

# Teaching at a Primarily Undergraduate Institution



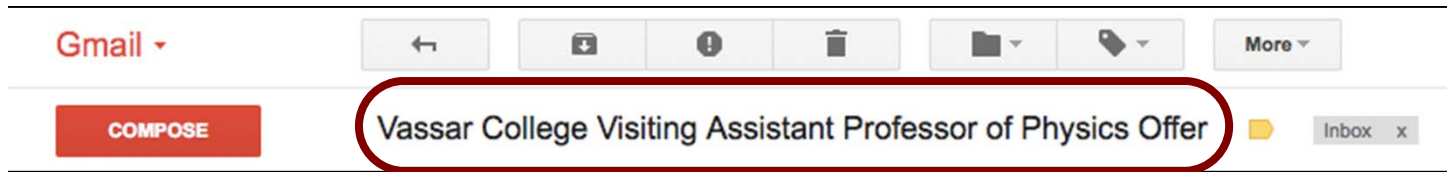
## Roadmap for the next hour:

1. What is day-to-day of the job

2. How to prepare for the job during grad school... and what can't be done during grad school

3. Which job(s) to apply for and how to apply for them

# It all started on May 8, 2017...



**A job!!!  
Hurray!!!**

## Their expectations:

- teach 2x intro mechanics in the fall
- teach 1x advanced lab and 2x intro E&M in the spring
- re-appointment decision in December-January, if you stay then you can apply for internal research grants

## My hope:

- Improve dossier a bit before job search starts again in Nov.

**Great! I can manage this!**

In fact, it sounded too doable...

$$2 \text{ classes} \times 2 \frac{\text{lectures}}{\text{class} \times \text{week}} \times 1.25 \frac{\text{hours}}{\text{lecture}} = 5 \frac{\text{hours}}{\text{week}}$$

The homework is online, no need to grade.  
Enrollment capped at 21 per class.

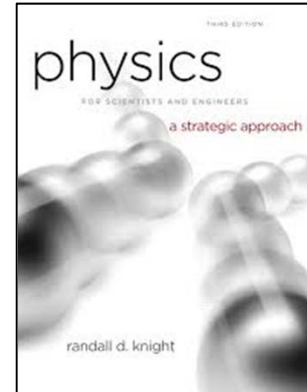
	Monday	Tuesday	Wednesday	Thursday	Friday
	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/
3:10pm	/	Lecture 1	/	Lecture 2	/
5:50pm	/	Lecture 1	/	Lecture 2	/

Weekly  
Schedule

For re-appointment: Good teaching with potential for improvement.

**Known difficulty: they only have a calculus-based intro track, which pre-meds must take**

- request copy of textbook
- sit in 211 lectures
- sit in 101 lectures
- buy 211 discussion problems from bookstore
- copy UIUC course material from servers
- seek guidance from PER group
- discuss lecture demos w/ Erika Smith



# Orientation



Sanders Physics  
Building



# The department is small.



Vassar: 6.5 faculty,  
~ 16 graduates/year

UIUC: 65 faculty,  
~ 150 graduates/year



# Here is the classroom...



... and contacts for software problems, media resources, demos, lab electrician, the two professors teaching the other sections of the course.

... First class for you is in 5 days, right? Find us if you need anything.



# There is a lot of curriculum pressure

13.5 week semester, 2x 75 minutes lectures a week,  
tests in class only

## Must Cover

kinematics  
dynamics  
momentum  
energy/work  
rotational motion

## Pick one

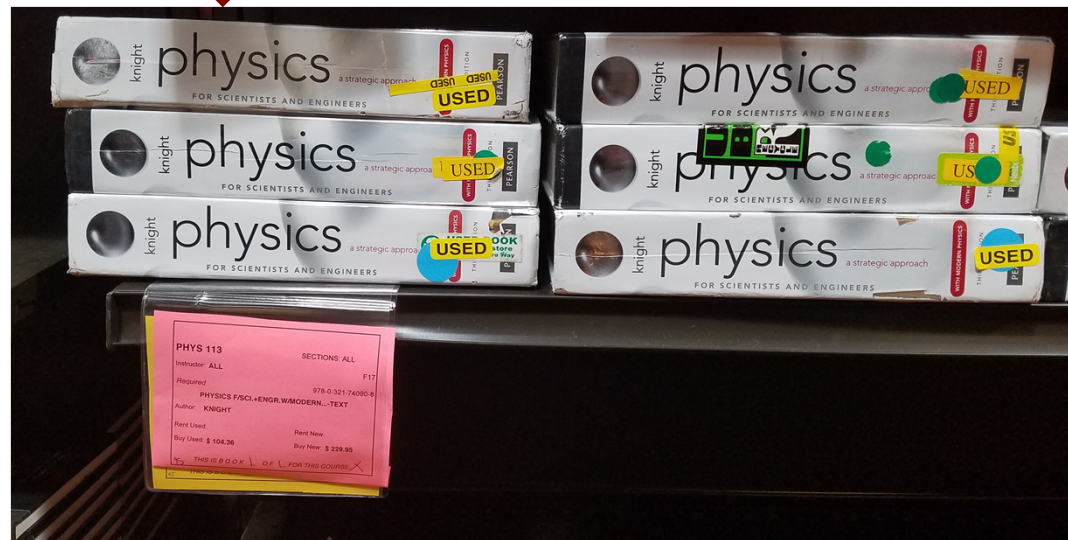
gravitation  
fluids  
oscillations

It is impossible to serve all students well.

