The Teacher-Scholar: Being a Professor at a Liberal Arts College

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The questions I will answer over the next ~50 minutes:

1. Where do physics professors work?
2. What is a teacher-scholar of physics?
3. Why choose this career path?
4. How do I prepare for this career path?
Where do physics professors work?
N > 2500 institutions in the US award physics or related degrees.

All employ physics professors.
Amount of support is closely tied to expectations.

<table>
<thead>
<tr>
<th></th>
<th>Maryville College</th>
<th>Whittier College</th>
<th>Skidmore College</th>
</tr>
</thead>
<tbody>
<tr>
<td>Courses/Labs</td>
<td>3 courses/4 labs</td>
<td>2 courses/2 labs</td>
<td>2 course/1 lab</td>
</tr>
<tr>
<td>Start-up</td>
<td>No start-up</td>
<td>$20K</td>
<td>$70K</td>
</tr>
<tr>
<td>Summer Support</td>
<td>No summer support</td>
<td>Some summer support</td>
<td>Well established summer support</td>
</tr>
<tr>
<td>Research Hurts Teaching</td>
<td>Scholarship is required but not much</td>
<td>External funding/publication required</td>
<td></td>
</tr>
</tbody>
</table>
What is a teacher-scholar of physics?
Verbatim from signed contract:

“You shall, pursuant to [Department] rules and regulations, devote full time during the academic year to teaching, scholarship, publishing, and other professional activities, including advising students, keeping office hours, observing grading deadlines, administrative work, committee assignment, participation in commencement exercises and similar activities.”

This is typical, and typically vague. Let’s unpack this.
Teaching: You will function as professor AND TA.

“Candidate must have... the ability to teach a full spectrum of courses in physics."
(from job ad.)

Class sizes are small.
Keeping office hours:  
(Co-instructor’s evening OH)

Some professors have office hours in the courtyard.
Observing grading deadlines
Grading doesn’t have to be boring:

We are free to manage our own time.
The holy grail: course-based research pipeline

Tenure-track faculty are expected to develop and offer an advanced course within their specialty.

Teaching can help with research.
The desire and capacity to actively engage undergraduates in research and to supervise senior-thesis research projects is essential. (from job ad.)
Publishing.

Evan at Vassar College’s annual Undergraduate Research Symposium

Mit at the Optics and Photonics Winter School at the Arizona State University

Evan performed an experimental control in a collaborator’s manuscript. It was accepted for publication last month.
My experimental biophysics research program:

*Stentor coerules*

regeneration

Image courtesy of Gruber

Tracer particles allow flows to be mapped and quantified.
Starting a research lab:

March 2019: 40’x14’ lab space pre-furnished by architects.
Running a research program is a bit like running a small business. Amount of secretarial support you get depends on the department.
You function as professor, post-doc, and grad RA.

Setting up processes, establishing a healthy culture, and modeling the behavior you wish to see are all important.
Advising (and advocating for) students

Undergrads, particularly those from disadvantaged backgrounds, often do not know how to advocate for themselves. Some faculty find helping these students to be a very rewarding part of being a faculty member.
A well-mentored undergraduate can go from never having heard of a research field to a young researcher at the level of a 2\textsuperscript{nd} - 3\textsuperscript{rd} year graduate student.
Example committee work: How a professor is hired

- Physics (or subfield) faculty make case for new tenure line in petition
  - Fall semester

- Most petitions fail. If a tenure line is allocated, a search committee is put together.
  - Spring semester

- Ad is posted to various jobs listings, prestigious journals, and spread through mailing lists, FB, etc.
  - Summer

- Application deadline
  - Mid-Late Fall

- New hire starts job
  - Mid-Summer

- Offer(s) made, startup negotiations
  - Spring

- On campus interviews
  - Winter

- Skype interviews
  - Late Fall

This entire process spans two years.
This is basically everything from that line in the signed contract:

“
You shall, pursuant to [Department] rules and regulations, devote full time during the academic year to teaching, scholarship, publishing, and other professional activities, including advising students, keeping office hours, observing grading deadlines, administrative work, committee assignment, participation in commencement exercises and similar activities.

”
Compared to similarly competitive career paths, we work summer months unpaid.
## Appendix 1: Salaries, Strategic Plan Peer Group

