



Engineering Applicants: Note These Specific Considerations

The Warnings

Engineering programs have experienced a surge in applications in recent years, undoubtedly driven by reports of employability and high salaries right out of college. What many people don't realize, though, is that Engineering has the highest attrition rate of any major, with 40% of those who enter college planning to major in it either switching out of the major or failing to graduate. Those who do graduate with an engineering degree frequently take an additional semester or year to do so, usually because they were unable to begin the actual engineering curriculum until they had mastered a sufficiently high level of math.

The high attrition rate is attributable mostly to the demanding nature of the engineering major, which requires rather dry, abstract coursework in math and physics along with the practical, hands-on experiences that usually drew students to it in the first place. Also, many would-be engineers find it challenging to persevere with their studies when surrounded by classmates whose coursework is much less demanding.

Engineering is a direct-admit program in many schools, meaning that students must declare it on their application and begin the sequence in their first semester. Where this is the case, it is generally tougher to be admitted as an engineering student than as an arts and sciences student, meaning that the average GPA and test scores of students admitted to the engineering program will be higher than those reported for the student body as a whole. Nevertheless, it's not a good idea to plan on transferring into an engineering major after being admitted to the school for something else. Switching into this major later, even where that is possible, is invariably difficult to do on account of the many sequenced course requirements.

The most prestigious undergraduate engineering programs admit only applicants with outstanding high school transcripts and standardized test scores. Although SAT Subject tests are seldom required elsewhere any longer, many top engineering programs still require two of them, Math 2C and either Chemistry or Physics. And while admissions officers consider what courses were available to the applicants when they evaluate their transcripts, for engineering applicants they prefer to see AP Calculus BC, AP Physics, and another AP in a lab science. They also like to see high-level courses in the humanities, social sciences and arts, including some APs.

The Good News

Many graduates of less prestigious engineering programs obtain excellent jobs right out of school. In fact, studies have shown that top students graduating from lower-profile programs ultimately fair better than those coming out of more prestigious schools in the lower portion of their class. For this reason, Hollis Bischoff, a consultant who works extensively with engineering applicants, urges students to consider seriously the benefits of attending a college where they will be able to graduate in the top 25% of their class.

Employers consider ABET accreditation the gold standard, so that's something applicants might look for when selecting a school. The only problem is that some excellent programs may not have the accreditation yet simply because they are too new. To receive accreditation, a program must have graduated its first cohort, and some schools don't even apply for accreditation that quickly because it takes time for them to get everything in order.

For would-be engineers who aren't great test-takers, other good news is that more and more schools are becoming test-optional even for engineering applicants. The University of California system is said to be considering moving toward test-optional admissions, and if that happens, it will undoubtedly have a major ripple effect.

What Engineering Programs Are Increasingly Doing to Retain Students

Many engineering programs have implemented measures they hope will combat the high attrition rate. These include housing engineering students together so they can study and support each other, and in some cases providing additional study sessions with teaching assistants.

Perhaps even more important, many are now providing hands-on experiences with practical challenges beginning as early as freshman year to counterbalance the dryer coursework students previously had to get through first.

Opportunities for multi-disciplinary study are increasing, too, not only because these appeal to students with diverse interests, but also because of a realization that multi-disciplinary education actually produces better engineers. After all, engineers don't work in a vacuum, but rather strive to address real-world problems and enhance people's lives. And, as the educational mission everywhere has begun to include producing students with a global perspective, more and more engineering programs have begun incorporating study-abroad opportunities.

The Most Important Component of the Engineering Application

In their effort to predict who will persevere in their engineering program and thrive, admissions officers look in particular for evidence in the application of the student's passion for the field. In fact, this is so important, that Bischoff often has her engineering applicants produce two versions of their common application personal statement so that if a school doesn't have a supplementary essay asking why the candidate is a good fit for engineering, they can address that question in the one place they have to do so.

How can a student know and prove that he or she is passionate about engineering? Many high schools now offer engineering electives and robotics and engineering clubs. Students can also use their summers to pursue engineering-related activities. Numerous colleges, including some very prestigious ones like Yale and Stanford, offer pre-college engineering programs for high school students, and Blue Stamp (<https://bluestampengineering.com>) provides great opportunities. It is most assuredly not necessary to pay a high price to get useful experience, though. High school students can also take courses at their local community college, take online courses, join a summer robotics league, or even buy and build a Robot-in-a-Box.