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.

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.

“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.
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:

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

Now

exp. solid state

exp. optics

control

I 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
117th Topical Symposium
joint with
The 2017 Fall Meeting of the Astronomical Society of New York
November 10-11, 2017

"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
“... 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

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

careers.aps.org  
higheredjobs.com  
Also: careers.insidehighered.com
Levels of Teaching Obligations

Beware # of preps.
If they don’t tell you, ask.
Grad School -> PUI Tenure-Track Pathways

- Grad school
- Post-doc
- PUI tenure-track
- Visiting assistant prof.
- Teaching specialist
- Adjunct
You can make industry experience benefit your teaching.

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

software analysis + physical interpretation

VASSAR

raw data

improved algorithm

custom samples

Argonne
NATIONAL LABORATORY

Fancy research
collaboration proposal

corporate gift to sponsor student

Gary Hohenberger
ghohenberger@vassar.edu
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
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Janet Y. Sheung, Ph.D.
Visiting Assistant Professor
Department of Physics and Astronomy

October 12, 2017

Dr. Lahsen Assoufi
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 ongoing project to develop the Long Trace Profiler (LTP) into a goto instrument for characterization of X-ray biased diffraction gratings. This student will be paid for any hours worked by industry partner Inprenns Inc.

VASSAR COLLEGE
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

Applying from outside US
- no mention of mentoring undergrads/outreach
- no mention of interactive teaching methods
- poor qualifications
  - difficult to read
  - poor fit

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