# Unexpected problems start on day 1...

Two Students: “I am on full financial aid and cannot afford both the textbook and online homework subscription.”

\$240 new  
\$104 used

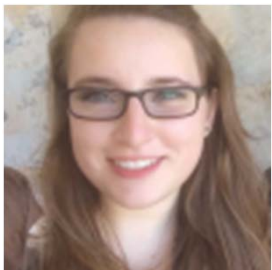


I got the library to buy a copy of the book and place it on reserve.  
It is the first textbook from our dept. in the library.

At a residential college, your teaching starts with physics but does not end with physics.



**Bevan:**  
Aspiring chemist



**Liz:**  
Vassar EMT crew chief



**Leven:**  
HS biology teacher assistant

The ideal is to start mentoring relationships.

# Sometimes they drop your class.

Physics 113 Drop Inbox x



to me ▾

Oct 1 ☆



Hello Professor,

After a lot of thought, I wanted to let you know that I will be dropping your Physics 113 class. While I have enjoyed being challenged by Physics and the material presented, I find that I spend a significant amount of time trying to understand the concepts and doing the assignments well. I joined this class to try and understand something I originally didn't like and I feel you have helped me do just that. Unfortunately my others classes take priority and I feel I would not be able to achieve the level of quality I expect in all my classes, should I continue with Physics.

Thank You for your teaching.

“I joined this class to try and understand something I originally didn't like and I feel you have helped me do just that.

Thank you for your teaching.”

Try to have made a difference anyway.

# Students ask to do research with you...

Inquiry about Research

Inbox x



to me ▾

Nov 2 (3 days ago) ★



Hello Professor Sheung,

My name is Timothy Yoo and I am currently a senior physics major at Vassar. I work in Professor Daly's lab a few days out of the week, which I think is right next to your lab. I was looking back at the email about interest in biophysics and, even though I will be graduated by next year anyway, I wanted to say that I would have been very interested in taking that course. I think that the discipline has a lot of applications to topics that are trending nowadays, and it would be really cool to see more diversity in the courses offered in the physics department.

Since I won't be able to take the course next year, I was wondering if we could meet sometime to talk about what sort of work you enjoy doing in your lab, if you plan to continue doing research next term, and, if so, if I could possibly be a part of your team as well. Thank you very much for your time and consideration!

“I was wondering if we could meet some time to talk about... the work you do in your lab... and if I could possibly be a part of your team.”

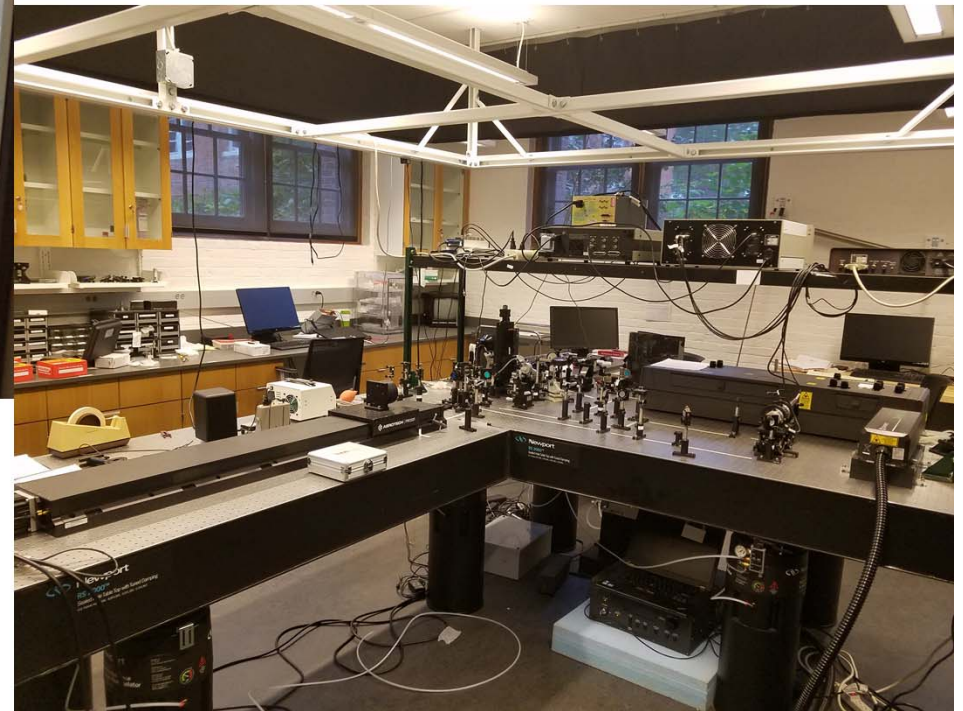
Need to find some \$\$\$...

