

# Academic and Non-Academic Career Paths and Job Search

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# What to Expect?

## Research, Teaching and Service

### Research

engage in scientific discovery, support graduate and undergraduate students, funded research

### Teaching

active teaching, mentoring, advising

### Administration/Service

Chair, serve-on committees, etc.

- Departmental
- School /College
- University
- Professional: societies, conferences, journals

# Types of Colleges/Universities

## Private vs. Public

Type	Degree Program	Emphasize	Important
Research Universities	Ph.D.	Research	Teaching & Service
Colleges / universities	M.S.	Teaching	Research & Service
Selective Liberal Arts Colleges	B.S.	Teaching & Scholarship	Service & Research
Undergrad oriented	B.S.	Teaching & Service	Research

# Example of Different Expectations Faculty

## Research Institution:

60% - 80% Research

10% - 35% Teaching

5% - 10% Service

## M.S./ B.S. College or Teaching focused at R1:

50 - 80% Teaching

10 - 30% Professional Development

10 - 20% Service

# Different Academic Positions within an Institution and Expectations

## Professorial Ranks

Assistant

Associate

Full

Distinguished/Chaired/Endowed Professor

Instructor – teaching & service

Lecturer - teaching

Postdoctoral positions - research

# Research Expectations: Research University

- Publications – journal, conferences, workshops (focus on top peer-reviewed venues)
- Funding to support research group and summer salary (peer-reviewed, basic vs applied, grant vs contract)
- Graduate student training (and their professional success)
- Reputation and Impact
  - Higher in rank: more visibility and international reputation – talks, invited talks, involved in conferences, major review boards, NRC panels etc.
- Maybe:
  - Undergraduate research mentoring
  - Patents, software artifacts,...

# Teaching: Research University

- Teaching load: typically 1:1 to 1:2
  - Mix of undergrad and grad courses
  - Course material: intro undergrad up through core grad course, seminar in research area.
  - Teaching assistants for grading, office hours, and overall help
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- ❖ **Good research but bad teacher – harder to be promoted.**
  - ❖ **Good teacher but bad researcher – impossible.**
  - ❖ **Good researcher, fair teacher easier to be promoted than good teacher, fair researcher**

# Service Expectations: Research University

- Department committees
- University committees
- External Professional Service
  - Program committees
  - Funding panels
  - Professional society involvement
  - Journal editorship; program chair, conference organization
- ❖ Higher in rank, more external service
- ❖ Pre-tenure: Favor research-oriented service
- ❖ Be selective: choose roles that are important where you can engage

# Life as a professor at a research university

## Pros:

- Freedom for research (within bounds)
- Work on the frontier of computer science, biology, engineering, social sciences, cognition....
- Get to develop your ideas and vision
- Get to teach/inspire/lead/mentor the next generation.

## Cons:

- Must find funding for students/projects
- Must judiciously choose balance of research/teaching and work/life

# Some advice: What you can do right now to start preparing

## Research

- Read broadly, attend talks: How does your research fit into a bigger vision? Trends?
- Always on the lookout: Keep a list of potential future research ideas.
- Publish!
- Cultivate your professional network: Seminars, conferences, mentors, ...
- Communication skills matter: Writing, speaking!

## Teaching

- View TA as prep. Ask for chance to lecture.

## General

- Make your own best opportunities: Ideas? Opportunities? Awards? Fellowships? ASK!!

# Some advice: pre-tenure years

- Find mentors and professional cohorts.
- Seek feedback.
- Know your strengths.
- Do what you find easy for all else collaborate.
- Learn to say no.
- Prioritize!! Especially in research.
- Write well.
- Choose your teaching service carefully
  - !Have fun!!

# On Job Stress

Common Quote: “I chose career path X because I heard career path Y would be too stressful.”

To consider: Any job is stressful if the job’s expectations do not align with the resources available, OR if its priorities do not match your strengths/loves.

# Teaching Position

## What types are out there?

- Teaching at small college
  - Professor (assistant, associate, full) with tenure
  - Lecturer
- Teaching track at Research University
  - Many different types/titles
  - Teaching Professor
    - Professor of the Practice, Clinical Professor, Lecturers with SOE (CA)
    - Few with tenure, most on contracts
  - Lecturer, Senior Lecturer

# Teaching Position Expectations

- Teach 2-4 classes per semester
- Have busy office hours
- Teach out of your specific area (e.g. intro programming sequence, non-majors)
- Involve undergrads in research projects
- Attend meetings (dept., campus)
- Serve on campus committees (technology, etc.)

# Teaching Position

## Research

- Fewer institutional resources
- No graduate RAs
- Get undergraduates involved
  - Distributed Research Experience for Undergraduates
  - Collaborative Research Experience for Undergraduates
  - REU through NSF
  - Local programs at undergraduate institution

# Teaching Position

## Getting Hired/Cover Letter Essentials

- Your focus is on teaching.
- You can document relevant experience related to teaching.
  - Teaching Assistant
  - Center for Teaching programs
  - Instructor of Record for a course
- You can teach intro CS courses and courses for non-majors.
- Your teaching focus (e.g., systems) matches what is advertised.

