Physics Workforce
Latest Data on Supply and Demand

American Physical Society
Pittsburgh - March 17, 2009

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Statistical Research Center
American Institute of Physics
Acknowledgements

Data Sources
AIP
NSF
US Department of Education

SRC Staff
Patrick Mulvey
Starr Nicholson
Rachel Ivie
Bachelor’s Degrees
Natural Sciences, Math & Engineering Bachelor's Produced in the US, 1977 to 2006.
Physics Bachelor's Degrees, from 1969 through 2007

Source: Statistical Research Center

- Private Sector: 57%
- High School: 13%
- Colleges & Universities: 11%
- Civilian government, FFR&DC*: 8%
- Active Military: 5%
- Other: 6%
Field of Employment for Physics Bachelors in the Private Sector, Classes of 2005 and 2006

- Engineering: 31%
- Non-STEM: 28%
- Computer or Information Systems: 19%
- Physics or Astronomy: 7%
- Other Natural Sciences: 7%
- Other Technology: 5%
- Education: 1%
- Math: 2%

STEM: Science, Technology, Engineering and Math

AIP Statistical Research Center, Initial Employment Survey.
Common Job Titles
Recent Physics Bachelors in the Private Sector

Design engineer
Electrical engineer
Process engineer
Project engineer
Quality assurance engineer

Programmer
Software engineer
Systems analyst
Systems engineer
Software developer

Scientist
Lab technician
Research associate
Research analyst
Research assistant
What's a Bachelor's Degree Worth?
Job offers for 2007-08 graduates

Petroleum Engineering
Chemical Engineering
Computer Science
Electrical Engineering
Mechanical Engineering
Aerospace Engineering

Economics
Mathematics
Civil Engineering
Finance
Business Admin.
Accounting

Marketing
Chemistry
English Language
Biological Sciences
Secondary Educ
Elementary Educ

Starting Salary in Thousands

AIP Statistical Research Center compiled from data collected by the National Association of Colleges and Employers.
Bachelor's Starting Salaries
Physics Bachelor's of 2005 & 2006

Employer
Private Sector STEM
Private Sector non-STEM
Active Military
High School Teachers
College or University

Typical Salaries in Thousands of Dollars

Typical salaries are the middle 50%, i.e. between the 25th and 75th percentiles. STEM refers to positions in Science, Technology, Engineering, and Math.

- Team Work: 95
- Verbal Communication: 95
- Problem Solving: 93
- Management Skills: 67
- Advance Computer Skills: 67
- Business Principles: 61

Used Regularly
Masters Degrees
Master's degrees conferred by type of degree and department, 1977-2006.

- Master's enroute at PhD departments
- Master's exiting from PhD departments
- Master's exiting from master's departments

AIP Statistical Research Center, Enrollments and Degrees Report.
<table>
<thead>
<tr>
<th>Department</th>
<th>Annual Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ball State U (IN)</td>
<td>9</td>
</tr>
<tr>
<td>Christopher Newport U (VA)</td>
<td>8</td>
</tr>
<tr>
<td>CA State U, Fresno</td>
<td>6</td>
</tr>
<tr>
<td>Cleveland State U (OH)</td>
<td>6</td>
</tr>
<tr>
<td>San Diego State U (CA)</td>
<td>6</td>
</tr>
<tr>
<td>U of Mass, Boston</td>
<td>6</td>
</tr>
<tr>
<td>Appalachian State U (NC)</td>
<td>5</td>
</tr>
<tr>
<td>CA State U, Fullerton</td>
<td>5</td>
</tr>
<tr>
<td>City College (NY)</td>
<td>5</td>
</tr>
<tr>
<td>Miami U (OH)</td>
<td>5</td>
</tr>
<tr>
<td>U of Louisville (KY)</td>
<td>5</td>
</tr>
<tr>
<td>U of Mass, Dartmouth</td>
<td>5</td>
</tr>
<tr>
<td>Western Illinois U</td>
<td>5</td>
</tr>
</tbody>
</table>

