

How To Succeed

CS majors will need to do well in this course to be adequately prepared for the next course in the major. Non-majors will want to take advantage of this opportunity to better understand how a computer works and how to program a computer. Both will want to maintain their GPAs. Having taught this course to hundreds of students, it is extremely easy to see how it is that some students succeed brilliantly and others do not; there are very clear-cut skills that some students bring to the course and others lack. Students may be surprised to hear that raw talent (brain power) and previous experience (in programing) are not actually among the biggest predictors of success. I offer the following advice for doing well in this course.

- Students report that the workload for this course is higher than for a typical class at Denison University. You will need to be very solid at time-management. Schedule small amounts of time throughout the week rather than attempting a big chunk of work once a week or less often.
- The material in this class is highly cumulative, thus it is imperative that you keep up with the pace of the class. If you fall behind, it is very difficult to catch up because you must go back and learn the older material before you can tackle the new things. This makes it even more important to schedule frequent time to work on the class.
- You need to fully understand a concept before moving on. If you "just barely get it", keep practicing. You will need to have full and immediate recall of previous concepts in order to digest the next one. If you are still struggling with a previous concept, you cannot learn a new one.
- Type in all the example programs in the book. Play around with them to see how changes affect the outcome. Try "re-creating" them based only on the description without looking at the code. Do them over and over again.
- Retype all examples given in class. See if you can do it without looking at the notes.
- Understand, do not memorize! Students attempt to memorize a very specific statement without fully understanding how the parts of that statement work. Later they are asked to make a modification and cannot because they didn't understand how the original worked. Worse, they get to a test and fail to recall what they had memorized, the "gibberish" that shows up immediately reveals a complete lack of understanding.

- Complete the TuringsCraft exercises right away. Do not wait. They help even more to reinforce current ideas.
- Read the text often. Read it before the lecture that day. Read it again after the lecture. Reinforce, reinforce, reinforce. I have other, more complete texts, if you want an additional source.
- You will typically be given several days (or a week or more) to complete a program. Start it immediately. You will get a lot more accomplished and if you get stuck (which happens often), you have ample time to seek help from the professor. The students who send emails at 1am the night before an assignment is due are ALWAYS the ones doing poorly in the class. The students who show up at 8am the next day after an assignment is given are invariably the "A" students. To make it more fun, have a race between you and another classmate to see who can get done first.
- Force yourself to do the work. Do not rely on others. Sure, every once in a while you can ask your buddy a small technical question. But if you rely on someone else to "solve" the problem given in an assignment, you will fail to learn the concept. Forcing yourself to come up with the answer is a very different cognitive experience than "seeing it done" by someone else. The next assignment will be even more difficult and soon you will be completely unable to start an assignment without having someone else do the work. Not only won't you learn and be extremely frustrated, it is also academic fraud. It is better to work at a problem yourself (or come seek help from the professor) than fall into this trap of letting someone else do the work. Students who rely too heavily on someone else's help typically get A's on their programs but then get F's on the exams – it is very obvious what is happening.
- Come to class every day. We cover lots of things not in the book and the examples with explanations help a great deal. Most questions on the exams come from some class discussion or example.