# Yes, research is a part of the curriculum:



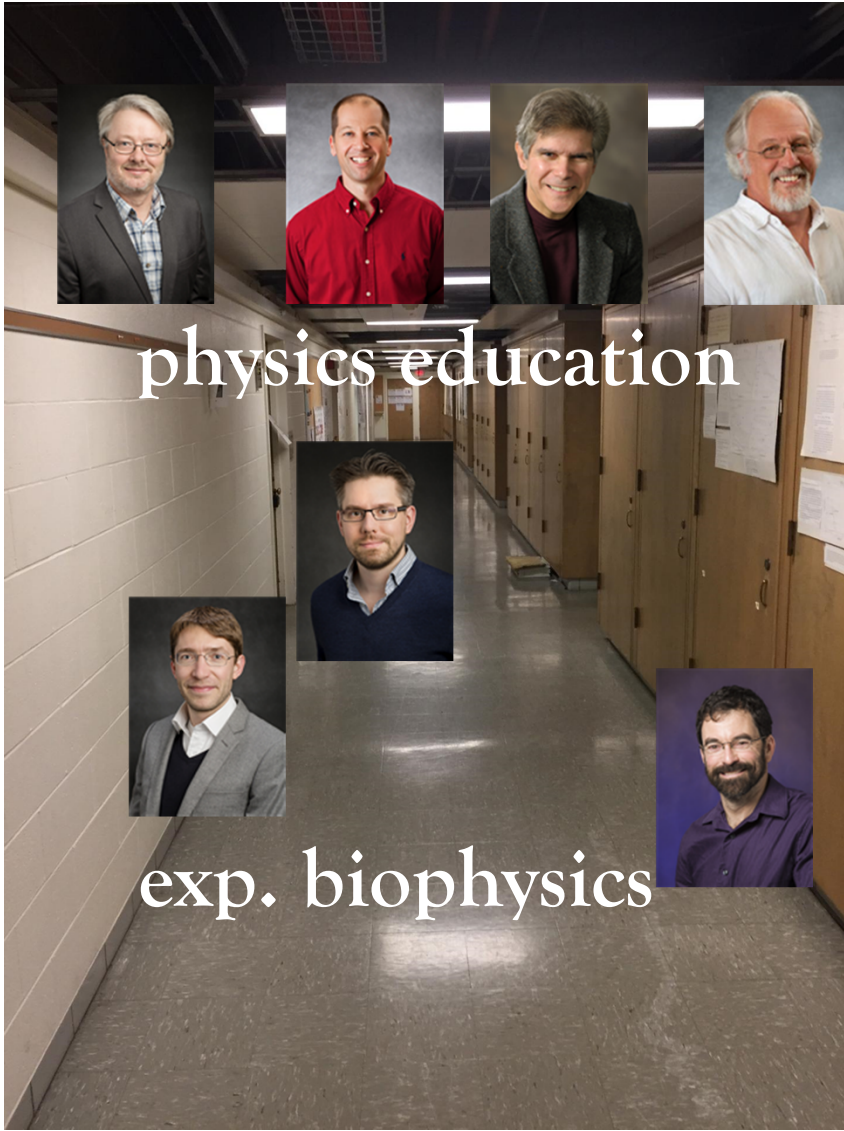
← David's  
Experimental/Computational  
Acoustics Lab

Brian's Experimental  
Solid State Lab →



Expect to direct one single research project, for which you function as grad student + post doc + PI.

I came from this hallway.



