

SWE-ECI  
MENTOR-MENTEE Meeting (December)

College .. So many majors, What do I want to do? What are my DREAMS?

Dear Mentors-

Ready for another exciting discussion with your mentee. This month you and your mentee shall work on college for engineering students.

If the student knows what area he or she wishes to study, focus on what he or she can expect in college for his or her major. If the student is unsure about his or her major, hold a discussion on the different types of engineering disciplines,. Then discuss what he or she can expect in college until a engineering major is chosen.

The items included in this packet can aide in the your discussions. Feel free to discuss anything else that would benefit the mentee.

If you have any questions, concerns, or suggestions, please let us know. We enjoy getting feedback to help us improve the program!

Best Regards,

Enanga Fale  
SWE-ECI Outreach Director

[Enanga.Fale@swe.org](mailto:Enanga.Fale@swe.org), [swe-eci\\_outreach@googlegroups.com](mailto:swe-eci_outreach@googlegroups.com)

## College Expectations: So you want to be an engineer!

By

American Society for Engineering Education © Copyright 2004

### **What type of education will I need to become an engineer?**

You will need a bachelor's degree in engineering, which generally takes four to five years of full-time study.

### **What type of academic background do I need to get into engineering school?**

It's pretty obvious that you'll need good grades, particularly in mathematics and science, to be considered for enrollment in a course of study as demanding as engineering. But you don't need to be a "genius." Ideally you should rank in the top one third of your high school class and certainly in the top half.

Because engineers spend much of their time solving problems, a strong engineering candidate should enjoy and excel at problem solving. Enrich your problem solving know-how by taking as many math courses as your school offers, including calculus and trigonometry if available. You should also take laboratory science courses such as chemistry and physics. Most engineering institutions expect you to have good grades in algebra, geometry, trigonometry, science, English, and social studies.

Because engineers convey ideas graphically and may need to visualize products or processes in three dimensions, courses in graphics, drafting, or design are helpful as well.

Admission officers will expect you to have high scores on the math section of aptitude tests such as the SAT and ACT, and perhaps on the Math and Science Achievement Tests. Most engineering schools look for a total SAT score of at least 1,100, a math score of at least 550, and a verbal score of at least 450. At the most competitive schools, average math SAT scores exceed 700, and average verbal scores exceed 600. If students take the ACT, colleges prefer a composite of at least 28, a math score of at least 26, and a verbal score of at least 24. Scores on Math and Science Achievement Tests should be above 500 each.

### **I goofed around a little in high school. Now I realize I want to get serious and apply to engineering school. Is it too late for me?**

If you are the type of person who enjoys taking things apart and putting them back together as well as figuring out how things work, and are now serious about studying, you should do well once you get accepted into a program. The question is: Can you get in without high grades?

To increase your chances, you may want to take a few math and science courses at a junior college before applying to an engineering program. Or, you might enroll in an intensive pre-engineering program. Some four-year schools often offer these programs the summer before the regular course of study. After successfully completing the course, you can begin regular classes alongside other freshmen.

You also might consider completing a two-year engineering program at a junior college and then transferring into an engineering school as a junior.

### **When must I declare an engineering field?**

Most engineering schools will not require you to declare a specific field of interest until the end of your second or the beginning of your third year of study. Your first two years are usually devoted to gaining an overview of engineering and will cover the major fields available to you. If you can't narrow your choices by the time you choose a university and you later find that the field you'd like to major in is not offered at your university, you can select something closely related and continue your studies in a graduate program, or you can transfer to a university with an ABET-accredited program in that major.

### **Will I need to go to graduate school?**

While you can work as an engineer in industry or government without a graduate degree, many engineers have found investing in a master's degree to be worthwhile. In addition to gaining more knowledge, you become qualified for positions of greater depth, prestige, and earning capacity. There is no reason, however, to decide immediately upon graduation; only 20 percent of engineering students go straight into graduate school from undergraduate school. A master's degree usually requires an additional year of study. A doctorate, necessary for research and teaching positions, usually requires at least a total of seven years of undergraduate and graduate study.

## Engineering Disciplines

Some Engineering Disciplines:

- Aerospace Engineering
- Agricultural Engineering
- Architectural Engineering
- Bioengineering/Biomedical Engineering
- Chemical Engineering
- Civil Engineering
- Computer/Software Engineering/Computer Science
- Electrical Engineering
- Environmental Engineering
- Industrial Engineering
- Manufacturing Engineering
- Mechanical Engineering
- Metallurgy and Materials Engineering
- Mineral and Mining Engineering
- Nuclear Engineering
- Ocean Engineering
- Transportation Engineering

Information about Some disciplines can be found here:

[http://www.engineeringk12.org/students/so\\_you\\_want\\_to\\_be\\_an\\_engineer/the\\_engineering\\_alphabet.htm](http://www.engineeringk12.org/students/so_you_want_to_be_an_engineer/the_engineering_alphabet.htm)

## Mentee-Mentor Discussion Sheet

Discussion on \_\_\_\_\_ Engineering

(1) What do \_\_\_\_\_ Engineers do?

(2) Where can \_\_\_\_\_ Engineers work?

(3) What kind of networking channels do \_\_\_\_\_ Engineers have?

(4) What do \_\_\_\_\_ Engineers study in college?

(5) What is fun about \_\_\_\_\_ Engineering?







