Career Paths in Science and Engineering Fields

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Science vs. Engineering

Discovery	Application
Requires learning a lot of details about science	Requires some knowledge of science
Some math (except physics)	Heavy use of math
B.S. teaches a knowledge set	B.S. teaches a way to think

Chemist ≠ Chemical Engineer

What does it mean to have a STEM degree?

- Bachelor's (B.S.)
  - Critical thinker
  - Knows how to identify, approach, and solve problems
  - Team player
- Master's (M.S.)
  - Expert in a sub-specialty of Bachelor's
  - Can approach more difficult problems
- PhD
  - Mastery of a yet narrower field
  - Taught to find answers outside of knowledge base
 - More focused on discovering questions to answer

Career Options for Engineers/Scientists

Industry vs. Academia vs. …

- Most scientists and engineers
- Wide variety of companies hire engineers/scientists
- Work is profit-driven

- Typically PhD level
- Flexible work environment
- Very secure job if tenured
- Work is more abstract

A Few More Points on Degrees

- A bachelor's in engineering is a very hirable degree
  - Most engineers can find work relatively quickly

- Science degrees are slightly less hirable, but still highly sought
  - Many companies look for M.S. and PhDs now
  - Higher proportion go into academics

- Both degrees are flexible, engineering maybe a little more

Where can Engineers/Scientists Work?

- Software/Game Design
- Plastics
- Petroleum
- Manufacturing
  - Home goods
  - Planes, trains, automobiles
  - Many, many others
- Law
  - Patent Law
  - Environmental Law
- Politics
- Wall Street
- Pharmaceuticals

- Electronics
- Government Agencies
  - Sandia, Howard Hughes, etc.
  - NIH, NSF, etc.
- Medicine
- Military
- Building/Designing Buildings
- Power Generation
- Aerospace Design
- Mining
- Others

In short, most anywhere you set your mind to

A Few Types of Engineering

- Chemical – Very broad: application & design of chemical products

- Civil – Designing and building buildings

- Electrical – Design of electronic hardware

- Computer/Software – Programming for electronics

- Biomedical – Design and building medical devices

- Aerospace - Designing planes, rockets, etc.

- Mechanical – Very broad: involves any sort of machine

- Environmental – Recycling systems, environmental protection

Companies That Hire: Chemical Engineers

Companies That Hire: Mechanical Engineers

Companies That Hire: Aerospace Engineers
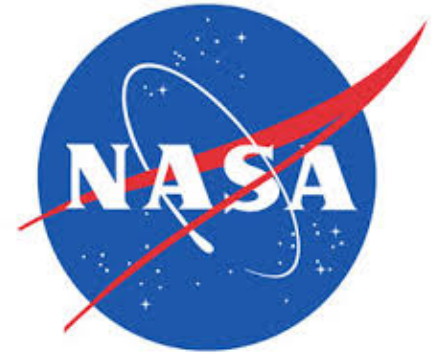
Companies That Hire: Electrical Engineers
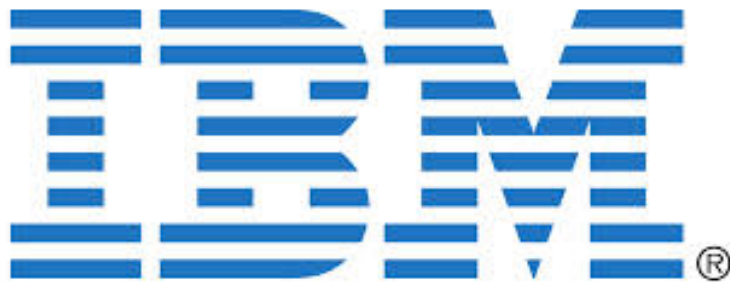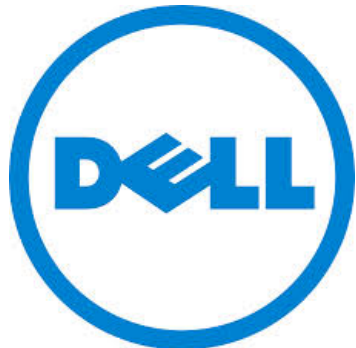
Companies That Hire: Computer Engineers

How to Prepare for Jobs in College

- Internships

- Co-ops

- ROTC (if interested in military)

  - They pay for school, for ≥4 years of service

- Research experience

- Leadership Experience in clubs, etc.

Being **prepared**

Internships & Co-ops

Internships and & Co-ops are short work experiences during your education

- Internships:
  - About 3 months long
  - Usually during summer
  - Does not usually affect graduation

- Co-ops:
  - About 5-10 months long
  - Usually summer + 1 semester
  - Can delay graduation

Both offer full-time, paid experience and are great ways to build networks

Best for students interested in industry jobs after graduation

Research Experience

Research experience is usually on-campus lab work, or school-sponsored summer research programs

- Provides students to learn important research skills (both techniques and method of thought)
- Typically get to work more directly with a mentor
- Really helps build on-campus contacts

Usually unpaid on campus, paid if summer program

Best for students interested in graduate school or research positions

Getting a Job

- Past Internship/Co-op

- Networking

- Career Fairs

- Career Center

- Information Sessions

- Online applications

Questions?

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