subject.

Sample Questions

The students should know beforehand exactly what material they will be responsible for and how they will be graded. It is a good idea to provide sample questions and practice tests, but it is not wise to give the same test twice. Sororities and fraternities keep files, and a duplicate exam will give some students an unfair advantage.

What a Test Should Cover

A test should cover only the material central to the course objectives, and should allow students to demonstrate a range of understanding. A test should also present problems of varying complexity so that a reasonable differentiation among student capacities will be reflected. If the best student in the class gets 100% and everyone else fails, obviously the test was prepared for one person only.

Types of Tests

There are essentially three different kinds of tests. Each is better suited for testing a particular kind of knowledge. When testing for students' absorption of factual material, multiple choice, true false, matching, and fill in the blank formats are best. They are easier for teachers to evaluate because they are quickly graded and provide little room for debate, but they are hard to prepare properly.

To find out how well students can apply the theories or techniques they have been taught, prepare problems, multiple choice, short answer, and essay questions. They offer students a chance to demonstrate powers of memory and abstraction. These kinds of tests are more time consuming to grade.

To test analytic and evaluative capacities, use essays and multiple-choice tests. Essays allow students to demonstrate their ability to communicate complicated ideas. Essays, of course, are very time consuming to grade and require considerable, specific commentary.

Many TA's find evaluating student performance the most difficult part of their job, feeling they are being asked to make a character judgment when they have to put a grade on a paper. Remember that you are evaluating a person's academic performance only, and in just one area of academic endeavor. By recognizing that a person's chemistry, for example is really third rate at this time and under these circumstances, you are recognizing nothing more than that.

Grading accomplishes two objectives. First, it provides a ranking among students so that prospective employers or graduate school admissions officers can discern who among many candidates is best suited for a position. It also provides students with encouragement, as well as information to help improve their skills and capacities. The second of these two purposes, providing helpful information and support, ought to be your particular concern.

Grading Techniques

Normative grading ranks an individual within a class, while criteria grading indicates an individual's achievement measured against a standard set by the teacher. If you grade according to a norm and distribute the grades in a class over a curve, then someone looking at the grades will be able to tell how a student did in relation to the other students in the class. Criteria grading offers the advantage of allowing a student to perform to his/her own level, but as a result it offers no information about the student's rank within a class.

Informing Students of What Is Expected

Whether you choose normative or criteria grading or some combination of both it is crucial to make your expectations explicit early on and stick to them. If you vacillate between methods, or change your mind without careful and open deliberation, students will believe that your grading is arbitrary and will resent your efforts. They will learn less and you will be evaluated poorly.

Your grading should always be fair, but the students should not imagine that a grade is negotiable. If a student petitions you, claiming that you have made a mistake, consider the claim carefully. Do not simply raise the grade, but do not refuse to consider the matter either. The first actions will fill your office with clamoring students; the latter may well be unfair.

Grading in Batches

Use a number assignment or something like it to prevent knowing the name of the student whose work you are evaluating until after all grades have been determined. If there are multiple questions on an exam or paper, mark one question at a time. Read several answers to the question without comment to determine how the question fared in general, if it tested what you wanted it to test, if there are any group confusions, etc. Do not be dogmatic about the correct procedure for answering a question or, in some cases, even about the correct answer. Do not just look at the answer itself, but check to see how answers were derived, as the thought process is often an excellent indication of how well someone knows something.

Providing Fast and Valuable Feedback

If grades are going to be useful to the student, they must be informative and they must come back to the student early enough so that he or she can learn from your evaluation. A grade should always include a complete analysis of the student's efforts. The student should know why a paper is a B, what would make it an A, or what needs to be learned to improve the student's understanding. Providing models of excellent and less than excellent answers or solutions can be beneficial because it gives students a concrete idea of what is expected of them. Be careful, however, about using truly dreadful examples in order to get a laugh.

Class Participation

Some portion of the grade should be reserved for class participation. This encourages students to keep up with the work from day to day. By expecting participation in class, you encourage them to take an active role in their education; they will learn more about the subject and develop a greater command of their social skills. Don't hesitate to ask questions of people who appear to be hiding or even of people who are shy.