physics education

exp. biophysics

Now ↓

physics education

exp. solid state

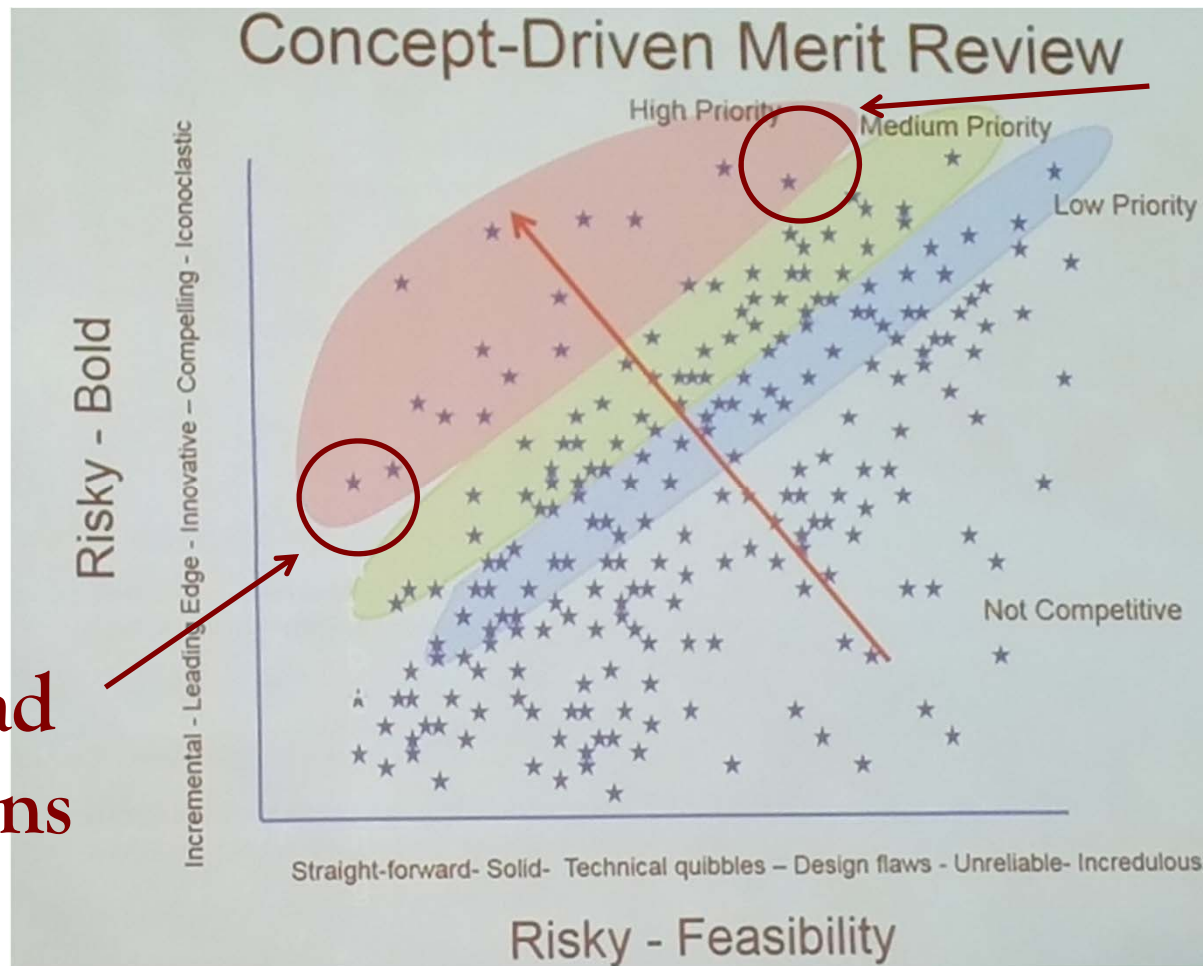
exp. optics

history of science

observational astronomy

Expect to be the only faculty member in your research area in the entire college.

There is a lot of support for professional development... they paid for me to attend NSF Day



top PhD programs

undergrad institutions



# Example department event

Colleague: “One of the LIGO Nobel Laureates will be speaking 2 hours away next next weekend.”

**Gravitational Waves**  
New York State Section of American Physical Society  
117<sup>th</sup> Topical Symposium  
joint with  
The 2017 Fall Meeting of the  
Astronomical Society of New York  
**November 10-11, 2017**  
Image credit: LIGO/T. Pyle

**UNION COLLEGE**  
FOUNDED 1795

**APS physics**

[Home](#)  
[Registration](#)

"The remarkable gamble the National Science Foundation took with LIGO"

Rainer Weiss, *MIT*



2017 Physics Nobel Laureate

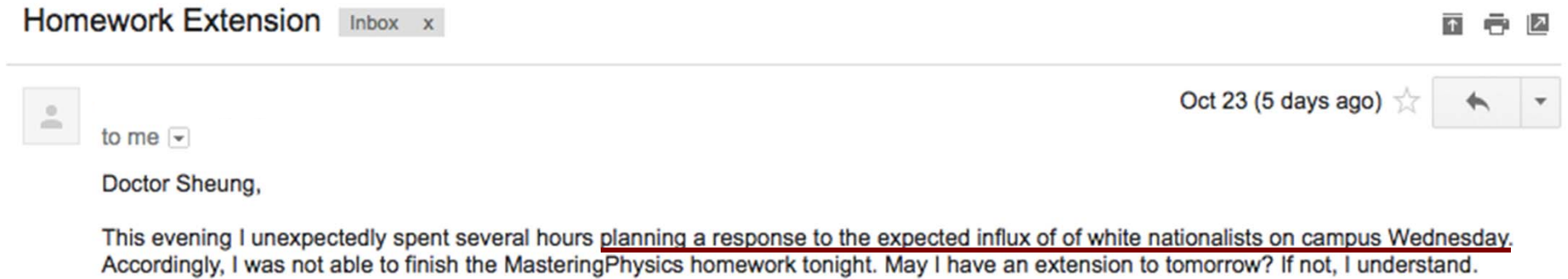
# Example college event: Sometimes you are paid to play dress-up



Extremely sweaty and undignified professors

Sept. 24, 2017 Inauguration of Elizabeth Bradley

# Example college event 2



“... planning a response to the expected influx of white nationalists on campus Wednesday.”

