Career Paths in Science and Engineering Fields

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March 22, 2014
Science vs. Engineering

Discovery
Requires learning a lot of details about science
Some math (except physics)
B.S. teaches a knowledge set

Application
Requires some knowledge of science
Heavy use of math
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

- Genentech
- P&G
- GlaxoSmithKline
- MERCK
- Johnson & Johnson
- L’Oreal
- Schlumberger
- ExxonMobil
- Intel
Companies That Hire: Mechanical Engineers
Companies That Hire: Aerospace Engineers

- Raytheon
- Boeing
- Lockheed Martin
- Airbus
- NASA
- U.S. Airways
- Northrop Grumman
- Rolls Royce
- Delta Airlines
- BFGoodrich
- Bell Helicopter
- Royce
- Cessna
Companies That Hire: Electrical Engineers

- Samsung
- Segway
- IBM
- Motorola
- Sony
- Dell
- Energizer
- LG
Companies That Hire: Computer Engineers

Apple

Google

EA

CISCO

ACTIVISION

Adobe

ORACLE

Microsoft
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.
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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