

Large Class FAQ: Class Planning

1. How can I highlight important points in the lecture?

- Charlotte Wulf (English) responded: "This is a problem I have been dealing with this semester (and other semesters!), but this semester I have experimented with a variety of methods and have sought feedback about it--and gotten it. Several things seem to get a positive reaction:
 - Before class begins, write key words/concepts/names/dates (whatever is appropriate) on the board to facilitate note-taking.
 - From time to time, prepare a transparency with important review notes/concepts/ideas and put it up before class begins. Leave it up for the first 3-5 minutes while you go over preliminary business, then take it down and start the day's lecture.
 - If a lecture seems like it is going to be especially complex, will introduce a great deal of new material, or in particular will cover quite a bit of material which is not available to the students in the book or another source, prepare an outline on a transparency and have it up while you lecture. (Note that there is a danger in over-using such transparencies because some students can easily become too dependent on them. Some students seem to want to memorize what you put on a transparency instead of reading the book or learning anything else. It should never replace reading the book or taking their own notes, merely make their notetaking easier and perhaps better organized.)

2. How can I prepare a class to meet the needs of students with a wide range of abilities/knowledge?

- Terry Engelder (Geosciences) offers this technique: In choosing the level at which you teach, follow a sine curve where you spend part of the class teaching to the most talented students and some of the time teaching to the less able students. This practice best maintains the interest of both ends of the spectrum.
- Make use of the learning support services. Tutors from the Center for Excellence in Writing and the Math Center provide help to students on a drop-in basis in Boucke Building and at other locations. More formal assistance is provided to certain large class sections through the Supplemental Instruction (SI) program, where student facilitators attend lectures and lead several sessions per week with students who opt for the program. Luncheon participants whose students have taken advantage of such assistance report that undergraduates understand the difficulties their peers are having, can often describe the learning process better than faculty, and can be less intimidating than someone who assigns grades.

3. What else can I do in addition to lecturing?

- Create small ad hoc groups (or pairs) that work in class on a focused question, problem, or exercise; this gives students an opportunity to interact and really engage the material, and it also gives them a needed lecture break. Those with recitation sections sometimes assign the group problems there, and then hear reports in the lecture. Another variation is to have group members role play various positions as they debate a given claim or issue.
- Invite student groups or partners to present the assigned reading and lead the class in discussion (they can use questions you provide as a start). Although only a small fraction of the class gets to present, many more are willing to participate when their peers take the lead.
- Administer some kind of understanding check at the end of class to get feedback. The most popular example is the "minute paper," which usually consists of two questions: "What was the most important thing you learned in today's session?" and "What did you find most confusing or unclear?" An interesting variation is to give a "minute problem" that requires students to apply some key concept that has just been covered. A portion or all of these are collected, read, and used to plan the next session.
- Ask students to supply information (facts, data, examples, etc.) for in-class problem-solving. Whenever possible, ask for information directly related to students-eating habits, study habits, demographics of any sort. This increases enthusiasm and participation.
- Conduct demonstrations that involve all or a subset of your students. For example, Gita Sathianathan (Chemistry) passes a lead brick and a plastic brick of the same dimensions around the classroom during the first part of her lecture and then asks students for a comparison to introduce the concept of density. Peter Maserick (Mathematics) uses a Java applet showing triangles that make up a hexagon. He asks students to tell him the value of pi to two, three, four, five, etc. decimal places. As he enters each response, the hexagon increasingly resembles a real circle.
- Find easy ways to acknowledge / reward those who participate in class. For example, pass coded index cards to those who ask or answer a question; the student signs and turns in the card to get credit. Some participants post participation questions to their course Web site before class and give bonus points to those who answer correctly in lecture.
- Case studies: Rather than using case studies of the Harvard Business School variety, many teachers employ such things as video scenarios, brief narratives, students' own experiences, newspaper articles, mechanical design snags, graphs, and even data sets to help students apply difficult concepts to real-world problems. For example, a single case can be used in conjunction with a related data set to show that while the data may support a particular theory, that theory may be difficult to apply in the single instance.
- A number of instructors are assigning problems related to data provided by current students on the first day of class. This gives students the opportunity to analyze data provided by their own cohort and to design data collection forms for the same group. Laura Simon (Statistics) has generously provided URLs so that you can take a look at two such forms, the first designed by her and the second by her students:

<http://www.stat.psu.edu/~lsimon/webforms/forms/instr250.html> and
<http://www.stat.psu.edu/~lsimon/webforms/forms/instr250b.html>

- For case studies or any other group problem-solving activity to be successful, students must be prepared for the activity ahead of time and must understand how to tie it back to course objectives once they've completed it. For example, one faculty member gives an individual writing assignment prior to asking students to work in groups on a related problem so that the transition to group activities is gradual. Another gives a "prepare quiz" to make sure students understand the goals and procedures for the upcoming group project. Some of the integration of group problem-solving and course objectives can be done on a course Web page and through discussion via a class list.

4. What decisions should I make about content when revising or redesigning a course?

- Consider the big picture by deciding what the course can and should accomplish within the larger framework of student needs, your discipline and your department's curriculum. Limit course objectives to a set of desired outcomes-what should students take with them at the end of the semester? Determine if the course will provide a solid base for subsequent courses to build upon. Ask how the course can change your students' thinking.
- Find out what previous experience students have, and where they need help the most. Conduct a background knowledge survey earlier in the semester. Decide what discussion or presentation of easier content can be moved out of the classroom to reserve time for more difficult concepts and application of knowledge. Figure out ways to hold the students accountable for out of class work. One possible solution is low-stakes computer testing.
- Consider not only what your students need to know but also what they need to do. Include both fundamental and relevant applications. Several participants stressed that once fundamentals are accounted for, you should pursue your own and your students' interests. Build selective gaps in the syllabus so that you can adjust to students' needs throughout the semester. Make optional that which is no longer required; some students will still find this material engaging if you invite them to engage it.