It took time for me to get more information, then to reason through that information and convince myself things are likely under control.

Ended up forwarding to college president as a heads up to be safe. She wrote back that there will be security increases and alternate events for students.

# Your time will be very precious, not just for yourself but also for your department and even

## college. Teaching

check in on struggling student  
provide help outside office hour  
coordinate with tutors  
teaching development  
letters of recommendation  
⋮

## Research

keep up with literature  
conferences  
recruit/mentor students  
publish  
mentor student  
grants/funding  
collaborators  
⋮

## Department

department meetings  
advising  
bring in speakers  
organize/attend student events  
support colleagues  
curriculum development  
⋮

## College

faculty meeting  
service courses  
coordination  
college-wide initiatives  
support other departments  
advising  
⋮

## Personal

Have a life????  
Give career seminar because you don't say no to Lance Cooper



Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		Lecture 1		Lecture 2		
		Lecture 1		Lecture 2		

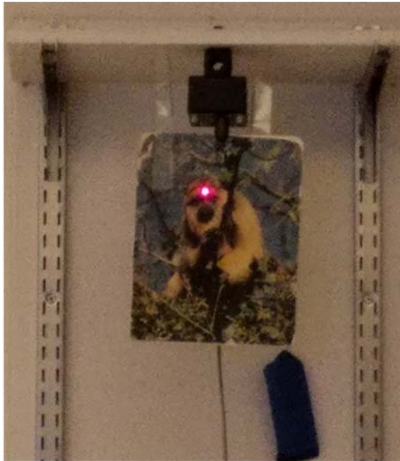
Your weeks will be as long as you are able and willing to work.

# I learned to teach almost entirely out of opportunities in this department.

- PHY 211 discussion – only a week ahead of students
- PHY 212 lab – be proactive TA
- CPLC K-12 outreach – lesson planning
  - education outcomes assessment
- PHY 140 – demos
- PHY 402 (light lab) – identify things to improve
  - consider costs
  - streamline procedures
  - lecture with intent and clarity
- PHY 498BP – course identity and narrative theme
  - see beyond a single course

Try to make improvements which will outlast you.

# Less support... equals more freedom? example: lecture demos





Vassar

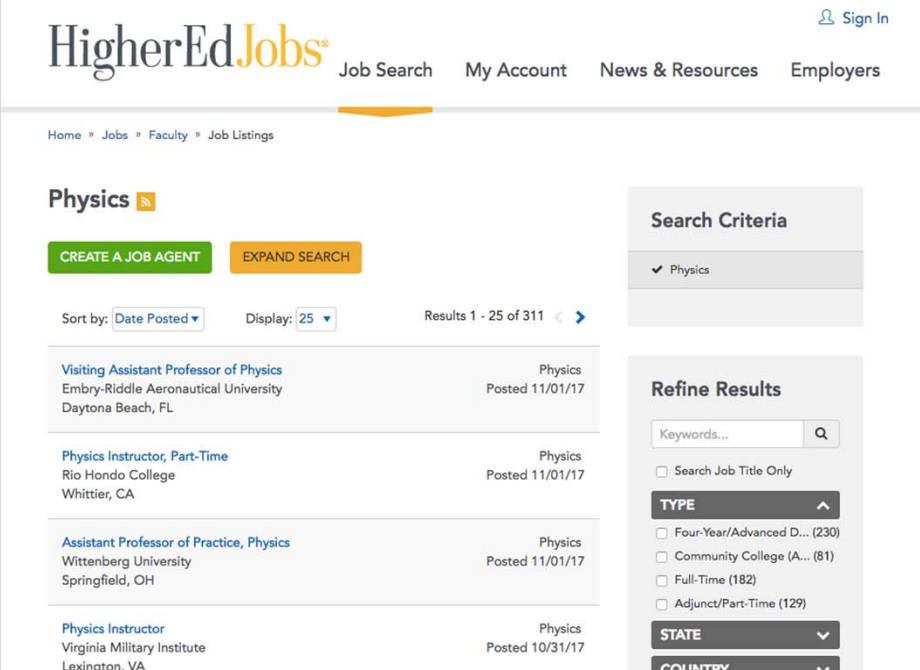


UIUC



# Where to find job ads

<a href="#">20+ quantum computing R&amp;D roles in world-leading research team</a> <small>University of New South Wales</small>	Sydney, New South Wales, Australia Yesterday		★
<a href="#">Tenure track Faculty Positions</a> <small>Perimeter Institute for Theoretical Physics</small>	Waterloo, Ontario, Canada Yesterday		★
<a href="#">Distinguished Research Chair in Quantum Condensed Matter Physics</a> <small>University of Waterloo</small>	Waterloo, Ontario, Canada Yesterday		★
<a href="#">Tenure Track Assistant Professor in Physics</a> <small>Samford University</small>	Birmingham, Alabama Yesterday		★
<a href="#">Tenure Track Assistant Professor in Astronomy/ Astrophysics at Texas Christian University</a> <small>Texas Christian University</small>	Fort Worth, Texas Yesterday		★
<a href="#">Assistant Professor, Teaching Stream, Position in Physics</a> <small>University of Toronto Scarborough</small>	Toronto, Ontario, Canada Yesterday		★
<a href="#">Assistant Professor, Physics - Department of Chemistry and Physical Sciences</a> <small>Pace University</small>	New York, New York Yesterday		★
<a href="#">Theoretical Condensed Matter Faculty Position</a> <small>Johns Hopkins University</small>	Baltimore, Maryland Yesterday		★



