

## *How to pass a programming course*

1. **Come to class, on time, every time.** If you must miss class, contact the professor (in advance if possible) and get an overview of the material you missed. Don't ask; you **DID** miss something important.
2. Lose the cell phone and iPod. If you are texting or listening to your iPod, you are not listening to the class. You **CANNOT** do both at the same time, no matter how well you might think you can.
3. If you bring a computer to lecture, use it **ONLY** for taking notes or examining the example programs. Don't play games or surf the Web. Preferably, don't use it during lecture at all; it's distracting and it's hard to copy a diagram on a laptop. A tablet computer with a stylus is a bit better. A paper notebook and a mechanical pencil are even better.
4. Use a notebook with a separate section for each course you are taking (or use separate notebooks). Every day, start your notes by putting the date at the top of the next blank page. Then, if the professor is talking, and it's not an obvious aside, you need to be writing. If the professor writes something on the board, copy it completely. Just taking a cell phone photo of the board every so often is not taking notes. Note taking is an active process that helps you learn.
5. Go over your notes **immediately** after class, and correct any errors while the material is still fresh in your mind. If you discover you don't understand something, **ASK YOUR PROFESSOR.**
6. Do every program for the class **YOURSELF**. The **only** way to learn how to program a computer is to program a computer. There is no substitute. Do not cheat and look up the program on the Internet or copy and tweak your buddy's program. We don't have to catch all the cheaters, they **WILL** fail the exams. In the "real" world, if you can't do it, they fire you.
7. Write your programs **FROM SCRATCH**, meaning don't recycle the #include directives and "shell" of the program from an example program or an earlier program you wrote. You need to know all the parts of a program, so write them every time.
8. **Understand the problem, then design an algorithm, and ONLY THEN write the code.** Do this even for the easy programs at the start of the semester, where you have similar examples to work from. As the semester progresses, you will find the problems move farther and farther away from the examples, and you will not be able to make them work by sitting in front of the computer and banging on them.
9. To memorize definitions, **WRITE THEM**. Once in the morning and once in the evening for two weeks is usually enough. Just memorizing them by reading them will cause you to drop words when writing them on exams. Precise definitions are critical in sciences, mathematics and engineering. And just knowing the words, without understanding the concept, isn't enough either.
10. Every time you have a chance to get points for class, **GET THEM**. Do not decide, "I have enough points, I don't need these points. I don't need to do this assignment/lab/project, I have enough to pass."
11. **Do not wait until the last minute.** Ever.