

Advice for first year undergraduate engineers

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You are no longer a big fish in a small pond (and that is a good thing)

Engineering programs typically select those who, during high school, outperformed their peers in science and mathematics. You're probably used to being one of the highest performing students in the room when it comes to these subjects, and that is about to change. This will be one of the best things to ever happen to you, but you will initially hate and resist it, because being a top performer is a significant part of your identity.

If you aspire to greatness, you must surround yourself with people who constantly challenge you to improve your game. As an engineer, which would you rather be: someone who contributes to a team that takes on world-class problems, or a superstar on a team that works on second-rate problems?

Genius is bullshit

Einstein did not crack general relativity by being a genius. He cracked it by working at it diligently for over eight years.

"Inspiration is for amateurs; the rest of us just show up and get to work." - Chuck Close

Everyone has impostor syndrome

You will at some point decide that you've somehow managed to fool everyone around you into thinking that you are a smarter, more capable, and better person than you actually are. You will then have to live with the anxiety that everyone will find out that

you are an untalented fraud.

Most of your peers are just as afraid that you will discover that *they* are the impostor.

Working hard and being productive are not the same thing

Putting in the hours isn't enough. Students who are having a difficult time will often work harder doing the same things that weren't working in the first place. I call this "virtue grind" - it's work that's meant to make you feel better. It rarely leads to much improvement.

The problems you will face in college are not just harder than the problems you've dealt with previously - they are fundamentally *different*. Many of your methods for solving problems are obsolete, and you need to develop new ones. For example, you're probably used to solving problems from a book - problems that have previously been solved. We will soon be asking you to solve problems that have no existing solution. That's why they're interesting, and that's also why you'll need new techniques to solve them.

Go to office hours, work with others, and be social

Working with other students is not just about getting through the week's problem sets. It's an opportunity to hear the ideas and observe the work habits of other students and to learn from them.

Your fellow students have various experiences, backgrounds, and specialties that you can learn from. During college, they will be your teachers, inspirations, compatriots, and drinking buddies. After college, they will found companies, start research labs, and generally be good people to have on your side when you need a friend, answer, or job.

Copying homework will destroy your GPA

Students who routinely copy homework get exam scores [1.3 standard deviations below](#) students who don't. Group sessions are not about getting answers; they're about learning how to answer questions.

Wait two semesters before attempting to join a research lab

Many first years are anxious that they're "missing out" on lab experience. You'll find it much easier to find research in your second year, and you'll probably get more out of the experience. Most faculty want you to take a few lab courses that will give you basic skills before they'll hire you. Waiting also gives you a chance to settle in and get used to comfortably handling your course load.

Your research isn't just a bullet point on a resume. It's an opportunity to impress a faculty member with your work ethic and insight, and to produce genuine, often publishable results. Don't rush it.

Exercise, eat well, and sleep adequately

Pulling frequent all-nighters is not impressive; rather, it's an admission that your life is out of control and your work habits are poor. Crunch times are inevitable, but living in a constant state of dazed, caffeine-fueled panic is not.

Avoid debt whenever possible

For many of you, going into debt during school is unavoidable. You should look upon your degree as an investment and act accordingly. If you haven't already, estimate your monthly payments after you graduate based on your expected costs. This will affect your postgraduate life options, often significantly.

Asking for help is a sign of strength, not a sign of weakness

If you don't understand something and you're willing to ask, it shows that you've accurately estimated the extent of your current knowledge.

If you can't do something yourself and you're willing to seek aid, it shows that you're able to set your ego aside in favor of your goals.

If you're struggling with your work because of a physical or mental health problem and you're willing to seek treatment, it shows that you know your current limits and desire

to surpass them.