Note: List includes only those departments who contributed degree data for all 3 years.
AIP Statistical Research Center, Enrollments and Degrees Report.
Professional Master’s Degrees in Physics

• Fundamental Knowledge is the foundation
• Specialized skills that are valued in the workplace

Common Features
  Active external advisory committee
  Required coursework outside the physics dept.
  Require an internship or off-campus work experience
  Cater to part-time students through evening courses
<table>
<thead>
<tr>
<th>Physics</th>
<th>Engineering Physics</th>
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</thead>
<tbody>
<tr>
<td>Appalachian State Univ.</td>
<td>Nanoscience</td>
</tr>
<tr>
<td>Arizona State Univ.</td>
<td>Physics for Entrepreneurship</td>
</tr>
<tr>
<td>Case Western Reserve Univ.</td>
<td>Health Physics</td>
</tr>
<tr>
<td>Illinois Institute of Technology</td>
<td>Physics</td>
</tr>
<tr>
<td>New York Univ.</td>
<td>Applied Physics</td>
</tr>
<tr>
<td>Oregon State Univ.</td>
<td>Nanoscale Physics</td>
</tr>
<tr>
<td>Rice Univ.</td>
<td>Applied and Industrial Physics</td>
</tr>
<tr>
<td>Univ. of Arizona</td>
<td>Physics, Technical Management</td>
</tr>
<tr>
<td>Univ. of Houston – Clear Lake</td>
<td>Applied Physics</td>
</tr>
<tr>
<td>Univ. of Northern Iowa</td>
<td>Modeling of Corporate Applications</td>
</tr>
<tr>
<td>Univ. of South Carolina</td>
<td>Science Instrumentation</td>
</tr>
<tr>
<td>Univ. of Utah</td>
<td>Science Entrepreneurship</td>
</tr>
<tr>
<td>Western Carolina Univ.</td>
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</tr>
</tbody>
</table>
Physics PhDs
Number of physics PhD's conferred in the United States, 1900 to 2007.

Sources: ACE (1900-1919), NAS (1920-1961), AIP (1962-2007)
AIP Statistical Research Center, Enrollments and Degrees Report.
Citizenship of Physics PhDs, 1966 - 2007

AIP Statistical Research Center, Enrollments and Degrees Survey.
Initial employment of physics PhD’s, 1979-2006

Percent

Academic Year

Data for 2005 and 2006 are Preliminary

- Postdoc
- Potentially Permanent Position
- Other Temporary Position
- Unemployed

Initial employment of physics PhD's, 1979-2006
Figure 1. FTE Physics Faculty

Retirement Rates for Physics Faculty.

Figure 5. Number of Recruitments for Tenured and Tenure-Track Faculty Members.

Table 15. Background of New Physics Faculty, 2006*

<table>
<thead>
<tr>
<th>Type of Department</th>
<th>PhD (%)</th>
<th>Bach (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earned PhD in US within last 5 years</td>
<td>31</td>
<td>62</td>
</tr>
<tr>
<td>Earned PhD outside US, any year</td>
<td>35</td>
<td>13</td>
</tr>
<tr>
<td>Earned PhD in US &gt; 5 years ago</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous Employer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>US Academic Institution</td>
<td>27</td>
<td>20</td>
</tr>
<tr>
<td>Industry, National Lab, Other</td>
<td>7</td>
<td>5</td>
</tr>
</tbody>
</table>

AIP Statistical Research Center: 2006 AWF Survey

*Includes permanent non-tenured faculty at schools without tenure, and tenured and tenure-track faculty at other schools.
Concluding Remarks
Downturns in the United States Economy

Source: National Bureau of Economic Research, Compiled by AIP Statistical Research Center
What Should Department Do?

Keep track of your own graduates

- Recruitment of students & parents
- Show current students that you care
- Powerful info for talks with the Dean
- Periodic assessment of curriculum
Thank You