Dr. Furse's Lazy Professor's Guide to Teaching

Dr. Cynthia Furse
Professor and Associate Chair for Undergraduate Studies
Director, Center of Excellence for Smart Sensors
cfurse@ece.utah.edu
http://www.ece.utah.edu/~cfurse
Department of Electrical and Computer Engineering
50 S. Central Campus Dr., 3280 MEB
University of Utah
Salt Lake City, Utah 84112
ph: (801) 585-7234 / 581-6941
Fax: (801) 581-5281

In this day of economic downturn, many colleges and universities are having to cut budgets. Some are reducing teaching staff and leaving the remainder of the staff to cover more courses. This short article gives a few of the tricks I have found useful to reduce the faculty hours for teaching a course without (I think) reducing course quality or student learning.

Exams

Write a good, clear exam in the first place, and be sure it is not too long. Students generally take 3 times as long to do my exam as I do, so for a 1 hour exam, I make sure I can work it in 20 minutes. After all, I know what I am looking for and don't have to read the problems carefully or figure out what I was asking for. Check very carefully (and if possible have a TA check) to be sure you have made every problem very clear, carefully prescribed all the variables, etc. Nothing is harder to grade than an exam where students misinterpreted your problems.

Multiple choice exams are faster to grade. I haven't found a good way to ask multiple choice EM exams, but I wish I could! (Suggestions welcomed for a further column.)

Put lines/boxes/tables/etc. in the exam for the students to fill in is possible. It is easier to grade an exam if you can look for all of the answers in the same place.

Grading exams is one of the most time consuming activities in teaching, particularly in a large class. Have graduate students or TAs help you! First, make a good, clear answer key and mark how many points you will give for each part of a problem. Then buy lots of pizza, and sit around a big table with your TAs to help grade the exams.   Explain in detail about the grading for problem 1, and then grade all of the papers for problem 1. When a grader has a question, you are right there to ask, and you can grade the harder ones (usually the ones the student has messed up on). This gives good grading consistency. And I can usually give the exams back to the students the very next day, which the students really appreciate (translation: higher teaching evaluations).

Give fewer exams. I usually give 3 plus a final, although many of my colleagues give 2. One year I gave weekly exams. It was a lot of work and seemed like I was grading exams all day every day. The students didn't like it either.

I have a trick that has saved me a lot of time grading the finals (at the end of the semester when time is at a premium and everyone is tired). I give 3 midterm exams, each of which is 1 hour long. And I break the final into three sections that cover the same material as each midterm. (The topic areas are the same but the questions are definitely different.)   The final exam time at our university is 2 hours, so each section of the final is 2/3 as long as the associated midterm exam. Most of my midterms have 3 problems. Each section of the final has 2 problems, for a total of 6. Each section of the final exam is optional, and I give the student the highest grade of either the midterm score or the final exam score. For instance, if a student has done well on midterm 1 and 3, they may choose to take only final exam section 2. If they have done well on all of the midterms, they may not take the midterm at all. If they do well on midterm 1 and poorly on final section 1, they still get the good score from midterm 1. If they do poorly on midterm 1 but well on final section 1, they get the score from final section 1. This results in my needing to grade only about half of the final. There are some other advantages, from a lazy professor's perspective. The students stay motivated, even after doing poorly on an exam. They work to find out what they did wrong, learn the material better, and give it a better shot on the final. About half of the students improve their grades this way. Most of the ones who don't were actually doing quite well and were just trying to get an even better grade than they already had.   The other thing that is nice is that even if a student is ill, their car breaks down, their dog dies, or whatever… I don't feel compelled to write or give make up exams. The final exam can do that. And I don't feel as bad if a student misunderstands an exam question, freezes up, or otherwise has a bad exam taking day. They can fix that on the final too. My idea in doing this is that a student can know the material and still get a bad score on the midterm, a fluke. But they can't get a good score by accident – they have to know the material. If they know the material once, I assume they will know it later, and I don't need to check again to find out (I don't need a comprehensive final). I've had many students tell me this reduces their stress when taking exams, and students who are not stressed do better. One note on scheduling the exams… be sure the final midterm covers the end of the lecture material. I use the last three days of class to review for midterm 1,2,3, respectively, and give midterm 3 on the day before I begin those reviews.   Students have really liked this exam policy (again, higher teaching evaluations), and I like it better too. They still have to know the material when they leave the class, but it reduces a lot of the frustrations that come with ordinary exam processes.

Post all of your old exam keys on line. Students love this. And you can assume that some of your students have copies from last year from their friends or whatever, so you might as well make it fair and let everyone have them. Definitely, never reuse an exam.   They are far too easy to post online.

Homework

Writing homework and its solutions takes a LOT of professor time. If you have a textbook with good homework problems, use them. Be aware that virtually every solution manual for every textbook ever written is available to the students online for free or cheap. Illegitimate copies abound. This is one reason that many professors have chosen to write their own assignments, which need to be rewritten

each year (your answers from last year will surely be posted somewhere too!). But this takes so much time, think carefully before writing your own homework.

I give homework problems from my standard textbook. I like them, they represent the material well, and the solutions are already worked out. I make the solutions available in advance of when the assignment is due, and ask the students to check themselves to see if the solution is correct.   Then I just give 'completion' credit for students turning in completed homework. It is much faster to give points for completeness and not have to check the correctness of the answers, and the students benefit from seeing the correct method right away (which is often a little different than how they did it… electromagnetic problems can be solved in many ways). There are always a few students who just copy the solutions and don't learn the material. They will have 100% (completion) on all of the homework and fail the first exam. That is usually enough to change how they study, and they put in more responsibility and effort for the remainder of the class (and go back and learn the material to fix their score on the first midterm on the final exam).

Office Hours

Schedule office hours right after class, if possible. Most students will ask a quick question while you are still in the classroom and go on to their next class or activity. This is usually faster than 'quick' questions in your office.

Consider providing full solutions to the problems you assign. Providing the solutions has also radically reduced the easier questions students were asking in office hours. I used to have a long line of students the day the homework is due. Now it is only the more difficult questions where a student really doesn't understand and needs extra help. Those are the questions I would rather focus on anyway.

I have had very good luck with these lazy ideas. Actually, they don't end up being lazy at all. They leave time for other activities like writing papers, working with graduate students, career advising, to name a few.