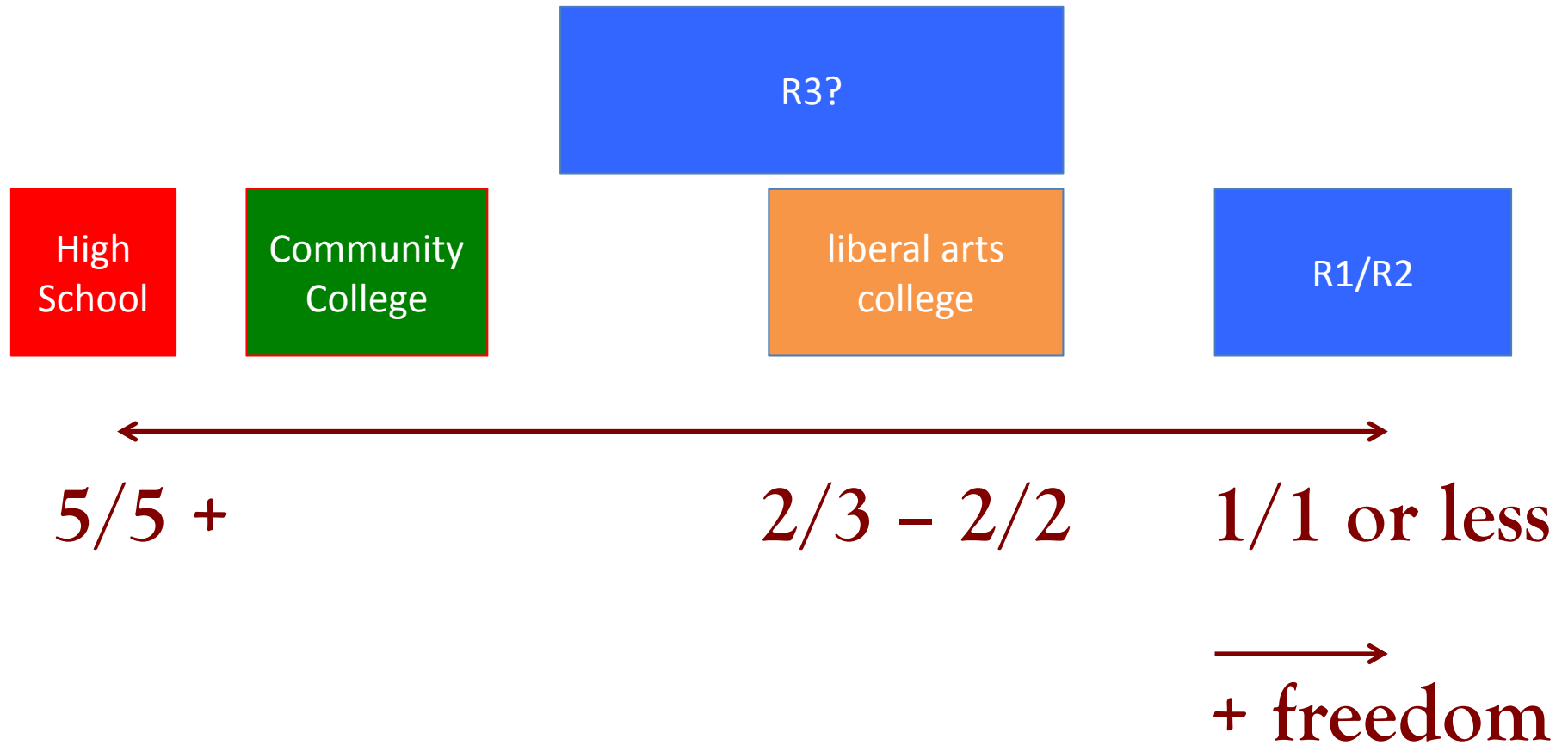
The screenshot shows the HigherEdJobs website interface. At the top, there is a navigation bar with "HigherEdJobs" logo, "Job Search", "My Account", "News & Resources", and "Employers". A "Sign In" link is also present. Below the navigation bar, the breadcrumb trail reads "Home » Jobs » Faculty » Job Listings". The main content area is titled "Physics" and includes two buttons: "CREATE A JOB AGENT" and "EXPAND SEARCH". Below these buttons, there are sorting and display options: "Sort by: Date Posted", "Display: 25", and "Results 1 - 25 of 311". The search results list several physics-related positions, including "Visiting Assistant Professor of Physics" at Embry-Riddle Aeronautical University, "Physics Instructor, Part-Time" at Rio Hondo College, "Assistant Professor of Practice, Physics" at Wittenberg University, and "Physics Instructor" at Virginia Military Institute. On the right side, there is a "Search Criteria" section with a dropdown menu set to "Physics". Below that is a "Refine Results" section with a search box and several filter options: "Search Job Title Only", "TYPE" (with a dropdown arrow), "STATE" (with a dropdown arrow), and "COUNTRY" (with a dropdown arrow). The "TYPE" section includes checkboxes for "Four-Year/Advanced D..." (230), "Community College (A..." (81), "Full-Time (182)", and "Adjunct/Part-Time (129)".

