Sloan Career Cornerstone Center

Pre-College Career Planning

Course Selection - Student Networking - School Counselors - Connect with Professionals - Science Centers/ Museums - National Programs and Projects - Summer Programs and Camps - Lesson Plans and Activities - Online Resources

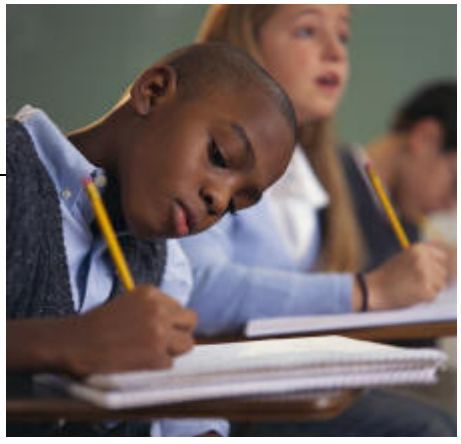
Pre-College Ideas

Prior to college, there are several steps you can take to help prepare for careers in science, engineering, mathematics, technology, computing, or medicine. Many of these ideas can help you focus on a career path by giving you exposure to the types of activities with different career areas.

Course Selection

While in school, or in optional after-school programs, try to take as many math and science courses as you can. Taking additional courses will help you determine if you enjoy the subject matter, and will also give you a head start on advanced coursework. It will also give you an opportunity to meet other students with similar interests. In middle or high school, consider extra classes in algebra, biology, chemistry, calculus, geometry, trigonometry, physics, electronics, and engineering concepts. At the elementary level, consider exploring pre-algebra and geometry, and if engineering if of interest, preview engineering concepts where available. Massachusetts is the first state to require that engineering concepts are included in K-12 curriculum. View details and recommended subjects by grade level at www.prek-12engineering.org/frameworks.

Student Networking



Try to keep in touch with other students who are also interested in engineering, math and science. Join a math or science club after school, or participate in science, math, or engineering competitions.

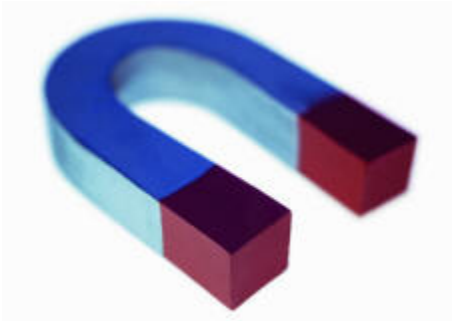
School Counselors

Visit your school's career counselor, and find out what suggestions they have for exploring career paths in science, technology, engineering, math, computing, or medicine. They may be able to suggest courses, internships, or extracurricular activities. Some university career centers also have good resources for pre-college students, and many offer career days for high school students.

Connect with Professionals

If you, or your family, knows someone who works as an engineer, mathematician, scientist, or medical professional -- see if they would be able to mentor you -- or provide advice and exposure to their career path. Perhaps you could join them at work for a day, or ask for guidance in gaining internships, or summer jobs in your field of interest. Whatever field interests you the most, it is a great idea to network with people who are already working in the field to find out what they do, and see if it might be the right field for you!

Resources at Science Centers and Museums



Many science museums offer lessons, activities, and programs that can help students explore science, technology, engineering, mathematics, computing, and medicine. Museums and science centers can play a critical role in sparking life-long interest in and understanding of science, engineering, and technology. They offer a non-threatening, friendly environment where adults and students can explore without fear of being wrong, or admitting what they don't know. Many museums offer informal, interactive activities that complement local course curriculum. By helping the public investigate the natural world and explore why and how the human-made world works, science centers museums can also help equip young people -- and adults -- with the skills they need to live, work, and innovate in the 21st century. Some museums and science centers also offer weekend or summer programs for precollege students, and some also offer programs for teachers, including lesson plans and activities for use in the classroom. Many offer hands on experiences for exploring science, mathematics, engineering, computing, and medicine or health applications. The Sloan Career Cornerstone Center offers an online directory of science centers and museums throughout the United States…but also check with your local center to see what they have to offer. Many science centers and museums offer virtual experiences through their website, so you can participate in resources from anywhere!