<table>
<thead>
<tr>
<th>College</th>
<th>U.S. News Ranking</th>
<th>Assistant Professor Salary</th>
<th>Associate Professor Salary</th>
<th>Full Professor Salary</th>
<th>Cost of Living Index - Bankrate</th>
<th>Reference City</th>
<th>Adjusted Assistant Professor Salary</th>
<th>Adjusted Associate Professor Salary</th>
<th>Adjusted Full Professor Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado College</td>
<td>27</td>
<td>$82,700.00</td>
<td>$100,500.00</td>
<td>$135,700.00</td>
<td>68.01%</td>
<td>Colorado Springs, CO</td>
<td>$121,603.38</td>
<td>$147,776.78</td>
<td>$199,535.41</td>
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<tr>
<td>Carleton College</td>
<td>5</td>
<td>$83,700.00</td>
<td>$101,200.00</td>
<td>$135,900.00</td>
<td>77.12%</td>
<td>Minneapolis, MN</td>
<td>$108,531.52</td>
<td>$131,223.29</td>
<td>$176,217.84</td>
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<tr>
<td>Bowdoin College</td>
<td>5</td>
<td>$87,400.00</td>
<td>$107,500.00</td>
<td>$146,600.00</td>
<td>81.75%</td>
<td>Portland, ME</td>
<td>$106,906.89</td>
<td>$131,493.03</td>
<td>$179,319.80</td>
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<tr>
<td>Whitman College</td>
<td>43</td>
<td>$71,300.00</td>
<td>$90,900.00</td>
<td>$121,900.00</td>
<td>67.71%</td>
<td>Kennewick, WA</td>
<td>$105,298.84</td>
<td>$134,244.94</td>
<td>$180,027.04</td>
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<td>Hamilton College</td>
<td>16</td>
<td>$83,600.00</td>
<td>$107,300.00</td>
<td>$142,900.00</td>
<td>80.33%</td>
<td>Albany/Schenectady/Troy NY</td>
<td>$104,073.47</td>
<td>$133,577.56</td>
<td>$183,000.00</td>
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<td>Swarthmore College</td>
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<td>$105,000.00</td>
<td>$156,100.00</td>
<td>85.17%</td>
<td>Philadelphia, PA</td>
<td>$102,970.53</td>
<td>$123,282.85</td>
<td>$183,280.50</td>
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<tr>
<td>CMC College</td>
<td>9</td>
<td>$102,600.00</td>
<td>$121,200.00</td>
<td>$166,800.00</td>
<td>100.00%</td>
<td>Los Angeles, CA</td>
<td>$102,600.00</td>
<td>$121,200.00</td>
<td>$166,800.00</td>
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<tr>
<td>Amherst College</td>
<td>2</td>
<td>$88,900.00</td>
<td>$108,200.00</td>
<td>$151,000.00</td>
<td>87.88%</td>
<td>Providence, RI</td>
<td>$101,137.10</td>
<td>$123,118.09</td>
<td>$171,819.15</td>
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<tr>
<td>Smith College</td>
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<td>$84,800.00</td>
<td>$97,800.00</td>
<td>$141,600.00</td>
<td>85.17%</td>
<td>Providence, RI</td>
<td>$99,560.17</td>
<td>$114,822.93</td>
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<td>$100,300.00</td>
<td>$137,300.00</td>
<td>88.24%</td>
<td>Burlington, VT</td>
<td>$96,555.42</td>
<td>$113,667.94</td>
<td>$155,599.28</td>
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<td>Williams College</td>
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<td>$85,400.00</td>
<td>$104,000.00</td>
<td>$146,900.00</td>
<td>88.67%</td>
<td>Pittsfield, MA</td>
<td>$96,313.85</td>
<td>$117,290.87</td>
<td>$165,673.36</td>
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<tr>
<td>Pomona College</td>
<td>5</td>
<td>$93,300.00</td>
<td>$114,100.00</td>
<td>$156,600.00</td>
<td>100.00%</td>
<td>Los Angeles, CA</td>
<td>$93,300.00</td>
<td>$114,100.00</td>
<td>$156,600.00</td>
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<tr>
<td>Mount Holyoke College</td>
<td>30</td>
<td>$79,000.00</td>
<td>$97,100.00</td>
<td>$125,300.00</td>
<td>85.17%</td>
<td>Providence, RI</td>
<td>$92,750.63</td>
<td>$114,001.09</td>
<td>$147,109.55</td>
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<tr>
<td>Bryn Mawr College</td>
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<td>$78,200.00</td>
<td>$97,000.00</td>
<td>$139,600.00</td>
<td>85.17%</td>
<td>Philadelphia, PA</td>
<td>$91,811.38</td>
<td>$113,883.68</td>
<td>$163,898.58</td>
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<tr>
<td>Agnes Scott College</td>
<td>51</td>
<td>$68,200.00</td>
<td>$77,800.00</td>
<td>$96,800.00</td>
<td>74.96%</td>
<td>Atlanta, GA</td>
<td>$90,980.00</td>
<td>$103,786.57</td>
<td>$129,132.90</td>
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<tr>
<td>Connecticut College</td>
<td>46</td>
<td>$75,900.00</td>
<td>$85,900.00</td>
<td>$115,400.00</td>
<td>88.67%</td>
<td>Hartford, CT</td>
<td>$85,601.05</td>
<td>$96,879.18</td>
<td>$130,149.68</td>
</tr>
<tr>
<td>Wellesley College</td>
<td>3</td>
<td>$85,734.00</td>
<td>$101,907.00</td>
<td>$151,047.00</td>
<td>102.85%</td>
<td>Boston, MA</td>
<td>$83,357.45</td>
<td>$99,082.13</td>
<td>$146,859.97</td>
</tr>
<tr>
<td>Pitzer College</td>
<td>41</td>
<td>$82,200.00</td>
<td>$98,700.00</td>
<td>$134,000.00</td>
<td>100.00%</td>
<td>Los Angeles, CA</td>
<td>$82,200.00</td>
<td>$98,700.00</td>
<td>$134,000.00</td>
</tr>
<tr>
<td>Scripps College</td>
<td>30</td>
<td><strong>$79,400.00</strong></td>
<td><strong>$100,600.00</strong></td>
<td><strong>$140,800.00</strong></td>
<td>100.00%</td>
<td>Los Angeles, CA</td>
<td><strong>$79,400.00</strong></td>
<td><strong>$100,600.00</strong></td>
<td><strong>$140,800.00</strong></td>
</tr>
<tr>
<td>Occidental College</td>
<td>39</td>
<td>$78,600.00</td>
<td>$94,000.00</td>
<td>$133,500.00</td>
<td>100.00%</td>
<td>Los Angeles, CA</td>
<td>$78,600.00</td>
<td>$94,000.00</td>
<td>$133,500.00</td>
</tr>
<tr>
<td>Barnard College</td>
<td>25</td>
<td>$89,600.00</td>
<td>$118,700.00</td>
<td>$168,700.00</td>
<td>162.08%</td>
<td>New York City - Manhattan</td>
<td>$55,280.92</td>
<td>$73,234.88</td>
<td>$104,083.60</td>
</tr>
</tbody>
</table>
Why choose this career path?
My favorite free things

