# Careers in Science and Engineering

Parent Program

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# Science vs. Engineering

Chemist ≠ Chemical Engineer

## Science

- Scientists observe things in nature and focus on discovery
- Has a much broader range of study
- Creates questions
- Requires knowledge about the details of sciences
- Requires some knowledge of math
- B.S. teaches concepts
- Complementary to engineering

## Engineering

- Engineers create new things and work on existing creations
- The study of how things work
- Creates solutions
- Requires some knowledge of science
- Requires advanced knowledge of math
- B.S. teaches a way to think
- Complementary to science

http://www.stemjobs.com/whats-the-difference-between-a-scientist-engineer/

# Levels of STEM Degrees

STEM = Science, Technology, Engineering, Math

- Bachelor's (B.S.)
  - Critical thinker
  - Capable of identifying, approaching, and solving problems
  - Team player
- Master's (M.S.)
  - Expert in a sub-specialty of major
  - Can approach more difficult problems
- Doctorate (Ph.D.)
  - Mastery of a yet narrower field
  - Taught to find answers outside of knowledge base
  - More focused on discovering questions to answer

# Some Notes on Degrees

- B.S. in engineering is a very hirable degree
  - Most engineers can find work relatively quickly
- Science degrees are slightly less hirable, but still sought
  - Many companies prefer M.S. and Ph.D. level graduates now
  - A higher proportion of science graduates go into academia
- Both degrees are flexible, although engineering may be slightly more

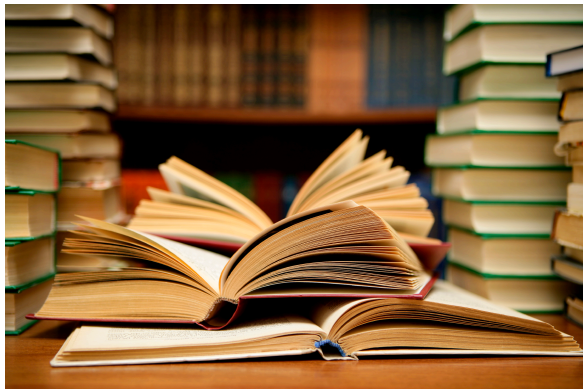
# Careers for Engineers/Scientists

## Industry

- Most common profession
- Wide variety of companies hiring
- Work is profit-driven

## Academia

- Requires a Ph.D.
- Flexible work environment
- Very secure job if tenured
- Work is more abstract



# Where Engineers/Scientists Work

- Software/Game Design
- Plastics
- Petroleum
- Pharmaceuticals/Medicine
- Aerospace Industry
- Electronics
- Manufacturing
  - Home goods
  - Planes, trains, automobiles
- Building/Designing Buildings
- Nonprofits/NGOs
- Law
  - Patent Law
  - Environmental Law
- Politics
- Wall Street
- Government Agencies
  - Sandia, Howard Hughes, etc.
  - NIH, NSF, etc.
- Military
- Others

There are many opportunities for graduates in these fields

# Some Types of Engineering

- **Chemical** – Very broad: design of chemical products, systems
- **Biomedical** – Designing and building medical devices
- **Environmental** – Recycling systems, environmental protection
- **Mechanical** – Very broad: involves any sort of machine
- **Aerospace** - Designing planes, rockets, etc.
- **Civil** – Designing and building buildings
- **Electrical** – Design of electronic hardware
- **Computer/Software** – Programming for electronics

# Companies that Hire: Chemical



GlaxoSmithKline


MERCK

Johnson & Johnson

L'ORÉAL

Schlumberger

ExxonMobil

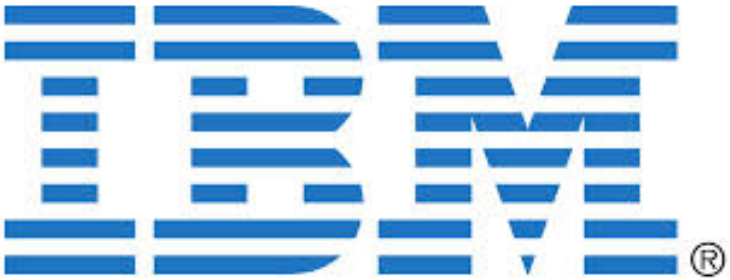
intel

# Companies that Hire: Mechanical

# Companies that Hire: Aerospace

# Companies that Hire: Electrical


NYSEG

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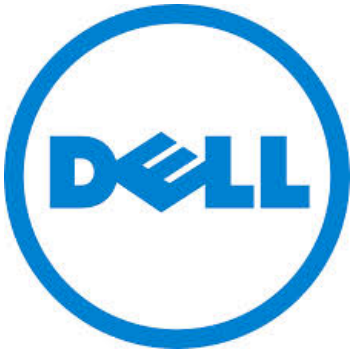



LG

# Companies that Hire: Computer

Google


CISCO

ACTIVISION

Adobe

ORACLE

Microsoft

# How to Prepare for Jobs in College

- Internships/Co-ops
- ROTC (if interested in military)
  - The military will often pay for school for ≥4 years of service
- Research experience
  - On campus, REUs (other colleges), at companies, at national labs
- Leadership experience in clubs, etc.

# Internships and Co-ops

Internships and co-ops are short-term work experiences during your education.

- Internships
  - About 3 months long
  - Typically during summer
  - Does not usually delay graduation
- Co-ops
  - About 5-10 months long
  - Typically summer plus 1 semester
  - Can delay graduation

Both offer full-time, paid experiences and are great ways to build professional networks.

These opportunities are best for students interested in industry careers after graduation.

# Research Experience

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

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

On-campus work is usually unpaid, but it may be paid for a summer program.

This opportunity is best for students interested in graduate school or research positions after graduation.

# Getting a Job

- Utilize past internships or co-ops
- Networking
- Career fairs
- On-campus career center
- Information sessions
- Online applications

# Thank you for your attention!
# Questions?

Feel free to contact me at aps268@cornell.edu!