Precollege STEM Summer Programs and Camps

Precollege summer camps that focus on science, mathematics, technology or engineering can provide students with great hands-on experiences working on activities that explore how these fields have an impact on the world. Many universities that offer engineering programs offer programs in the summer for high school students. Companies and science museums also often offer summer activities for high school, and occasionally middle school students. Check your local university, or visit www.careercornerstone.org/pcsumcamps.htm for state by state examples.

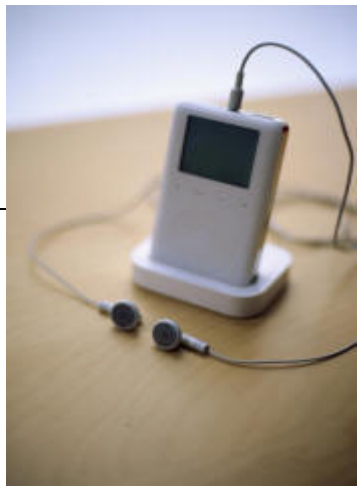
Participate in National Programs and Projects

Join in on engineering, math, or science projects and events that may be offered in your area. These are great opportunities to network with other students, meet professionals in the field, and gain experience. There are dozens of mathematics, science, and engineering competitions - many sponsored by local schools. By participating in these projects, you can also develop a network of other students with similar interests and goals. The following list is a sample of programs and project which may be of interest to you. Be sure to check with your local university to see if they sponsor local math, science, technology, engineering, or medicine related competitions. Links to each of the projects are at www.careercornerstone.org.

- **A World In Motion**
- **American Mathematics Competitions**
- **American Regions Math League**
- **BattleBotsIQ**
- **BEST Inc.**
- **Boston University Design Competition**
- **Botball**
- **Bucket Buddies**
- **Da Vinci Competition**
- **Destination ImagiNation**
- **Discovery Channel Young Scientist Challenge**
- **eCYBERMISSION**
- **Edventures Robotic Challenge**
- **ExploraVision Awards**
- **FIRST LEGO League**
- **FIRST Robotics Competition**
- **Future City Competition**
- **Globe Program**
- **Hands On Universe**
- **Harvard-MIT Mathematics Tournament**
- **HP International Telementor Program**
- **Intel International Science and Engineering Fair**
- **Intel Science Talent Search**
- **International Bridge Building Contest**
- **International Mathematical Competitions**
- **International Mathematical Olympiad**
- **International Physics Olympiad**
- **Internet Science and Technology Fair**
- **JASON Project**
- **JETS (Junior Engineering Technical Society)**
- **Junior Solar Sprint/Hydrogen Fuel Cell Car Competition**
- **Live From Earth and Mars**
- **Marine Advanced Technology ROV Competition**
- **MATHCOUNTS**
- **NASA Quest**
- **National American Indian Science and Engineering Fair**
- **National Engineers Week**
- **National Middle School Science Bowl**
- **National Robotics Challenge**
- **National Science Bowl**
- **National Science Decathlon**
- **Navigational Vectors**
- **NEDC (National Engineering Design Challenge)**
- **New England Math Legaue**
- **Odyssey of the Mind**
- **RoboCup**
- **Rose-Hulman High School Mathematics Contest**
- **Rube Goldberg Machine Contest**
- **Science Olympiad**
- **Sea Turtle Migration-Tracking Education Program**
- **Signals of Spring**
- **Solar Decathlon**
- **Swan Project**
- **Take a Dip**
- **Team America Rocketry Challenge**
- **TEAMS: Tests of Engineering Aptitude, Mathematics, and Science**
- **TechXplore**
- **The Mandelbrot Competition**
- **ThinkQuest**
- **TOYchallenge**
- **USA Mathematical Talent Search**
- **Webquests**
- **West Point Bicentennial Engineering Design Contest**
- **Winston Solar Car Challenge**

Lesson Plans and Activities

Several professional societies and other organizations have developed lesson plans and activities to provide students with hands-on experiences in science, engineering, and technology. TryEngineering.org offers several, as do professional societies representing many STEM fields.



