10 Tips for Women Students in Science Fields

There is growing concern at American colleges about why so few women study science, technology, engineering, or math (the so-called "STEM" fields). Though women constitute more than half of undergraduates, according to a study of college students in 2009, 138,000 bachelor's degrees in STEM fields went to men, while only 88,000 went to women.

A recent and quite interesting meta-study, sponsored by the National Science Foundation and the American Association of University Women (AAUW), located eight factors that contribute to the disparity between the number of female and male college students electing the sciences: beliefs about intelligence, stereotypes, self-assessment, spatial skills, the college student experience, university and college faculty, implicit bias, and workplace bias.

We were interested in finding out what advice could be offered to women in male-dominated, STEM fields. We invited visiting blogger Sara Seager, professor of planetary science and of physics at MIT, to share her best tips. Here's what she suggests:

1. Join a support group of peers. It will be reassuring to have a specific group of peers to meet with. Such "women in physics" or "women in engineering" groups not only provide a group of people in a very similar situation to you but also have organized practical connections such as resources and advice. And consider attending one of the growing number of conferences for undergraduate women in different STEM disciplines.

2. Find a mentor. A mentor is someone who can provide you with guidance and advice. Many colleges have formal mentoring programs to connect mentors and mentees, but if not, seek one out on your own. You should seek out additional mentors if your formal mentors aren't meeting your needs. The mentor need not be a faculty member. A graduate student, a senior undergraduate student, or even a peer with good insight are all suitable possibilities.

3. Get involved in a research project. Listening in classes and completing homework is so different from any kind of work done in an actual scientific or engineering career. To learn whether or not a science, technology, or engineering career is really for you, it is important to try the research environment. Seek an opportunity during term or in

the summer, at colleges with professors, or summer internships in industry.

[View *U.S. News*'s engineering program rankings.]

4. Organize your time. College can be overwhelming with the rate of new material you are expected to learn, as well as all of the possibilities for extracurricular activities. Time management is a must, but it is a topic never taught. Get a calendar and use it. Plan ahead for big due dates such as term papers or exams. Clear blocks of time each day for homework and studying. With so many new opportunities in college, it's tempting to overcommit, but it's better to do a few things very well than to struggle with an unrealistic schedule. Find a way to learn more about time management on your own.

5. Don't be afraid to be assertive. Ask questions in class. If you're not understanding material from class or homework assignments, visit your professor or teaching assistant during office hours. It's their job to help you so take advantage of it. Many departments also have tutoring programs, peer or otherwise, that no one should feel embarrassed about utilizing. Beyond classes, ask specific professors or other individuals about internship, mentorship, or other career-related opportunities even if they do not already formally exist.

6. Have confidence. A common stumbling block for women college students is lack of confidence. Remember that you were accepted to your college because of your qualifications and accomplishments, and you belong there. It may sometimes appear that some other students are excelling effortlessly. Whether or not this is the case, it should not interfere with you reaching your goals at college: to become educated and train for a career.

[See 15 Ways to Boost Your Confidence at College.]

7. Look out for yourself. Another pitfall for women is the tendency to help others before helping themselves. In a science career, where individual accomplishments are used as the main basis for judgment, this is detrimental. Regardless of whether the research environment is collaborative or competitive, make sure your own interests are being met.

8. Avoid taking comments personally. Inevitably, rude or sexist remarks from others will occasionally happen, even though they are not supposed to. The worst ones attack

women's abilities in science, engineering, or math. These remarks are unfounded so don't take them personally. Women students can often fall into the trap of taking even healthy criticism and scientific debate personally; don't do this, as it will hinder your progress.

9. Strategize for the future. When approaching the senior years of college, always look a step ahead. Try to identify internship, graduate school, or other interesting options well in advance. Find out what it takes to be admitted to these programs and put in the effort needed. For example, your college's alumni database could be useful for finding contacts who are willing to help you identify what it takes to be admitted or hired.

[See Best Graduate Schools for Science and Technology Careers.]

10. Enjoy yourself. The secret to a successful career in science, engineering or math is to find something you both like doing and are good at. Take your time in college to explore and find what suits you.