

Designing Tests

If you serve as a Teaching Assistant for a large, multi-section course, you may have little control over the design of exams you administer and grade. It can be frustrating if students complain to you that a test was unfair or didn't cover what they thought it would cover (especially if you agree with them). You might pledge to yourself that when you have total control over a course, you'll do things differently. Yet, when TAs teach their own courses, they are likely to be mainly concerned with issues such as what reading material to assign, whether they'll be able to give engaging lectures and generate discussions, and how to structure the class. Exams may be an afterthought; instructors know they have to give them so they'll have some basis for assigning grades, but they don't relish the prospect.

Exams, however, not only give instructors an opportunity to assess their students, they also allow them to evaluate their own instructional methods and whether they are reliably communicating the material and skills that they want their students to learn. Exams can also motivate students and force them to focus their efforts on mastering the material. An exam may not always be the best way to determine whether students are achieving a course's goals. Papers, research projects, presentations, or direct demonstrations of a skill may be more relevant in some classes. Most instructors, however, are likely to rely on exams as the most practical assessment tool for large groups of students.

You are unlikely to create a successful exam, one that is useful to both you and your students, unless you actively think about what you are trying to achieve, both in the course and with the exam. A well-designed exam will reflect the central learning goals of the course and should test whether students have achieved those goals. You need to decide specifically what you want to test: knowledge of facts, knowledge of concepts and theories and the ability to apply them, the ability to make connections among ideas, or whatever else is relevant to your course, and then design an exam that will meet those objectives. If you are concerned with students knowing a

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Quick Tips for Writing Tests

- Think about exam questions over the course of the semester. If you create questions as you teach, you are likely to come up with exams that accurately reflect which topics were central to the course.
- Avoid trick questions
- Give clear instructions and indicate point values for each question.
- To minimize cheating in a large class, create multiple versions of the same test, with the same questions given in a different order. Let students know that you have done this, so they won't be tempted to try to copy off someone else's exam.
- Get regular feedback and avoid intense student anxiety by testing frequently instead of only giving a mid-term and a final.
- Remember that it will take students much longer to answer exam questions than it would take you. To design an exam that is a reasonable length, allow for students to spend about four times as long as it takes you.
- Take the test yourself to make sure you are asking what you intend to ask.

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body of facts, test their recall of those facts. If you want students to apply theories, then create questions that ask them to analyze a situation or problem using those theories. Exams should emphasize whatever the class emphasizes.

Some instructors think that only essay-type questions can test whether students have really mastered the relevant theories and concepts. Others believe that only limited-response questions like multiple choice, matching, and true/false questions can be graded objectively. There is no one right type of question. You'll probably find it useful to use a variety of testing methods, instead of asking just one type of question. Students may be particularly good or particularly bad at answering questions in a given format. Including a variety of testing methods will give students a better chance of demonstrating their knowledge. It will also allow you to assess their mastery of both general concepts and details. In addition, balancing the types of questions on an exam can help you better manage your own time: multiple choice questions tend to take a lot of

time and effort to design well, but a short time to grade, while essay and short-answer questions can be written fairly quickly, but take a long time to grade.

Essay questions are a good way to test overall understanding and the ability to apply concepts and engage in analysis. Questions should be explicit and clear; words like *how* and *why* are more likely to evoke focused answers than vague questions which simply ask students to discuss a given issue. You can also ask students to define concepts and give examples in short-answer questions which require students to write a paragraph or a few sentences instead of a multi-paragraph essay.

Limited-response questions allow you to cover a broad range of material on an exam. They can ask for recall of basic facts, or they can be used to test deeper understanding by asking students to apply concepts, make predictions, or choose appropriate examples. Word questions carefully to avoid confusion; unclear phrasing can lead students to choose the wrong answer even when they know what you want them to know. Make sure that all of the potential answers to a given question take the same grammatical form and that they all fit with the syntax of the question. Proofread carefully, take the exam yourself to verify the

accuracy of your work, and if possible, have another instructor review your questions and critique them. You may want to allow students to provide a short explanation for an answer if they feel that more than one answer choice is correct or if the question is in some way tricky.

In addition to including a variety of types of questions, the level of difficulty of the questions should vary as well. Consider asking some reasonably easy questions that nearly everyone in the class will be able to answer correctly, a lot of questions (the bulk of the test) that students who have kept up with the material and studied can answer, and a few that are challenging enough that only a small portion of the class will be able to get them right. The exam shouldn't be so easy that the best students are unchallenged or so difficult that average students feel that success in the class isn't possible.