# Teaching Position: Challenges

- Perception that less prestigious than research focused/university
- Intense focus on students
- Staying engaged in research
- Infrastructure (e.g., computer services, grant administration)
- Small dept. (~5 profs) or small group in a large research department
- Salary: possibly lower?

# Teaching Position: Rewards

Close relationship with undergrads

Be a member of the university culture

Chance for leadership and influence

Matches beliefs/lifestyle

Teaching is your gift and you want to share it with others

Possibly less travel

Flexible schedule for families

# Post-Docs

Transitional period into another career path

Teaching post-docs & research post-docs both available

Funding

Fellowship you apply for, OR university/department, OR professor's research grants.

Best-case Scenario

2 years, good mentor, high-ranked school that will help you transition to long-term job of your dreams.

# Career Path Option

## What is a post-doc?

Training opportunity whereby a person can deepen his or her expertise and/or research skills for a few years, en route to a permanent position

Typically funded either by a fellowship awarded directly to the Post-Doc or by the institution at which they will spend a limited time

# Some Post-doc Motivations

Timing: Graduate “off season”, Two-body issues,  
Difficult job year

Improve job opportunities: Strengthen research,  
Work in a highly regarded institution

Learn new area, field

Work with a specific expert: additional mentoring  
Experience different type of university

# What is a GOOD postdoc?

Used to expand experience

- entering a new research discipline

- gaining a distinctly different perspective on the scholar's current research base

Specific & relevant intellectual growth

- working with a particular mentor or on a particular project

Two years in duration

# GOOD postdoc position offers:

Mentoring & guidance that directly supports professional development

- not simply serve as a contract researcher

Significant opportunities to explore independent research topics

- in addition to supporting existing research efforts of the mentor's group

- manage operational aspects of a project under the supervision of the mentor

Enhance the breadth of their research

- exploring new fields or new perspectives

- not simply refine material from PhD

# Expectations

Variable, some combination of:

Teaching, Research, Supervising, Mentoring,  
Organizing

The ratio will depend on your own long-term goals, and the position

Should get a clear understanding **BEFORE** accepting job

# Challenges

Low pay (compared to faculty, industry)

Role in the university

- Not a student, but not faculty

- Depending on school, can feel isolated

May not have independence

- working on PI's grant

If you have family, can be difficult to move for a temp position

# Research Scientist

No tenure

“Soft money” – grant writing!

Less requirements (service, teaching)

Can focus on research

Dependent on PI

Hired to get things done for grant

Not independent

Need a good advocate, well-funded lab

Possibly easier work/life balance

# Job Search – Closer to getting out

Prepare CV and research/teaching statements

Get these materials reviewed

Talk to advisor/other faculty about where to apply

Apply to several places

Prepare/Practice interview talk

Be assertive

# How to get a post-doc

Can be posted in same venues as other academic jobs

Not always advertised

Use Your Network!

Give talks as you get closer to graduating

Remain in PhD lab

Usually for timing reasons only

# Moving between schools and positions

## University to university

Not particularly difficult

If have tenure, usually get tenure

- But not in all cases: schools have different rules and moving to higher ranked school

## University to teaching-oriented college

Must show evidence of being good teacher

## Teaching-oriented College to university

Must show can do research - publications

# Industry to Academia Comparison

Academia	Industry	National Lab
Active publishing in top tier conferences	Must build “real” systems	Mix of building “real” systems and publishing
Active collaborations with academia	Up-to-date technical skills	Active collaborations with labs and academia
Establish visibility in research community	Understand business roadmaps	Address agency mission critical problems
“Soft” money	“Hard” money	“Soft” and “hard” money

# Engineer or Researcher

## Engineer

Deep technical expertise:  
design, coding, testing,  
analysis

IP: patents & papers

Employer's bottom line:

- Supports the sales process and ongoing customer satisfaction
- Proactively pleases customers

## Researcher

Proactive leader for  
innovation (applied research)

IP: foundational inventions

Employer's bottom line:

- Bolder stance (higher risk)
- Seeks productive partnerships with other business units and external collaborators

# Becoming a Technical Leader

- Act like one: Show initiative & vision.
- Be trustworthy
  - Follow through on commitments in a timely fashion.
  - Treat people fairly and with respect.
- Demonstrate ability to work with others
- Let people know you are interested
- Work to acquire qualifications
- Find a mentor to help

# Backup Questions

- Do internships matter?
- Can I publish papers?
- How do you find and get on projects?
- What is the interview process like?
- How important is teamwork versus individual work in your environment?
- What is the career path of a researcher in your organization?
- Is it possible to switch during your career: Industry/Academia/National Laboratory/Funding Agency/Non-Profit?