

Careers Workshop
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"Luck is the intersection of preparation and opportunity."

This workshop will describe some of the opportunities give a few tips about preparation.

My Story

BS Physics, West Virginia Wesleyan College 1972

PhD Astrophysics, University of Colorado 1978

Post Docs

1978 - 1980 McDonald Observatory, U of Texas

1980 - 1983 Space Astronomy Lab, U of Wisconsin

Instrument Scientist, STScI 1983 - 1985

Systems Engineer, Ball Aerospace, 1985 - present,

Civil Space Systems Advanced Projects Office

HST instruments

Next Generation Space Telescope (now JWST)

TPF

Types of things that I do:

liaison between science, engineering and management

design studies and proposals

analysis and modeling of instrument performance

calibration, testing, verification

documentation, publication

education and public outreach

Aerospace Industry at a Glance

Markets & Customers

Civilian - NASA, NOAA, FAA etc.

Defense & Intelligence

Commercial - Remote Sensing, Communications

Connections to Astronomy

Entire missions

Spacecraft

Telescopes

Instruments

Detectors

Data systems

Operations

Astronomers have prospered at Ball

Engineering & Scientific Disciplines

Programs

Internal research & Development

Program and Corporate Management

New Business, studies, designs, proposals

Your intellectual assets have great value

Specific technical skills, optics, electronics, cryogenics

Specific computer skills, programming, web, software packages, systems management

Mathematical and numerical analysis and modeling

Experiment design and execution

Quantitative interpretation and inference from experimental data

Publication and documentation of results

Proposals

Communication, listening, teaching skills

Teamwork

Understanding and reasoning from fundamental principles

Multidisciplinary understanding

Continued learning and new interests

Enthusiasm for the work

Perspectives on a career in industry

many interesting projects, many terrific people

opportunities to participate in exciting current programs

tasks may be more structured and assigned, especially when you are new

day to day activities are pretty ordinary, but the big picture is very satisfying

professional societies, conferences, publications less highly regarded than in academia

less opportunity for self-directed, individual, original research, but there are often affiliations with nearby universities

compensation generally good, salary, benefits, vacation especially starting packages
companies compete with each other
often located in high cost of living areas

perspectives (continued)

no probationary period, but no tenure either

accountability, performance reviews tend to be more formal, especially first few years

good opportunities for promotions, raises etc.

as little or as much responsibility as you can handle

entrepreneurs and leaders do very well

many opportunities in management and business areas

organizations more fluid than academic structures
frequent reorganizations within one company
mergers, acquisitions etc. between companies

emphasis on business concerns & practices
contracts, schedules, budgets, deliverables
direct and overhead expenditures
labor accounting, time cards

physical infrastructure usually modest (buildings, offices)

professional resources are usually pretty good
(computers, software, libraries etc.)

Observations about hiring processes

Four common entry paths

- Intern and co-op programs

- Personal contacts through existing company projects

- Company recruiting

- Unsolicited resumes

Agencies can be useful in limited situations, usually not for entry-level positions

Typical sequence

initial contact, job fair on campus, recruiter at meeting,

resume to HR, forwarded to managers

telephone interview

on-site visit for formal interviews and tour (2 days) - be prepared for this part

- potential functional department

- potential programs

- potential managers & coworkers

Human Resources completes formal process

application, benefits, relocation policies

realtor, local area, housing, schools, family concerns

check credentials & references

offer

negotiations

get to work

Some advice about approaching industry

Be familiar with the field

- agencies that fund and manage programs
- companies & institutions that are the players
- relationships, primes, subs, vendors, supports
- professional societies, meetings, publications
- history, current, future

Research a company before making contact

- Web sites, annual reports, trade magazines
- university placement offices
- student chapters of professional societies
- corporate members of professional societies
- technical and scientific publications by employees

Be knowledgeable about history, projects, technologies, facilities, customers

Visit informally - most have visitor's centers, tours etc.

Take advantage of companies recruiting efforts & presence at meetings

Personal contacts can help (networking)

- alumni from your schools
- faculty or students familiar with company's projects
- family, friends

Advice about resumes and interviews

Take advantage of lots of general advice about resumes

Demonstrate familiarity with and interest in the company

Express interest in specific opportunities if possible
recent wins, future studies and proposals
specific technologies you can help with

Identify all skills, be specific

Especially identify cutting edge skills, you are the next generation of employees

Identify hobbies, recreation, outside interests

Community service is a good plus
science fair judge, tutoring, mentoring
tours, lectures, interviews

Citizenship or residency status, security clearance

Follow up with call to HR representative
a lot of the process is automated these days
make a human contact

Resumes are kept active for about six months

Companies are usually looking to fill specific needs, but often will hire good people with expectation of finding a good fit later.

In addition to specific technical skills, companies find the following things attractive:

creativity

problem solving skills

team player

communication skills, be articulate in speaking and writing

self motivation

enthusiasm, enjoyment of the work

desire to learn more and advance

There are endless opportunities. Learn to recognize them. Be prepared to take advantage when they arise. Good Luck.