Cheating

As you may recall from your early days at school, many students will cheat if given the opportunity to get away with it. Others will resort to cheating only if they feel there is no other way to succeed. As a teacher it is important, therefore, that you DO NOT tolerate academic dishonesty. There are rules in place (See The Rensselaer Handbook) and you must follow them closely. You should also make every effort to ensure that the assigned work load is rigorous but not overwhelming, and that assignments and exams do not lend themselves to illicit collaboration.

Keeping a Grade Book

Keep detailed and accurate records of your process of evaluation and all conversations with students about grades. Keep an updated copy in your files at home. If your records are accurate, you will be able to defend grading decisions in the unlikely event of a controversy.

A student's progress and achievement are personal matters. Do not publicly post grades. Inform your students that once grades are entered into the Student Information System they will be available the next day.

Grading Writing

Grading writing can be more difficult than grading tests or labs, because there is no absolute right or wrong answer. Good writing involves a combination of factors, besides the obvious grammar and spelling that you can think about while grading.

Organization -- Does the work have an introduction and conclusion? Are the paragraphs properly organized?

Unity -- Does the student stick to the point that he or she is trying to make? Is there a central theme?

Clarity -- Is the writing clear and precise, not bogged down by unwieldy long sentences or full of irritating short, choppy sentences.

TA-Student Interaction

Office Hours

You are expected to post and keep office hours. Since students are on fixed schedules, it is most convenient for them if you do not post the same time every day. If there is a phone in your office, you might provide students with the number, but you probably should not give them your home phone number.

Providing Helpful *Academic* Advice

When you meet with students one-on-one, you have an opportunity to provide personalized instruction. To take advantage of this opportunity, allow the student to do more of the talking. If they know exactly what their question is, your job should be fairly easy. Don't assume that just saying over again what you said in class is going to help. Most students have incredibly tight schedules and many are slightly intimidated by their teachers, even by TA's. If one goes to the trouble of searching you out, they may need special attention.

Additional Advice and Practice Materials

If they need remedial practice, give them more problem sets or additional assignments to work on. If they require remedial instruction, you can send them to several places on campus. The Advising & Learning Assistance Center (2106, Sage, 276-6269,) provides free tutoring. They also provide academic counseling, English as a Second Language education, and time management and study skills. For problems which are specifically writing-related, send students to the Writing Center (276-8983).

Counseling Services

One of the oddest things about being a TA is that you are both teacher and student. You may be quite close in age to the people you teach, and it is very easy to become friendly with your students, to treat them as though they were in a class with you. It is, of course, important to have a good rapport with students, but it is dangerous to be too ingratiating. Evaluating student performance is even more difficult when you are close to your students. You should also not discuss your students with anyone other than the appropriate faculty.

If you play the older sister or brother, you may find yourself providing counseling services. This is not your role. If a student has personal problems, and wants to talk with you about them, be sympathetic, but direct them to the relevant counseling center rather than trying to help them yourself.

Center, 2nd floor, (276-6234). For academic advising, send undergraduate students to 2106 Sage, (276-6269).

If you develop too close a rapport with students, a student may imagine a romantic involvement with you. Under no circumstances should you pursue a relationship other than an instructor-student relationship with anyone whom you teach. The power relation between faculty and students is one that cannot be sexually charged.

University Rules

Student Bill of Rights/Syllabus

The Student Bill of Rights is contained in The Rensselaer Handbook, page 1, and should be read carefully. Basically, students are entitled to a syllabus that provides a full explanation of:

- course objectives
- what material will be covered
- what material will be tested
- methods of testing
- criteria of evaluation
- procedures for testing
- dates that assignments are due

It should also include a full description of classroom procedures, any deviation from which should be explained, and a thorough definition of academic dishonesty and the penalties that any dishonesty entails.

Academic Dishonesty

Academic dishonesty includes:

- fraud (altering work after it is returned and claiming it was correct in the first place)
- collaboration (working with others without authorization from the instructor)
- copying
- cribbing
- plagiarism (claiming to have written something written by someone else)
- sabotage (destroying someone else's work).

For a full description of academic dishonesty, see the Rensselaer Handbook, page 10. For further information, please contact the Office of Graduate Education, gradschool@rpi.edu

Harassment

Rensselaer is committed to providing a work environment free of harassment based on race, color, religion, sexual preference, age, marital status, national origin, citizenship status, disability, or any other prohibited by law. Please become fully familiar with this policy in its entirety. You can view it at the Division of Human Resources website - <http://hr.rpi.edu/setup.do>.