COSC-450: Analytical Performance Modeling
Guide to Problem Classes

We'll have several problem classes throughout the semester. Each of you will be responsible for leading the solution of one problem during one of these classes. Usually two students will lead different problems during the same class. You should aim for your problem to take about 20 minutes (we'll do something else during the other half of class).

Your goal, in leading a problem, is for your classmates to fully understand both the problem and its solution. Here are some tips:

- Start by explaining the problem that you're trying to solve. If what we're trying to accomplish is unclear, it will be very hard to follow the solution! You'll probably find it helpful to draw some pictures.
- Translate from words to math. Usually the problem will start as a long paragraph, but solving it will involve setting up and solving some mathematical equations. Often this translation step is the trickiest part of a problem, so it's important to be clear about where each piece of the math comes from.
- Take your time. Once you know how to solve the problem, it can be easy to fly through it when explaining it to someone else. Remember that the problem and your approach are new to your classmates. Walk through your solution slowly and step-by-step, making sure that your audience follows the derivation.
- Consider discussing some common pitfalls and why they don't work. Was there an approach you tried that turned out to be incorrect? Sometimes thinking about wrong approaches and why they don't work can be just as useful as seeing the correct approach, as this can help us avoid making these mistakes in the future.
- Think about how you want to present your solution. Will you make slides, write on the board, or maybe a combination of the two? Would it help to create a handout? Any extra-creative ideas?

What do I do if I don't know how to solve my problem?

First, come see me! While I don't have formally scheduled office hours for this class, I am happy to meet with you by appointment as you're preparing to lead your problem class (or to discuss anything else related to the course). I'm often available Wednesday and Friday afternoons in particular, and can sometimes find time Monday afternoons.

Second, don't panic! Problem classes aren't an oral exam, they're an opportunity for you to lead a discussion about the course material. It's entirely possible to lead an outstanding discussion of a problem without being completely certain, in advance, how to solve it. If you're in this boat, you'll probably want to prepare to explain the approaches you have tried, where you're stuck, and what questions you have about your proposed approaches. Your role here is in guiding our collective problem-solving.

But what if I *thought* I had the right solution, but I present something that's totally wrong?

That's fine too! It's always useful to discuss incorrect approaches so that we can learn why some ideas that sound reasonable might not work after all. I even noted above that you might want to present some incorrect approaches deliberately for the purpose of discussion. If you do so inadvertently, we're all sure to learn from the discussion.