

For students beginning Calculus I at IIT:

I've taught about a dozen sections of Calculus over the past several years. I've noticed that in a typical Calculus class of mine, most people do quite well, and a few are surprised when they do very badly. In hopes of having everyone succeed this semester, I offer you some advice.

Different people need different advice (for example, I wouldn't say the same thing to an overconfident student and to an underconfident student), and some people don't need any. I'm going to try to speak to the sort of people that tend to have trouble in my courses. Those of you who need it most will likely not realize that it's you, so why not read on just in case?

Some of this is obvious: Consistent effort vs. catch-up. The former is much more effective, and in the long run, is a time-saver. This is true for everyone. Trust me.

*For example:* Sleep enough. Attend every class. Follow the lecture actively. Start your homework immediately after class (if possible).

Work smarter. If you're not getting it and don't know how to so about getting it, get help! Don't struggle for hours, confused, without making any progress.

On the other hand, learning takes effort, so you shouldn't do things that avoid hard work. *For example, these are bad:* Working homework problems with others before you've struggled with them a bit on your own. Constantly looking at the book/notes while studying (because during exams you will be looking at a blank piece of paper). Copying homework. Pretending to others and/or yourself that you understand well when you understand less than well.

Life isn't fair, so you might have to work harder/smarter than others. You may have the feeling that "everyone" else has taken Calculus I before, that other sections of Calculus I have it easier, or even that other students are smarter than you. It doesn't matter. In the end, either you succeed or you don't. So, *no matter* what advantages or disadvantages you start out with, you need to do *enough* to succeed, which is whatever is required due to your particular situation. (By the way, there's a difference between recognizing your disadvantages in order to overcome them, and making your disadvantages an excuse for potential failure.) You are all capable of success in my class if you deal with the semester appropriately.

On the other hand, it is quite possible to fail my course despite having taken Calculus in high school. Don't assume that what was good enough in a high school Calculus class will work at IIT as well. In particular, when comparing mathematics taught at a good university to what you see at some other places, one big difference is that for us *it's not enough to get answers*, but you must have a *deep* understanding of why the answers are correct, and you must be able to *explain it* at this deep level. (By the way, in Calculus II, there's a significant step like this about 1/3 of the way into the semester or so.)