[careers.aps.org](https://careers.aps.org)

[higheredjobs.com](https://higheredjobs.com)

Also: [careers.insidehighered.com](https://careers.insidehighered.com)

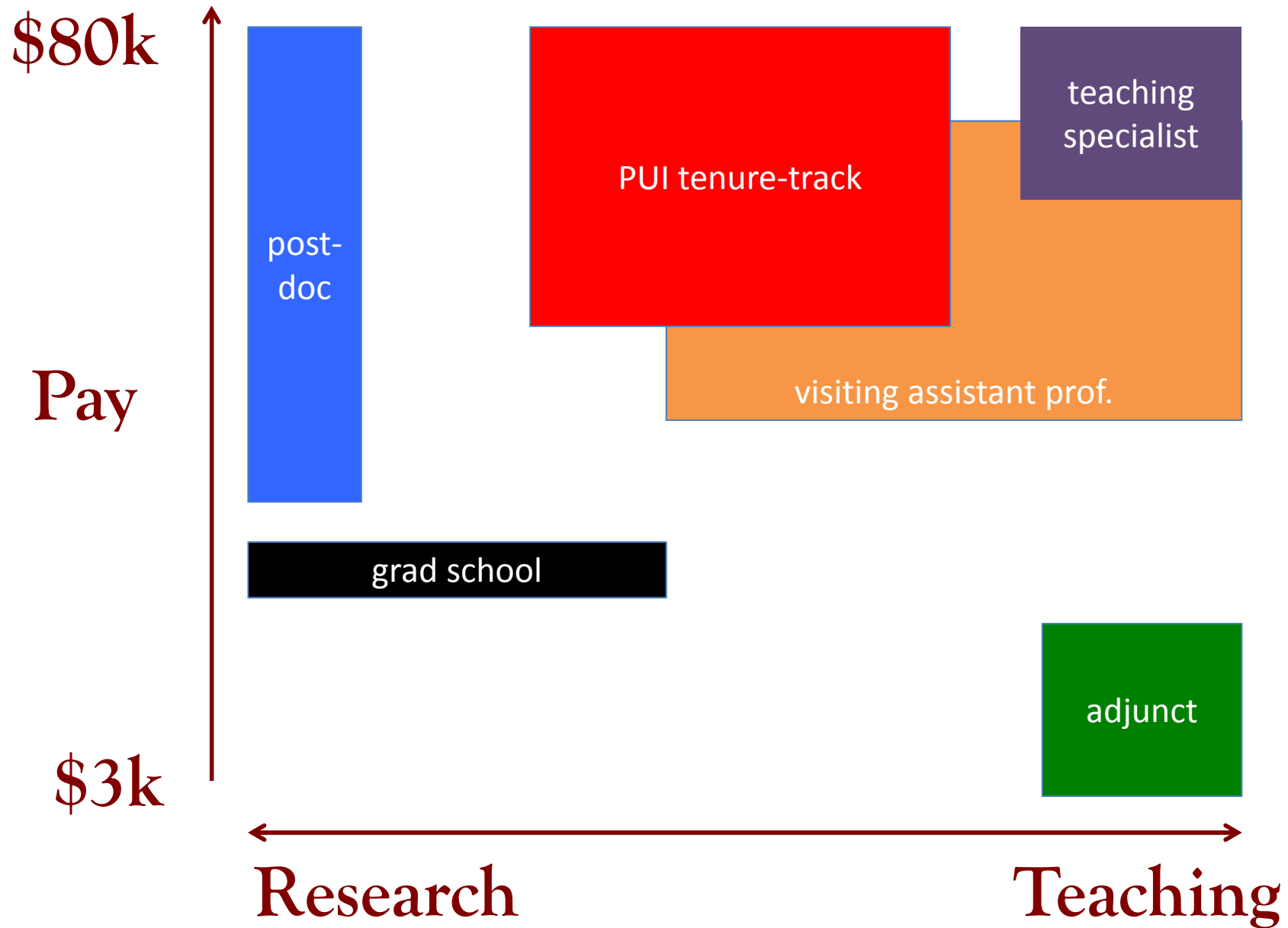
# Levels of Teaching Obligations



Beware # of preps.  
If they don't tell you, ask.