Additional Online Resources

The Sloan Career Cornerstone Center offers links to all the resources mentioned in this document, and also provides detailed reviews of over 100 degree fields. There are also industry profiles, hundreds of profiles of people working in the fields covered, and free monthly newsletters, weekly Podcasts, and PowerPoint presentations. (www.careercornerstone.org)

Career Cornerstone Profile Excerpts

The following excerpts from Sloan Career Cornerstone Center profiles offer suggestions for K-12 students:

▶ Liza Munda

Associate Process Engineer
Genentech
San Francisco, CA

"I was always pretty strong in math all through my education. When I went into high school, I had a really good chemistry instructor who made me want to go more into chemistry. My basketball and volleyball coach was actually a guidance counselor. I was talking to her at one of our tournaments and she said, `What do you think you're going to do when you graduate?' I didn't think I knew, and I said I really liked chemistry, so she suggested chemical engineering. And I thought, chemical engineering -- that sounds exciting -- I could tell people I'm a chemical engineer. So that got me to look into it, and then I decided that's what I wanted to at least try when I went into the university. And when I started at the university, I just followed the path, not really thinking about anything else. Then, in my third year, I had a senior advisor who introduced me to biotechnology. He was starting a program at the university in biotechnology. I heard about Genentech, and came here to work."

▶ Noah Loren

Applications & Technology Services Engineer
Detroit Diesel Corporation
Detroit, MI

"Seniors in high school should take science and math, as much as you can. If you can get calculus in high school, take it. Even if it's just a brief course or doesn't go in too much detail. But I guess my senior year in high school, I didn't have any calculus and then freshman year in college, it was like getting hit with a brick. So it's always nice not to have that done to you. Take physics, chemistry and a lot of math."

Maria Angelo

Area Consultant
DuPont
Deepwater, NJ
"When I was in high school, I wanted to be a chemistry major. Then I participated in a program the summer between my junior and senior year that gave me the information that caused me to choose chemical engineering as my career path. So, I knew my senior year I wanted to go into chemical engineering."

Mark Hawkins

Project Engineer
Caterpillar Incorporated
Peoria, IL
"Take every class you can, no matter what subject or topic, to broaden your experiences. As far as non-technical course are concerned, take typing because you will use it constantly on e-mails, documentation, software, and more. Other important courses are speech classes, writing classes, and punctuation because if you have a good idea and it doesn't come across well, it doesn't go anywhere. In fact, even history and some of the non-technical classes that allow you to understand other people's points of view are useful."

Cynthia Murphy

Business Coordinator
Chevron Products Company
Richmond, CA
"Well, I've always been a very curious and creative person, even when I was a child. I always enjoyed math and science. As it turns out, my father is an electrical systems engineer, so I think I was kind of raised with the engineering mentality, the thought that I would go off and be an engineer. When high school came around, I really enjoyed chemistry and-I think you hear this from a majority of chemical engineers-we like chemistry, we like math, we like science. `Oh, I think I'll go into chemical engineering.' So that's how I got into the chemical engineering curriculum. However, it still interested me through my freshman, sophomore, and junior years, which is where you really get into the chemical engineering courses, and so I stuck with it."

DeAnne Hellyer

Imaging Media Product Planner
Lexmark International
Lexington, KY
"I think it's really important to have good writing skills and good communication skills-so anything you can do to improve those is important. Also, it's very important to be proficient in using the computer. And experimental design courses and statistics are good to have for designing experiments."