Whatever kind of exam you write, make your expectations clear to your students. Let them know what to expect in terms of format, length, and material to be covered. Communicating with your students about exams will minimize their anxiety, reduce complaints, and give them the best chance of effectively showing you what they've learned.

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Technology and the TA: Instructional Computing Facilities

Editor's Note: This month's column was written by J.T. Chirco of Rutgers University Computing Services (RUCS).

TAs have a lot to do. They take classes, teach undergraduates, do research, work on projects, and give presentations. To help them accomplish these goals, RUCS offers Instructional Microcomputer Labs, or IMLs, that can be used in any course for hands-on computing. TAs can reserve these rooms to conduct class. Also, the Digital Media Lab, or DML, exists within the Allison Road Classroom Building (ARC) computing lab on Busch campus for individuals who need high-end graphical and video equipment to create teaching materials or complete course projects.

Instructional Microcomputer Labs (IMLs)

RUCS manages twelve computing labs across the four New Brunswick/Piscataway campuses. Within at least one lab on each campus are one or more IMLs, which typically contain from 20 to 30 computer workstations. Each classroom has projection equipment attached to the instructor's computer so lessons can be displayed.

These labs are used differently than the many "smart" lecture halls and classrooms that instructors typically use to give computer demonstrations and PowerPoint presentations

in front of rooms full of note-taking students. Rather, an IML is used more interactively, allowing a teacher to demonstrate how to complete some task before the students attempt the activity on their own using the machines at which they are sitting. One of the best ways to help students comprehend some topic is to involve them in a learning activity, rather than having them passively listen to a lecture. The IMLs make it easy to conduct such lessons.

TAs who are interested in adding new value to their courses should consider using the IMLs to hold some, or even all, of their classes. TAs who are interested in making a reservation to use an IML, want to request that certain software be loaded in the labs, or just want more information, should contact the manager of the computer center they are most likely to use. Find out more about these labs and who to contact by visiting our webpage (see below).

Digital Media Lab (DML)

One key to effective teaching is well-designed presentations. Another is adequate companion materials. The DML is a special lab that TAs may find useful for creating both of these. The DML has specialized graphics and video equipment for those wishing to produce more creative materials. This lab contains powerful Dell and Macintosh computers along

with high quality printers. Some of the major activities that can be performed in this room include: making tabloid-size printouts; drawing using graphics tablets; scanning photos; digitizing slides; optical character recognition; 3-D rendering; publishing multimedia webpages; digitizing, editing, and recording videos; burning CDs and DVDs.

Whether you want to draw and print large diagrams, scan in photos or slides to use in a PowerPoint presentation, make sophisticated webpages, or go all-out and produce a 15-minute video, you'll find that the DML has the proper tools for creating a variety of teaching materials. Visit the lab to see what's available. It's open many hours each week, and machines are generally available without a wait. Get more information by reading our webpage (see below), contacting the ARC Manager, or consulting directly with the student specialists who are based in the lab.

Visit our webpage at <http://ccflabs.rutgers.edu> and follow the "Teaching Assistants" link. Contact us at feedback@computerlabs.rutgers.edu to make suggestions, tell us about your experiences or ask follow-up questions.

TA
Helpline
Call
932-11TA
Monday-Friday
between
the hours
of
8:30 am - 4:30 pm

TAP Calendar

3/10	12:00-1:00 pm	Dealing with Challenging Students	CAC*
3/23	11:30am-1:00 pm	Conversations on Teaching: Academic Integrity	BCC*
3/31	12:00-1:30 pm	Interviewing for Faculty Positions	BCC+

*Call 732-932-7747 for information or to register.
+Call 732-445-6127 for information or to register.

Want to be a Movie Star?

Get your class videotaped!

<http://taproject.rutgers.edu>
Call 932-11TA for details

Sign up for the Peer Observation Program!

Having a class observed by a peer can be a great way to gain valuable feedback about your teaching. The Teaching Assistant Project offers the Peer Observation Program to any interested TA. You will be put in contact with a fellow graduate student teacher and provided with helpful materials for giving constructive criticism. For details, or to sign up, visit the website!

<http://taproject.rutgers.edu/pop/pop.html>

Teaching Assistant Project

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