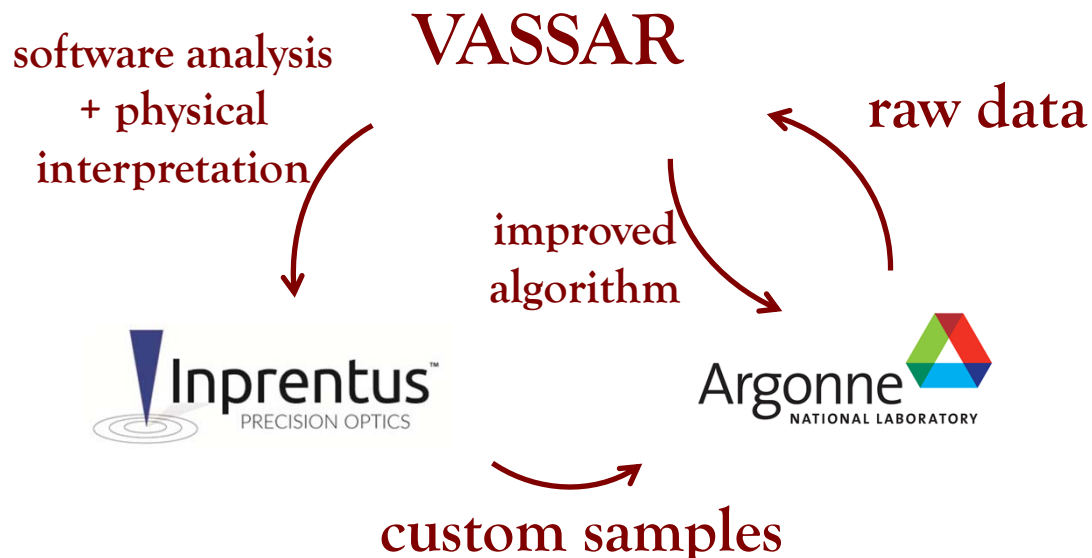
# Grad School -> PUI Tenure-Track Pathways



# You can make industry experience benefit your teaching.



Mit Patel, '20  
In Vassar Dartmouth 3-2  
program for engineering



VASSAR  
COLLEGE

Janet Y. Sheung, Ph.D.  
Visiting Assistant Professor  
Department of Physics and Astronomy

Gary Hohenberger <gahohenberger@vassar.edu>  
to Debra, me

Sep 19 ☆ ↶ ↷

Debra, hi -

The prospective donor company should write a letter to my attention stating the purpose of the contribution and method of payment. If applicable, they should also indicate any reporting requirements. Once received, I can have an expendable fund set up for the gift. Let me know if you have questions! Thank you, G.

Gary F. Hohenberger  
Associate Vice President  
Corporate, Foundation & Government Relations  
Vassar College  
124 Raymond Avenue, Box 657  
Poughkeepsie, New York 12604-0657 USA  
email: [gahohenberger@vassar.edu](mailto:gahohenberger@vassar.edu)  
telephone: 845 437 7092

October 12, 2017

Dr. Lahsen Assoufid  
Advanced Photon Source  
Argonne National Laboratory  
Lemont, IL 60439

Dear Lahsen,

I write to propose a research collaboration between Vassar College Department of Physics and Astronomy and the Advanced Photon Source at Argonne National Laboratory. It is to allow one of our undergraduate physics majors to join and contribute to the on-going project to develop the Long Trace Profiler (LTP) into a go-to instrument for characterization of X-ray blazed diffraction gratings. This student will be paid for any hours worked by industry partner Inprentus Inc.

corporate gift to sponsor student

Fancy research  
collaboration proposal

So you want to apply to a teaching position...

cover letter

CV

teaching statement

research statement

at least 3 reference letters, many of  
them addressing teaching

diversity statement

teaching evals

transcripts

# My hire from Search Committee's PoV

Just over 100 applicants

skim by at least  
one person



20 applicants

full committee  
full read



8 applicants

full committee  
Skype



Statements: Use bullet list initial summary or  
bold/italics to make key points clear.

# Common Skype Interview Questions (Visiting Position)

- Which courses are you comfortable teaching?
- If we walk into your classroom, what would we see?
- Why are you interested in working at a liberal arts college?

# What is fit???

(Skype with Wellesley, Tenure-Track Position)

## Minimum Qualifications

- Tell us about your teaching.
- What is your ideal distribution of time between teaching and research?
- If everything works as planned where do you see yourself research-wise in 2 years?
- How does your research program advance your field?

## Fit

- Which classes can you teach?
- We are interested in starting a biophysics program. Please comment on your experience starting a biophysics program at Vassar and how that would translate to Wellesley

# Take-Home Messages:

1. Your teaching will be elevated by the environment.
2. Undergrad research is very different from grad research.
3. Apply, apply, apply.

# Questions?



If you desire individualized advice please contact me at:  
[janetsheung@gmail.com](mailto:janetsheung@gmail.com)