A slide rule!!

Textbooks!
Benefits: more serious things

- Gym membership
- Health insurance
- Faculty housing
- Paid sabbaticals
- Intellectual community: Concerts, Speakers, Classes, Workshops
- Onsite daycare

Fun Fact: With 78%, Millennials (aged 18-34) features the age-group demonstrating the most interest in taking a sabbatical.
Teaching students, not just teaching a subject:

Physics dinner and movie night

Freshman A-student sleeps through final exam.

It is never boring: Teachable moments come unexpectedly.
Inviting and hosting speakers (sometimes Nobelists)

More effort is required to get top researchers to a college, but $$$ helps.
How do I prepare for this career path?
A less traveled path from grad school to professor:

Grad school → Visiting Assistant Professor: term-limited on the job training to be an effective faculty member

Primarily undergraduate institutions (PUIs)

Community Colleges

Doing a research post-doc is the most common path, but alternatives exist.
A strong application for a tenure-track opening at an LAC:

• Cover letter: clear case of good fit
• Statement of research interests: viable 5-year plan leading to publications
• Statement of teaching philosophy: depends on institution/department*
• Post-doctoral experience: research or teaching, some accept industry
• At least three reference letters: not unusual to send in more, at least one well-known scholar from outside Ph.D institution is important
• Curriculum vitae: illustrates track record of commitment
• Diversity statement*
If you desire individualized advice please contact me at: jsheung@kecksci.claremont.edu

Also, please join us for lunch!
If you run out of money (or want a postdoc)

Grant prioritization explained by NSF program officer

Top research institutions

NSF funding opportunities which place value on teaching and broader impact:

- NSF Career Award
- RUI (Research at Undergraduate Institutions)
- ROA (Research Opportunity Award)
- MRI (Major Research Instrumentation Program)
Teaching students, not just teaching a subject:

<table>
<thead>
<tr>
<th>Academic Signs of Distress</th>
<th>Physical Signs of Distress</th>
<th>Psychological Signs of Distress</th>
<th>Safety Risk Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant decline in quality of work and grades</td>
<td>Changes in physical appearance such as a decline in hygiene or grooming, weight loss/gain or appetite changes</td>
<td>Disclosure of significant personal issues such as familial, financial, trauma, suicidal/homicidal ideas, grief</td>
<td>Unprovoked anger or hostility</td>
</tr>
<tr>
<td>Repeated absences</td>
<td>Fatigue, excessively tired or sleep issues</td>
<td>Excessive tearfulness, panic, irritability, disassociation or numbness</td>
<td>Direct or vague threats to harm self or others</td>
</tr>
<tr>
<td>Bizarre or concerning content in writing, emails or presentations</td>
<td>Substance abuse</td>
<td>Verbal attacks or harassment such as taunting, intimidation, badgering or bullying</td>
<td>Unable to care for themselves</td>
</tr>
<tr>
<td>Conversations with students center around personal concerns rather than academics</td>
<td>Disoriented, confused, difficulty concentrating or “in a fog”</td>
<td>Bizarre, magical thinking or student seen excessively laughing or talking to themselves</td>
<td>Academic assignments displaying themes of violence, hopelessness, worthlessness, despair, suicidal thoughts, isolation or provocative statements that could be seen as threatening</td>
</tr>
<tr>
<td>Disruptive in class</td>
<td>Bizarre/slurred speech or thinking patterns</td>
<td>Concern expressed by other students, faculty, staff or family</td>
<td>Communicating threats via email, text, phone calls or other means</td>
</tr>
</tbody>
</table>

The faculty connect students to resources as needed.
The teaching philosophy statement:

• Bad: Talks about the idea of teaching

• Good: Talks about teaching as something done by you, the candidate. Your experience, things you have tried, things you want to try, things which are important to you.

• Outstanding: Offers a unique skillset or perspective which will significantly improve the curriculum or program.